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Adaptive Participatory Environmental Governance in Japan

Local Experiences, Global Lessons

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Preface

Complexity and uncertainty have been common terms for just about every aspect of modern living, and environmental governance is no exception. Indeed, environmental problems have long been recognized as "incorrigible" and "wicked," which place complexity and uncertainty at the core of environmental governance. The master discourse regimes such as sustainability, biodiversity, and resilience, with parametric simulations, have been explored as ways to build an anticipatory environmental governance, yet, the assemblages and dynamics found in human sociocultural and natural settings keep becoming more complicated, messy, contingent, and unforeseen. Wicked, indeed.

Furthermore, these master discourses matter too broad, too vague, too often without tangible, meaningful connection to people and their everyday strategies to keep their lives abundant and resilient. And, these empty master discourses all-too-often attach to other vaguely promising tropes—developmentalism and neoliberalism come to mind—which have also led to the degradation of social-ecological systems.

For these reasons, we need to engage more deeply with locally contextualized narratives and discourses in environmental relations and governance if we are to understand complexity and uncertainty in the human–nature relations of everyday living. We also need to engage with social practices that might better lead to adaptive pathways and everyday strategies that enhance resilient lives. It calls for a thoughtful study.

Japanese environmental sociology has long emphasized field studies for tackling a range of wicked environmental problems that impact everyday living. As experts, we situate these issues in multi-scaled temporal–spatial layerings of human–nature relations, keeping our focus on the everyday ways that humans and nonhumans interact. Japan's postwar experience with forms of industrial pollution in the 1970s motivated researchers to find environmental sociology. Early research in these degraded landscapes taught us much about the social-ecological damages brought about by the spread of these pollutants and the interconnectedness of humans with nature. Survivors in these pollution landscapes, both human and nonhuman, have kept asking us, what is a solution? What does it mean? We have learned that unless we understand the complexities and the uncertainties inherent within these relations,

across scales, we cannot begin to accurately characterize these problems or offer pathways forward.

Building on these early insights, Japanese environmental sociology has come to emphasize in-depth field visits in order to experience the realities of local impacts and consequences, immersing as participant observers in collaboration with stakeholders, scientists, practitioners, policymakers, and local decision-makers, at all stages in the research process, in service to "good" and better environmental governance.

Our critical theories came out of such practices. However, those theoretical and practical insights have seldom been referred to in the global discussions, mainly due to language barriers. We thus chose to compile these case studies in this book in order to spotlight the range of examples and to share the insights from our perspectives and experiences.

The contributors and editors of this book have been working together for the last decade on a government-funded research project focused on adaptive environmental governance. In this project, our central focus has been on environmental conservation, but it soon became clear that the issues that each researcher was engaging were expanding, as each encountered situations in which stakeholders were at odds with each other, or even within their own groups, confused about what to be problematized and where to set goals, or stagnated and, simply, mired in the seemingly intractable details of wicked problems. Amidst such situations, as social scientists we began to be asked for advice by these stakeholders, including natural scientists and engineers, whose expertise has recurringly been directly expected to lead to effective problem solving. As we each began to increase our participation in these field situations, some of us started social practices of our own with stakeholders in order to more directly tackle the problems—for example, facilitating consensus platforms among survivors of the tsunami for re-inhabitation and the rehabilitation of their community activities. As we researchers have continued, and especially as we have spoken with each other, it has become clearer that these field situations have needed social science frameworks, such as consensus, legitimacy-building, adaptability-cultivation, and social inclusiveness—not just as conceptual models *of* but also as on-the-ground frameworks *for* collaboration in service to "good" environmental governance. Through our co-participatory involvement, we have come to construct theories rooted in these long and complex historical trajectories of dynamic relations among humans and nature as social-ecological systems.

Most of the contributors to this book are active not only as environmental sociologists, but also bring to the field other expertise as well. We are environmental scientists, an agricultural civil engineer, a forestry policy researcher, and a wildlife management researcher. Through the rigors of our scholarly research and through the relevance of our participation we have exchanged our own trial-and-error efforts, our practice methods, and even small, quotidian experiences that often end up being more meaningful than any other expertise, in each complex field. We have discussed and continue to discuss relevant theoretical framings, to accumulate even the

smallest of lessons learned, and to synthesize these into practical theories. This book's idea was born of these experiences and results.

This book contains practical theories from a range of case studies, such as the Fukushima nuclear accident, wildlife management, watershed conservation, forest production, and renewable energy governance. Conceptual frames and theories include contributions to legitimacy, adaptability, plurality, redundancy, and distributive justice, most of which are refined and updated in tackling wicked problems. Therefore, these theories must be useful for the practice of local or regional societies throughout the world.

Sapporo, Japan   Taisuke Miyauchi
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About the Editors

Taisuke Miyauchi is a professor of the Faculty of Humanities and Human Sciences at Hokkaido University in Sapporo, Japan. As an environmental sociologist, he has researched the social-ecological systems of several areas in the Solomon Islands and Japan. He specializes in natural resources management, community development, and environmental governance. He has led some research projects on environmental governance, including the MEXT KAKENHI (Grants-in-Aid for Scientific Research Program) project titled "Sociological Study on Adaptive Governance in Uncertainty and Plurality." His authorship includes Kaihatsu to seikatsu senryaku no minzokushi (*An Ethnography of Development and Livelihood Strategies*) and *Hitobito no shizensaisei* (*Nature Regeneration and Local People*). He is also interested in the social history of the fishing industry, and coauthored *Katsuobushi to Nihonjin* (*Dried Bonito and Japanese People*). Miyauchi has edited and published several books as well, including *Hansaibai no kankyō shakaigaku* (*Environmental Sociology of Semi-nature*), *Naze kankyō hozen wa umaku ikanai noka?* (*Why Does Environmental Conservation Fail?*), and *Dōsureba kankyō hozen wa umaku iku noka?* (*How Can Environmental Conservation Work?*). Additionally, having been focused on the reconstruction and recovery following the Great East Japan Earthquake, he edited and published *Saigai to chiiki saisei* (*Disaster and Community Regeneration*).

Mayumi Fukunaga is an associate professor of Environmental Sociology and Ethics at the Department of Socio-Cultural Environmental Studies, Graduate School of Frontier Sciences, the University of Tokyo, Japan. Her works center on interdisciplinary issues at the interface of ethics, environmental governance, and ontological histories of nonhuman species, particularly in connection with aquaculture politics in the aftermath of natural and anthropogenic disasters, environmental justice in co-designing social-ecological systems, and foodscapes and foodways in the Anthropocene. Her most recent book is *Sake wo tsukuru hitobito: Suisanzōshoku to shigensaisei* (*Futuring Salmon: Dreams of Marine Ranching in Ruins*), and she is the coeditor of *Mirai no kankyō rinrigaku* (*Environmental Ethics for Futures*). Her recent nonhumans of focus are including seaweeds as communicator species of social-ecological systems' resilience and rainbow trout as a cosmopolitan and tech-adaptable species.

Introduction

<div style="text-align:right">**1**</div>

Taisuke Miyauchi and Mayumi Fukunaga

Abstract

Why does environmental governance not always work well? This and related questions continue arising among stakeholders, policymakers, and academics, despite global aspirations and ongoing efforts to define and implement "good" environmental governance, cultivated through maturing literature and based on practices across diverse communities, interpretations, and implementations. Indeed, participatory institutionalizations have often led to empty formalities in process and outcomes, engendering social apathy among all parties, leading to standardized governance solutions that are supposed to work well but do not.

This book gathers case studies from Japan and links them with contextualized micro-theories that themselves have arisen from the field and seeks to share both the stories and insights as practical wisdom for better environmental governance. Japan's archipelago of islands, communities, and resource issues has struggled with late-modern capitalistic and toxic ruins due to environmental pollution and massive development prioritized through rapid economic growth after World War II, chronic and acute stressors that include such socioeconomic structures-induced disasters as the Fukushima Nuclear Power Plant accident. The continuing damages across generations have continued to beseech us to stay with the aspirations of environmental governance, even when it does not always work. In Japan, our aging and declining populations urgently need to change the heretofore structures of SES governance and relationships with nonhuman beings in our shared systems, including the underlying climate crisis affecting our

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everyday lives. Local stories about environmental governance, including those that we present, often seem too local and specific to generalize; however, the contextualized micro-theories that we offer here, and merged with our fieldwork, just might enable those involved with environmental governance in other regions to expand their imaginaries toward new, innovative activities.

We look forward to furthering these conversations—and especially, to creating robust and enduring solutions.

1.1 Why Does Environmental Governance Not Work Well?

1.1.1 Environmental Governance and Its Institutionalization

Why does environmental governance not work well?

With a moan and with anger, with frustration, and with helplessness, and sometimes with resignation, this question is all-too-often posed to environmental sociologists when we are in the field as fieldworkers and practitioners. We hear this and related questions from researchers and policymakers, from concerned citizens and local administrators who govern natural resources, property holders, and from those who visit and whose activities and relations with these natural resources are found in the area of concern.

And still, the number of concerned voices continues to rise, despite how well-institutionalized local and regional environmental governance has become and how well we understand this history and its successes (Berkes et al. 2002; Bodin & Prell 2011; Hogl 2012; Mori 2013; Murota & Takeshita eds. 2013; Sato, Chabay, Helgeson eds. 2018). Environmental policies and best management practices in Japan became established at the beginning of the 1970s in response to chronic and acute forms of environmental pollution, driven by industrial toxins that were a result of the prioritization of rapid economic growth after World War II. As the national government learned about local-scale issues, basic components for governance were formulated and implemented: legal systems, regulations for control and rehabilitation, agencies for management, and compensation measures. Indeed, during these times, many civil antipollution movements contributed to efforts at democratizing environmental management (Broadbent 1998; Iijima 1993; Georges 2002; Miyamoto 2014). Regardless of some efforts, policymaking and decision-making processes in Japan were occupied by bureaucratic paternalism centering on technocratic experts more than on the participatory involvement of stakeholders (Funahashi 1985; Kajita 1988).

Despite these early problems, there was awareness of and action toward developing forms of governance imbued with democratic values such as stakeholder participation, accountability, science-based understanding, and procedural justice—all of

which began to be implemented and institutionalized in Japan soon after the United Nations Conference on Environment and Development, the so-called Rio Earth Summit, in 1992 (Matsushita 2002; Kitoh 1999; Miyauchi 2006). This evolving transformation came in response to the rapid, globalizing spread of "resources governance" schemes and theories related not only to public policies and cooperation management, but also to the groundswell of increasing citizen participation (Maruyama et al. 2015; Miyauchi 2013). Within this community, institutional–technocratic nexus would evolve insipient notions of governance, especially with moral underpinnings and political imperatives in service to public policy (Maruyama 2014; Miyauchi 2013). These came in response to the insistent, hegemonic emergence of neoliberal globalizing, including borderless (and morals-less) economies, a re-entrenched hierarchical stratification, recurring community-scale injustices, aggravated environmental problems such as climate change, and increased dependency between ecosystems and human societies.

At the same time, such borderless problems, across regional and social–organizational scales, have helped to create participation spaces for diverse players—from multinational businesses to local residents—which also means more dynamic contestations and conflicts among devoted participants. As such, environmental governance—as concepts, theories, models, and best practices—has had to shape itself as multifaceted in order to engage with and bridge bottom-up initiatives and their resistances with conventional (and globalized) top-down governing, all while developing ties of solidarity (i.e., ties of trust) across multiple scales, fields, policies, and stakeholders (Sato et al. 2018; Olsson et al. 2004; Murota and Takeshita eds. 2013). In response to the many, many globalized movements, administrative agencies began to implement and institutionalize governance formats for public policies, particularly since around 2000. These most recent policies and institutionalizations include setting councils for consensus building through citizen participation and creating social learning programs that promote attendance and partnership across all participants to share visions for the future (Matsushita 2002).

1.1.2 Empty Formality?

So, why cannot such participatory institutionalizations—of processes and outcomes, of participants and relations—make for effective and enduring natural resources governance in the field? The following brief story about a local forest restoration project in Northern Japan can tell us much about this quandary.

Certain suburban community members realized that their neighboring forest was deteriorating rapidly, and they recognized the increasing risk of landslides and floods associated with intense rainfalls and the increasing number and scale of typhoons, all due to climate change. Some of the local community members started conservation activities, including planting trees and bushwalking to characterize conditions and estimate risks. Then, they founded a forest restoration council for better local forest governance according to advice from local government foresters. They next followed an institutionalized format for how to help the council and invited

stakeholders—including logging companies, renewable energy companies, local and national policymakers, local schools, and citizen organizations—to sit with each other and participate in the forest roundtable.

The council started out so active, enthusiastic, and successfully collaborative in its early meetings. However, within a year, it started malfunctioning. Residents began feeling neglected by the other stakeholder groups who gathered in the council. National agencies focused on only scientific observations performed by themselves. The local government only cared about procedural formality and publicity. People from outside the community frequently came to the forest, did their activities, and broadcast them without any positive communication with or connection to local stakeholders. Local caretakers of the forest were frustrated with the outsider-driven kinds of forest use, many of which were seen as having negative impacts according to local knowledge. Scientists in the council asked other actors to prioritize their "accurate" scientific knowledge and insight.

Still, the council persisted, participants were present, and so, the official documents stated, "the council maintained well and we collaboratively set goals for next year." Each activity by each group was recorded on the list of collaborative works, and the local government secured the next year's budget with the report. As long as they could secure a budget, the council could continue. In light of these experiences with environmental governance, the local people who had started the conservation activities voluntarily faded out from the activities one by one.

And soon enough, those who had attended the council began to ask themselves, "Why does environmental governance not work well?"

To answer the question, it is easy to say that we need to change entrenched bureaucratic systems that penetrate from the national to local governments and which have mired themselves in the administrative dictum not to disturb what has been arranged. Surely, even in such a typical "Japanese" context, one would hope for candor about the causes of the problem. However, committed participants in the field expect from researchers more than just a critique. They expect us to give them more pragmatic theories and concepts, tools, and best practices, all in service to enabling and supporting discursive engagement, providing feedback about their efforts, and aiding in exploring relevant paths to achieve better results.

We often hear these topics and questions: What can motivate local administrative agency staff to engage in substantive collaboration—to go beyond offering nothing more than procedural obligation? Does leadership matter? If so, which kinds have worked well? And who leads? How can outsiders start meaningful conversations with local stakeholders? What kind of role can we specifically take as researchers?

These are questions that come up again and again for researchers and practitioners worldwide and those who struggle and make everyday efforts for good environmental governance. Theoretical frameworks of environmental governance are not unified, but several moral and political imperatives are globally shared: accountability, inclusiveness, diversity, plurality, legitimacy, transparency, adaptability, and transformativity, in addition to foundational aspects of participatory democratic governance such as participation, collaboration, and fairness. There has been a diversity of interpretations of these moral and political imperatives in public policies,

civic activities, and academic action research arenas both internationally and domestically, as well as meta-analyses of those imperatives. These efforts appear in the rich environmental governance literature inherent in participatory adaptive governance (Folke et al. 2005; Chaffin et al. 2014; Chaffin and Gunderson 2016; Gupta 2008; Margerum and Robinson 2016); collaboration among transboundary stakeholders at multiple geographic and political levels (Gunderson 1999); flexibility and transformativity within and between stakeholder groups and within and between institutional and governmental structures (Ostrom 1990, 2010; Olsson et al. 2006; Armitage and Plummer 2010); participatory consensus and process building through conceptions of deliberative democracy (Koontz 2016); and the integration of scientific methods and findings with traditional ecological knowledge epistemologies, practices, and understandings (Folke et al. 2005; Armitage and Plummer 2010; Sato et al. 2018).

This maturing literature on the diversity of interpretations and implementations shows us that sharing micro-theories from different fields and contextualized for site-specific situations give researchers sparks of insight and pragmatic hints as we consider specific solutions to bring to eager stakeholders. For example, we already know that cultivating transformativity of actors is one of the key issues. As such, how can we expect to gain transformativity of actors with such a rigid bureaucracy? How can we understand what kinds of transformations are efficacious and what kinds are not efficacious? If you try unilaterally to interpret and implement some moral or political imperative in a local situation, you, too, are likely to end up asking yourself, "why does environmental governance not work well?"

For these reasons, this book gathers case studies with contextualized microtheories from the field in order to share them as practical wisdom for better environmental governance.

1.2 Toward "Good" Environmental Governance

1.2.1 Highly Contextualized Realities in Complexity

Another concern of this book is the gap between the moral and political imperatives of environmental governance and the realities in the field, and how participants can negotiate with each other. Their words, actions, values, and goals are often contested, and such contestations often bring dysfunctioning or deadlock to environmental governance in the field.

For example, wildlife management, especially regarding how to reorganize zoning among local communities, buffer zones, and wildlife territories, is now one of the critical issues in the suburbs and rural communities in Japan. Amid Japan's continuing depopulation and reorganization of human uses of social spaces that include nature, wildlife such as bears, deer, wild boar, and monkeys have increasingly become threats and risks to small-scale agriculture, kitchen gardens, and everyday lives themselves. Experts and local government officials, who believe that participatory and collaborative approaches can make for "good" environmental

governance, make a lot of effort to bring residents together and to keep them motivated, even as residents often do not want to participate in such activities willingly. Rather, they show clear unwillingness and reluctance to join in governance. Such unwillingness and reluctance are not because they lack knowledge or have less awareness of risks (Suzuki and Muroyama 2010; Suzuki 2013). When they consider the cost–benefit trade-off of environmental governance for their everyday lives, the residents often conclude that it is a better strategy to accept damages and suffering rather than paying monetary and human labor costs to protect their garden. Because of the limited resources of time, money, and human power in aging, depopulated areas, what benefits they can gain from the limited resources, they can distribute them, and at what cost—these are the central issues that should be prioritized among residents. In other words, in such realities, the mobilization of locals for participation and collaboration in service to achieving "good governance" means depriving them of their time, money, and human power that could otherwise be used for actions that contribute to their livelihood strategies with higher priority than wildlife management. It was simply not cost-effective for residents.

This story is emblematic of the highly contextualized and sensitive situation in which governance is often embedded. We also find in the story how the complexity of value systems and the many mechanisms for determining what should be prioritized underlie governance. There is always a layered politics of values that are plural, contested, and structured differently at an individual level and a collective level. How can we prioritize one set of values over other sets of [contested] values?

Besides the moral and political imperatives in the pursuit of "good" governance, there is also a gap between the local values and the globally standardized normative values that conceptualize what environmental governance aims to achieve, including such notions as sustainability, biodiversity, circular economies, and low-carbon living. From local everyday perspectives, those globally standardized values are, unless translated or embedded into very familiar contexts, quite ambiguous and are not recognized as options to choose for their livelihood strategies. Furthermore, what values can be prioritized depends on contextual, historical, political, and cultural pathways. Thus, the value dynamics of residents are intimately shaped by the dynamics of everyday politics and path dependencies, not to mention cost–benefit assessments and power structures. Without negotiating with such local value dynamics, "good" environmental governance will not occur and any efforts to make it occur will almost certainly malfunction.

1.2.2   To Benefit From Uncertainty

In the literature that deals with complexity in environmental governance, an adaptive governance scheme occupies large theoretical and practical concerns (Lemos and Agrawal 2006; Chaffin et al. 2014). Adaptive governance emerged as an outgrowth of social—ecological system (SES) theory, which visualizes, historicizes, and theorizes linkages between and among the social and the ecological for analyzing and describing the world as materialized relationships and accumulations of historical interactions. Since the term "adaptive governance" formerly appeared in *Science*

(Didiezetz et al. 2003), adaptive governance had developed to respond to and manage near- and long-term uncertainty and complexity in highly contextualized situations.

One of the early advocates of adaptive governance, C. S. Holling, states that adaptive governance is a scheme for making certainty out of uncertainty.

> Man has always lived in a sea of the unknown and yet has prospered. His customary method of dealing with the unknown has been trial-and-error. (...) The search for a solution should not replace trial-and-error with some attempt to eliminate the uncertain and the unknown. (...) Rather, the proper direction lies in the design of policies and economic developments that can allow trial-and-error to work again. (...) This view is the heart of adaptive environment management - an interactive process using techniques that not only reduce uncertainty but also benefit from it. The goal is to develop more resilient policies (Holling 1978: 8–9).

Of course, all uncertainties vary, be they sociocultural, ecological, and/or socio-economic. And, they occur over long periods of time. Moreover, because they are so entangled with each other, they often accelerate across scales and by degree. The early contributors to theoretical framings of adaptive governance recognized the inadequacy of scientific management due to facing the inherent uncertainty of ecological systems (Walker et al. 2004; Folke et al. 2005; Brunner et al. 2005; Folke 2006). As Holling states, adaptiveness is an essential imperative in environmental governance and benefits from uncertainty, as well as from complexity and interconnection (and entanglement) of contexts. As such, adaptive governance is expected to mediate social factors for structuring well loops and recursive processes of monitoring, experimentation, and feedback to ensure a healthy system.

1.2.3 Legitimacy Matters

Another significant aspect of adaptive governance is the rise of community-based initiatives in scientific ecological management (Dietz et al. 2003; Walker et al. 2004; Folke et al. 2005; Folke 2006; Chaffin et al. 2014). To cultivate community-based initiatives, the literature on adaptive governance and co-management gives weight to legitimacy and social learning (Holling 1978; Gunderson et al. 1995; Olsson et al. 2004; Brosius et al. 2005; Berkes 2009; Cosens 2013). Due to the highly contextualized situations in field settings, legitimacy and social learning are two essential dimensions for structuring "good" community-based initiatives. Legitimacy here is a social, mutual recognition for those who govern and subordinate about ownership, usufruct rights, and rules, but also regarding the prioritization of values, properness of stakeholder-ness, and leadership. Social learning can cultivate participatory motivations, collaboration, and stakeholder-ness among those who might have concerns, as well as bridge into multiple and different knowledge systems such as local knowledge and scientific knowledge (Reed et al. 2010).

For example, how we define contextually sensitive stakeholder-ness is critical for community-based initiatives, and it leads to how we can continue to create public-sphere and public-access spaces that engender consensus building. And yet, who can be a stakeholder, and what is the proper set of criteria to decide who are

stakeholders? Here is an example of a certain successful consensus meeting. After consensus was successfully achieved in the voluntary stakeholder meeting, residents who had never attended the meeting started activities that went against the consensus. Furthermore, a powerful leader of the neighborhood community opposed the consensus and refused any activity that was decided at the meeting. However, due to its voluntariness, the consensus meeting did not have any effect and restriction on those who were outside of consensus processes and their activities against consensus. These events demotivated the consensus attendants and made the consensus meeting only for show as an alibi for agencies (Hirakawa 2005). This story leads us to another essential question. What is consensus? How can we recognize that consensus is rightly or successfully achieved? These questions go back to the question of stakeholder-ness. That is, who should appropriately be involved in the consensus-building processes? After all, under what set of conditions and situation can we truly say that an enduring consensus was achieved? Moreover, without any legally binding framework to structure consensus building, how can it have influence and constraints on its implementation? For those questions, legitimacy building and social learning can be essential pathways to explore answers collaboratively, as both interact with each other, within and across stakeholder groups.

The papers in this book frame the many dimensions of legitimacy and social learning and focus on narrative case studies as analytical and pragmatic tools. Narratives constitute discourses, including performance interactivity, and they tell stories that situate meaningful events and experiences amid the complexities of environmental–governance settings. Narratives contain spoken words, written texts, everyday conversations, and behaviors that convey stories, sometimes nonverbalized and unspoken, fictional and nonfictional, and contingently told or chronologically told. Narratives function as a boundary object (Star and Griesemer 1989), bridging stakeholders with different values and translating values between each other. As such, in these highly contextualized field situations that have complex values systems and uncertainties, narratives are useful as both analytic and pragmatic tools.

1.3 What This Book Tells You

Each story in this book arises out of Japan's postwar high economic growth and its myriad consequences: rapid urbanization, pollution of the commons, abandoned peoples and communities, socioecological damages incurred by artifact-nature hybrid disasters, and postwar population shifts within and into cities and the more recent trend of rural depopulation. Whether sudden, extreme events like the Fukushima nuclear accident or slower-acting sets of transformative forces, each case study begins as a story, contextualized in a local environment, and tied deeply into the everyday lives of residents. Each story has relevant micro-theories that arise from the field setting. We believe that such micro-theories, including the specific contextual dynamics, relations, and tensions amid these case studies, will help

readers who also face, in different contexts, such realities in the field, and find themselves asking, "why does environmental governance not work well?"

For these, micro-theories extracted from the field have a shared theme: How to facilitate the regeneration and reorganization of local communities and their environments, which have experienced recurrent disruptions and degradations, in order to assure that these social–ecological systems can maintain their historical identity? Due to globally shared realities such as a rapid development growth and urbanization worldwide, reorganization of globalized and globalizing supply chains, and an increase in socioecological disasters due to climate change, we Japanese environmental sociologists present our experiences and our accumulated academic and practical insights as contributions to local communities and their situations, which continue to face acute, dynamic transformations. In the process, we expect that our stories and insights will further contribute to the development of SES theories and to adaptive governance, giving insights for the pursuit of socioecological regenerative-ness, particularly about how imperatives in environmental governance can be translated into effective pathways for "good" environmental governance, whatever the historic, contingent, and ongoing situation.

Specifically, case studies in Part One articulate essential criteria in environmental governance and situate these structural dimensions in Japan's historical and socioecological contexts. In particular, their micro-theories contribute to arguments about plurality, legitimacy, and social adaptability in environmental governance contexts. Often, residents may not show their values, not least because they cannot name well what values systems they live with as their own, nor how they negotiate with other value systems from family members to national or global standardized values that surround them, nor even what prioritizations they enact, implicitly or explicitly, in their everyday lives. Soon enough, collaboration conflicts often reveal the heretofore unseen, and thus, local community members must confront a range of contested values within their own community and across stakeholder groups. And so, these sudden contestations of values often point to the reason why the conflicts are so confused and entangled with each other.

As such, these case studies seek to unfold these inchoate and contextualized values from the narratives, to explore what can be shared, and to be a node for linking, negotiating, and communicating across differences. Their findings as nodes include historical and communal relationships inherently associated with collective actions and memories in watershed governance (Chap. 2); visualizations of contributions to local communities and forest restoration by mountain bikers as outsiders (Chap. 3); redundant spaces in the rice paddies with ecological capacity for intergenerational creativity (Chap. 4); a local organization that creates giving–gift relationships among urban citizens and countryside residents for mitigating wildlife conflicts (Chap. 5); and nonhuman species, seaweed, as a signifier that can translate and re-contextualize socioecological regenerative-ness for human and nonhuman stakeholders (Chap. 6).

How to manage, distribute, and mitigate risk, and how to restore abundance and resilience for individuals, for communities, and for their social–ecological systems is another essential aspiration of "good" environmental governance. For environmental

sociologists in Japan, this has meant facing the fact that both social and ecological damages interact with each other and that they spread, link, and exacerbate sufferings and damages to humans and nonhumans, near and long term. Of course, even as damages and risks are bureaucratically evaluated, converted into numeric rating scales, and prioritized to be managed, compensated, and insured, amid these objectifying scrutinies, all that is within these life stories and narratives, especially such pain and suffering, would be left unverbalized.

In this light, Part Two has three papers that describe layered damages, including unverbalized damages and risks for both today's and future generations. Among the three, two papers chose the issue of the Fukushima nuclear accident in 2011. Chapter 8 depicts the realities and politics of nuclear evacuation, narrativizing the sufferings of evacuees and characterizing the difficulties of governance intended to support rebuilding the lives of evacuees. Such difficulties arose from the limited capacities of well-meaning actors, those local municipalities who were expected to be facilitators and mediators in adaptive support of the evacuees. In turn, the difficulty of renewing and maintaining adaptiveness in the aftermath of the nuclear accident is also revealed in the politics and management of compensation for rebuilding small-scale industries that use local natural resources. Chapter 9 illustrates the undocumented and unvisualized damages to the local small-scale businesses and their efforts to gain compensation and reorganize their business. Relatedly, even after the nuclear accident, the renewable energy transition in Japan has still been slow. Chapter 10 clarifies and unfolds the path dependency problems behind such slowness and then explores to create positive chains of benefits and mitigation of risks both in the intra- and inter-generations or the achievement of expanded distributive justice.

Finally, Part Three presents case studies that engage practical tools, processes, and designs with narratives, especially designs of processes for collaborativeness in knowledge, legitimacy, and stakeholder-ness production. These in turn break down, translate, and negotiate with the aforementioned meta-values of conservation, resilience, and sustainability, as stakeholders seek to establish their conceptions with what these mean in their local socioecological governance contexts. Furthermore, these ways of creating social capacities reach across to ideas and practices that aid in cultivating the capabilities of SESs, and of future visions for our more-than-human world. The tools and methods that these chapters provide us include evaluation methods of adaptability in the highly contextualized fields (Chap. 11); collaborative creation of narratives for actualizing local knowledge in order to motivate participation in adaptive governance (Chap. 12); narratives that help to drive transformativity and to bridge jurisdictional borders among stakeholders (Chap. 13); scientific narratives that can be boundary objects for co-design of urban sustainable transition (Chap. 14); co-designing workshops in action research in order to cope with the hegemonic power and social structures that are common in the field (Chap. 15); and leadership that can create the empathy-based assistance to achieve transformativity in adaptive governance (Chap. 16).

We hope that the readers will explore and understand how these Japanese researchers, as scholar practitioners in the field, were able to derive relevant micro-theories, tools, and methods through their dialogical interactions with

stakeholders in the field. We further hope that discussion with the readers of the issues, concepts, and findings that this book presents will contribute to the theoretical and practical development of adaptive, "good"—and effective—environmental governance for the near- and long-term future of all.

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Part I

What Matters? Legitimacy, Plurality and Adaptability

Reeds and Rights: Dynamism of Legitimacy Construction in the Collective Management of Natural Resources

2

Taisuke Miyauchi

Abstract

Attempts to advance environmental governance often encounter wicked problems such as contested images of nature, the issue of who qualifies as a stakeholder, and inherent difficulties in consensus building. Legitimacy in conservation is neither a simple nor a static concept. However, local communities often succeed in managing the establishment and recognition of legitimacy in adaptive ways. This chapter illustrates how legitimacy can be constructed and sustained in local collective management of natural resources, through a case study of the preservation of reeds (*Phragmites australis*) at a state-owned river mouth area in Kitakami, northern Japan. Reed beds appeared in this area in the 1930s following a government river improvement project, leading to discussion of local communities' collective rights to the reeds. The case study shows that the historical accumulation of local values such as collective memory, historical collectiveness, subsistence rights, profitability, and conservation values constructs the legitimacy of collectiveness and the status of diverse stakeholders.

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2.1   Intricate Problems and Legitimacy

2.1.1   Intricate Problems

This chapter examines the construction of legitimacy of environmental governance, through a case study of reed management in northern Japan. The case study shows not what legitimacy "should be" but how it has been constructed and how it has changed over time.

Efforts to establish environmental governance often encounter wicked problems (Brown et al. 2010). What kind of nature is desirable? Who should be involved in conservation activities? What values should be prioritized? There is no simple answer to such questions.

Throughout the world, nature and human activities are intimately intertwined. In particular, the landscapes of the Japanese archipelago have formed through long and close interactions between nature and humans (Yumoto 2011). These interactions can take many forms, and no one can declare that a particular form is objectively the correct one. To use an ecological term, there are many possible points of equilibrium in human–nature relations.

For example, Ogura (1998, 2006, 2012) points out that many mountains in the Japanese archipelago were grasslands until the nineteenth century; now, they are covered with forests. It is impossible to resolve definitively the question of which form of nature is better. Grasslands are a source of fertilizer for agriculture and a contributor to biodiversity. Forests also play a vital role in sustaining biodiversity and enhancing human well-being. Hence, the so-called *Satoyama* conservation activities, a mainstream environmental activity in Japan today, not only simply aim at preserving wilderness areas but also aim at enabling diverse interactions between humans and nature in addition to resolving conflicts arising between different landscapes such as forests and grasslands (Washitani 2001; Takeuchi et al. 2012). Moreover, these interactions have no fixed set of historical or contemporary biotic conditions nor static point of equilibrium. This situation can create conflict in conservation activities, as different stakeholders vie to conserve nature in different forms.

Stakeholder-ness (i.e., who qualifies as a stakeholder) is another intricate problem. In many instances of environmental conservation, there is no clear answer as to who should be involved. One could perhaps try to resolve this problem by saying that everyone who wishes to be involved is a stakeholder, but there remain difficult problems of legitimacy, as some stakeholders may not recognize others' right to be considered equal participants.

Moreover, diverse values exist among stakeholders, or even among local residents. Sometimes, values are hotly contested within a community. Resolving conflicts between diverse values is not easy. Obviously, a consensus-building process is necessary. But there is never any shortage of opinions as to what kind of consensus-building measures are desirable and who should be at the table.

Since there is no simple answer to these problems, legitimacy is the key (Hogl et al. 2012; Cosens 2013). Legitimacy, as used here, refers to a situation or process in

which it is socially recognized or accepted that particular people will manage a particular environment in keeping with a particular value or set of values, and in the context of a particular system or set of institutions (Miyauchi 2006). In tackling stakeholder-ness and consensus building, we should construct legitimacy, on the basis of local contexts.

2.1.2   Reeds and Legitimacy

Despite the intricacy of these problems, we may learn the solutions from case studies in which local communities have dealt with problems of environmental sustainability. This chapter discusses one such case, investigating the dynamism of legitimacy in environmental governance by analyzing the history of reed bed management in an area of northern Japan known as Kitakami. The site is located at the mouth of the Kitakami River, one of Japan's largest rivers, which flows from northern Iwate Prefecture into Miyagi Prefecture. Kitakami is a typical marginally rural area; most residents used to be involved in agriculture and fishing, and many still are, although most now commute to nearby urban or industrial areas. The population, which was over 7000 in the 1950s, has dropped to 2300 as of 2020. The area has 20 hamlets—half of them along the river and the other half along the sea. Each hamlet has dozens of households. The river has a big reed bed of 100 hectares in the mouth area, one of the biggest reed habitats in Japan (Figs. 2.1, 2.2 and 2.3).

  The reed species found here (*Phragmites australis*) is located in a government-owned area, since all rivers are considered government-owned in Japan. However, the local people have a history of shared management of and collective rights to the reeds and have established sustainable use and management practices. Residents cut and collect the tall reeds every winter, from November to March, and sell them. The reeds have been used mainly for the roofs of traditional temples and houses. There is no formal legal basis for this co-management; rather, it relies on social consensus. Moreover, the methods and purpose of reed management have changed over time. Therefore, this case study illustrates a process of socially constructed legitimacy and its historical dynamism.

2.1.3   Research Method

This study is based on a series of field research investigations carried out since 2004. Semi-structured interviews were conducted with more than 50 residents, most of whom were longtime community members with extensive knowledge of the local area's natural resources and social relations. These included farmers, fishermen, reed tradesmen, reed harvesters, local government officials, religious leaders, education leaders, community leaders, and housewives. Over 200 hours of interviews were recorded and transcribed. A wide range of archival documents, including local

Fig. 2.1 Kitakami and the
Kitakami River

Kitakami
River
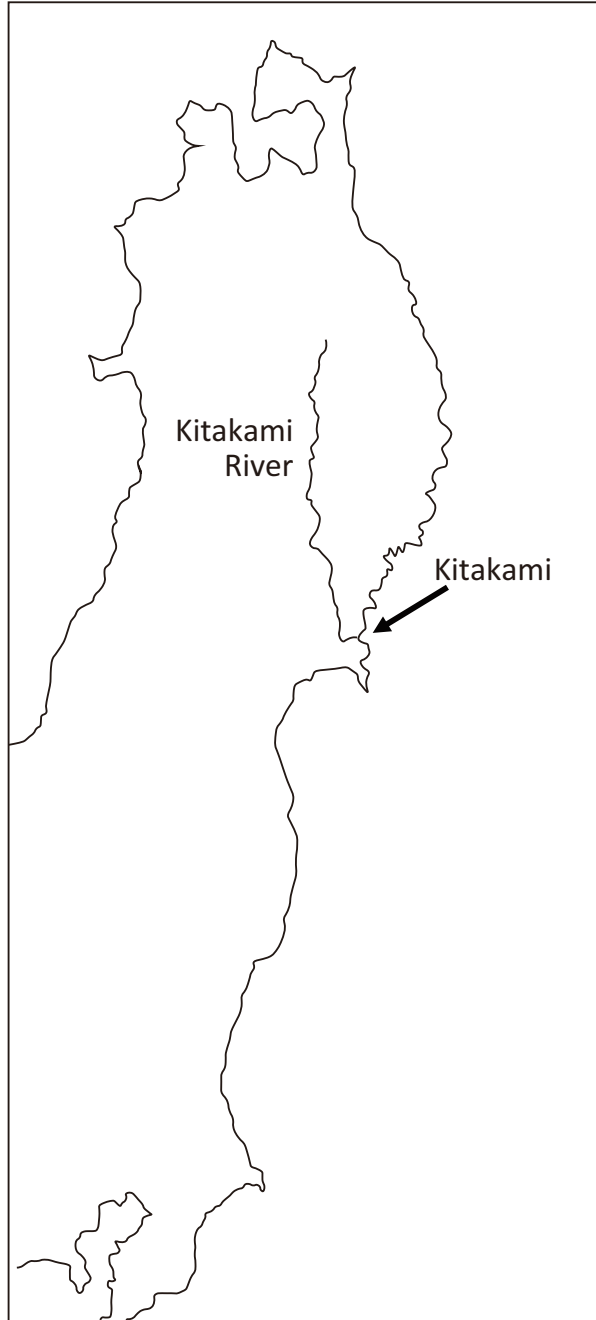
Kitakami

Fig. 2.2 Reed bed in the Kitakami River mouth area

historical documents, newspaper articles, historical maps, historical aerial photographs, and community documents, was also collected and used.

2.2   History of the Reed Landscape in the Kitakami River

2.2.1   The River Improvement Project and the Appearance of Reeds

The reed bed in the Kitakami River mouth area is not a very old ecosystem. In fact, the area where reeds now grow was once occupied by houses and rice paddies. The reeds first appeared about 90 years ago, following a government river improvement project to address the frequent problem of river flooding. Most severely, a typhoon in 1910 caused massive floods, leaving 320 people dead and 357 houses washed away. This tragedy caused the government to institute a huge engineering project, which began in 1911.

The government built an additional shortcut river to control the flow of water. It also widened a narrow portion of the river where it connected to this newly built shortcut. The original river was widened to increase its water capacity and thereby avert flooding. To do this, the government had to evict residents of the former riverside area, which is now part of the riverbed. Negotiations with residents led

Fig. 2.3 Reed collecting in Kitakami

eventually to a compensation agreement, although some people remained dissatis-
fied with the amount.

Soon after this major national project was completed in 1933, a huge reed bed
appeared in the river. Although a small number of scattered colonies of reeds had
grown among the rice paddies previously, the reed bed in the new riverbed was huge
and thick (Figs. 2.4 and 2.5). The appearance of these reeds generated conflict
among the nearby communities over the right to collect the reeds, which had a
high economic value at that time. Violence erupted between hamlets, which had
historically been independent, each with its own autonomous governing organiza-
tion. In particular, two communities of people who had suffered eviction as a result
of the river improvement project strongly asserted their right to the reeds.

The conflict was finally resolved by an agreement that each community had a
right to the reeds. The hamlets set up borderlines delineating the area granted to each
one. Figure 2.5 shows the borderlines, which have been maintained to this day. The
two hamlets with residents evicted from their former homes acquired a larger area
than others but were not the only ones granted access to a share of the reeds. This
arrangement was set up not as a statutory right but as a de facto right, similar to a
customary right.
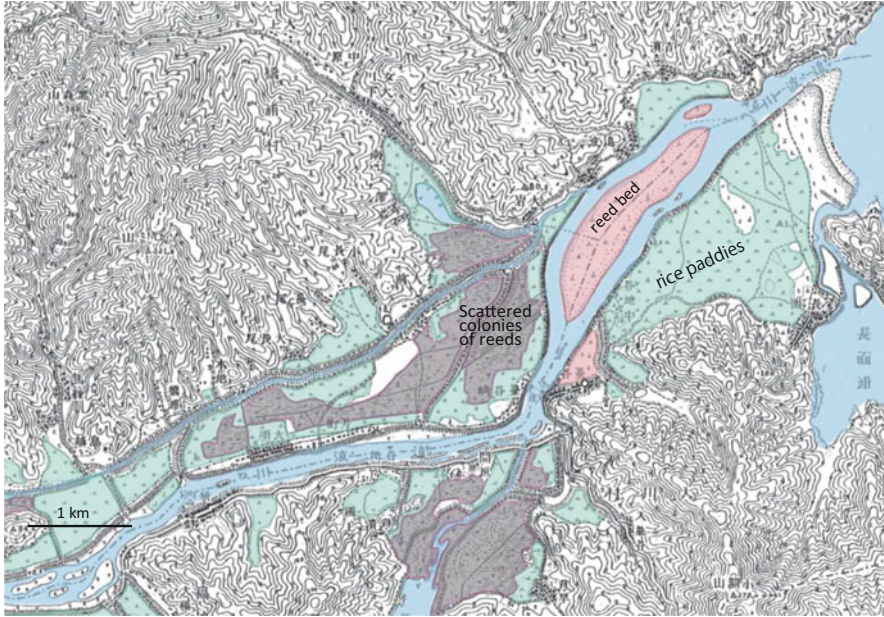
Fig. 2.4 Reeds before the river improvement project (1915)
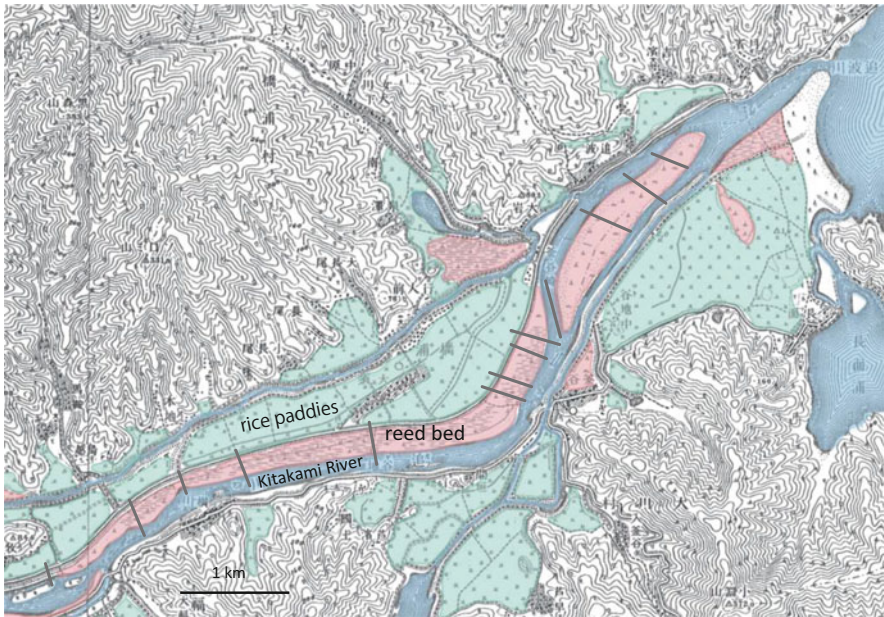
Fig. 2.5 Reeds after the river improvement project (1936)

2.2.2 Collective Right

Importantly, this right to the reeds was established as a collective right, even though the houses and rice paddies had been owned by individual families prior to the river improvement. Each community received a reed area for its own use, and no individuals or households could use the reeds without the community's permission. The *Keiyakuko*, a traditional autonomous community-based body that serves as both a governing body and a mutual-aid organization, oversaw the exercise of harvesting rights. Each hamlet also had a Shinto religious institution and owned common property, mainly community forest. Such communities are called *mura* or *buraku* in Japanese.

Historically, the people's use of the reeds can be divided into several stages. During the first stage, in the 1930s and 1940s, members of these communities collected the reeds and either used or sold them individually. Some communities set up cooperatives for the production of *norizu* (reed sheets) used to dry edible seaweed. The people harvest young reeds to make *norizu*, adhering to their own rules. The cooperatives then sold the *norizu* to outside markets. During this stage, the harvesting rules were strictly defined; only one person per household could cut the reeds during a particular period of several days in August.

During the second stage, beginning around 1950, some communities stopped making *norizu* and sold their annual reed harvesting rights to local businessmen, while other communities continued to produce *norizu*. Local businessmen paid a royalty to each *Keiyakuko* and collected the reeds before selling them to several markets. At that time, the reeds were sold for *norizu*, *yoshizu* (reed screens), *komai* (wall material), and roofing.

The market gradually expanded beyond the local area—for example, to Niigata Prefecture, where there was heavy demand for the reed as a wall-construction material in the 1970s and 1980s. During this time period, community rules still governed the local businessmen's activity. Royalties from the sale of rights funded community facilities such as assembly halls and religious facilities; the money was never divided among individuals.

In the late 1980s, reed harvesting declined because of market shrinkage. However, in the 1990s, local reed businessmen revived large-scale production of reeds, seeking to reach a national market. Today, although some communities are not concerned about the reeds because royalty amounts are very low, several others still maintain their rights and sell them to local businessmen on an annual basis. Meanwhile, this huge reed area maintained through sustainable harvesting activities of harvest is highly acclaimed as an iconic natural site, one of the few precious reed fields in Japan.

Figure 2.6 illustrates the history of local reed use, showing variations by community, in conjunction with the ecological status of the reeds. In earlier times, the reeds in the upper portion of the river mouth did not grow densely and were not suitable for harvesting, whereas the reeds downriver grew densely. Those closest to the river mouth were dense but not tall. These differences led to different uses. Nevertheless,
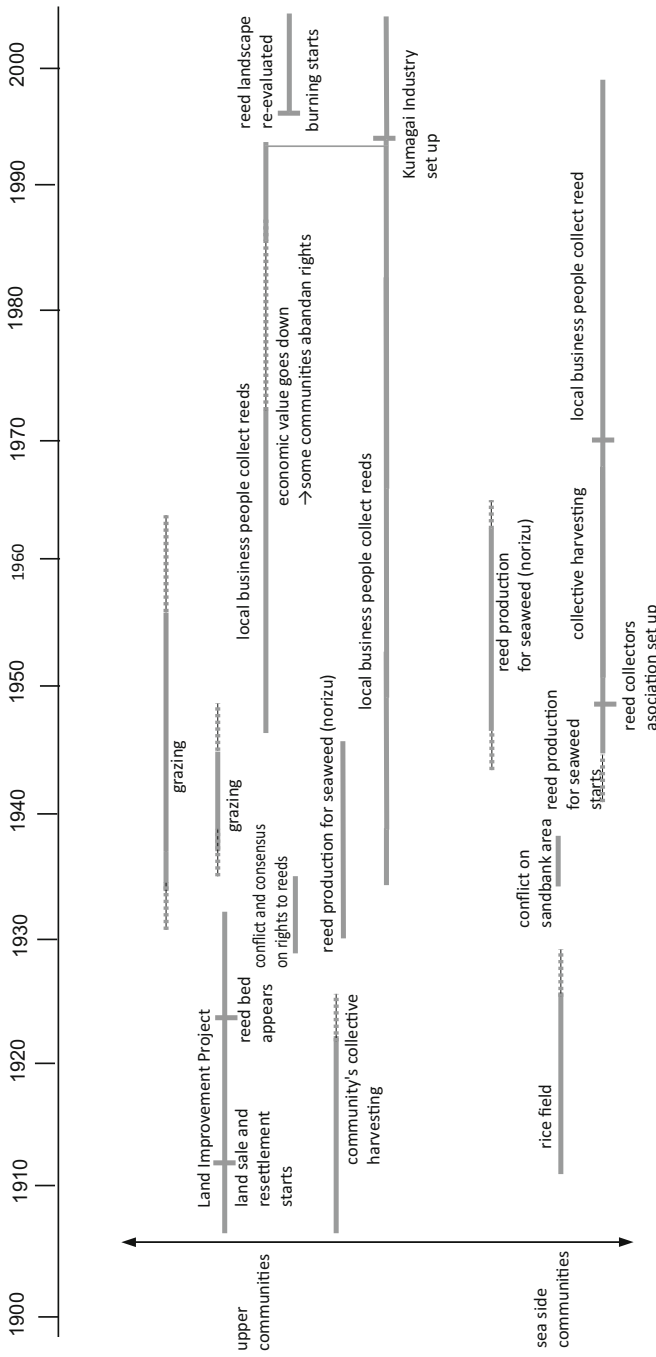
Fig. 2.6 History of reed use in the Kitakami River mouth area

the evolution of reed use, from private local uses to profitable business activity, was similar in all communities.

2.2.3   Why Have Collective Rights Been Sustained?

The communities have sustained strong collective rights, which have in turn maintained the reed ecosystem. The river is officially owned by the central government and is under its control, consistent with Japan's River Law. However, the historical customary right of community members to collect reeds belongs to the local communities, and the government cannot intervene in this activity. In terms of official procedure, the communities are required to obtain permission from the government each year to harvest the reeds. They file applications with the government and pay fees as stipulated by the River Law. Significantly, the government recognizes the communities' rights, even though they are not statutory but only de facto, and grants permission almost automatically every year.

In the late 1980s, as noted above, some communities abandoned their rights because the economic value of the reeds had dropped precipitously. However, when their market value improved again—albeit only to a moderate level—one community reclaimed its right. When it revived the official procedure for receiving permission for reed harvesting from the central government, the local society acknowledged the legitimacy of this right as well. The fact that an abandoned right could be restored in this manner without opposition reflects the robustness of the right and the historical local institutions through which this right is mediated.

Before the river improvement work, the area that now contains the reed bed was private property, used for either individual houses or the respective residents' rice paddies. But after the reed bed appeared, the right was assigned to the communities, not to individuals. The communities have retained the collective nature of this right and have not divided it into individual segments. They have set up their own rules for use of the reed bed.

One may wonder why this strong collective right arose and why it has been sustained. In fact, members of the communities did not use the reeds for a long time. Some communities stopped using the reeds in the 1950s, though others continued harvesting until the 1970s. The right to them was not traditional or customary, since there were no reeds before the river improvement project. But the collective right has long been recognized by both local society and the government. Why? What produces its legitimacy?

2.3   Factors of Legitimacy

2.3.1   Collective Memory

No single factor is responsible for the legitimacy of this right. Rather, it is based on several historical factors, among which the first is historical continuity or collective memory. This community memory dates back to the time when individually owned rice paddies were located where the river now flows. Although the land was transferred to the government, the memory of ownership was maintained among the people and contributed to the legitimacy of local rights. The local people still consider the territory presently occupied by the reeds to be strongly related to them.

In interviews with local residents, the word *enko* ("special relation") was used frequently. One resident said, "The government respected *enko* because that riverside area used to be our rice paddies." Another commented, "The community obtained the reeds due to this *enko*." The term *enko* originated with the government, which uses this word when it grants permission for the use of state-owned land; in this instance, the local people have appropriated the concept for their own purposes. *Enko* is closely connected to the right to the reeds in local discourse, with interviewees making statements like "The government gave us the right" and "The right to the reeds has been maintained." The memory of the rice paddies produced the local right to the reeds, based on the discourse of *enko*. This claim supports the argument that historical continuity is a factor in establishing the legitimacy of the right.

2.3.2   Historical Collectiveness

The second relevant factor is historical collectiveness. The communities in this area have many internal organizations and institutions, among which the *Keiyakuko*, described earlier, is the most powerful. Other organizations include the production associations (such as the *norizu* cooperatives), *yui* (a mutual-aid system), *shinrui* (clans), and *shinseki* (kinship networks). The *yui* functions when people need extra laborers for tasks such as harvesting and roofing. People clearly distinguish *shinrui* from *shinseki*. A *shinrui* is a patrilineal kinship group which unrelated persons can join if permitted. There are also two women's groups, *Kannonko* and *Nenbutsuko*. Both were originally religious bodies but now function as social organizations; *Kannonko* is for young housewives, whereas *Nenbutsuko* is for senior women.

The fire brigade is also an important community group. Although it is half voluntary and is devoted primarily to firefighting, it also functions as a local youth association.

These groups exist in each community in a multilayered way. People's lives are full of community activities, although these have gradually decreased over the years. In this way, collectiveness is a crucial, shared norm in the area, experienced on a daily basis.

Conflicts can still arise in the context of collectiveness. Indeed, conflicts over collective rights have occurred frequently between communities or even within a community. According to a historical document, in 1790 one man and his family moved from one community to another. Thereafter, the man and the former community fought over his right to the reeds. Because the present, huge reed bed did not exist at that time, the reeds mentioned in this document here must have been the ones scattered around the rice paddies. The man insisted that he still had a right to the reeds because he was originally from that community; the community argued that he had relinquished his right by moving away (Kitakami Choshi Hensan Iinkai 2005a: 289–191, 2005b: 134–136). We have no document indicating the verdict, but this story shows that the relationship between rights and membership was strongly recognized. Even in 1790, the community perceived the right to the reeds as collective.

During the early years of reed utilization after the river improvement, each community harvested the reeds in a collective way. A resident born in 1934 explained in our interview, "Reeds that are harvested by community work must be divided carefully into heaps. It [the distribution of reed] should be fair. During community harvesting work, each household must provide labor. A high value is placed on fairness." Interestingly enough, he himself had never experienced this kind of community-wide work to collect reeds, because it ended before he became an adult. However, he retains this historical memory and maintains the norm of collectiveness.

Collectiveness persists in the management of other natural resources as well. Half of the communities in the area are located along the sea and continue to conduct fishing and aquaculture. Seashore seaweed is one of the important marine products. It used to be economically valuable, although its value is now low. Harvesting of seashore seaweed has taken place under strict rules adopted by each community, which has the right to collect the resource in its seashore territory. As a typical example, one hamlet's *Keiyakuko* sets the days for harvesting. On the first day, each household must provide a member as the collective harvesting crew. The revenue from the first two days of harvesting goes to the community. After the second day, each household can harvest individually.

This history of collectiveness causes people to think that the right to the reeds must belong to the community, not to individuals, even though the land once belonged to individual households.

2.3.3 Subsistence Needs

Subsistence needs also support the legitimacy of this collective right. Shortly after the reed bed appeared, in 1941, the communities jointly formed a reed production association and promptly petitioned the government for permission to collect the reeds. In the petition (Fig. 2.7), they wrote:

Fig. 2.7 Petition to the government for permission to collect reeds (c. 1941)
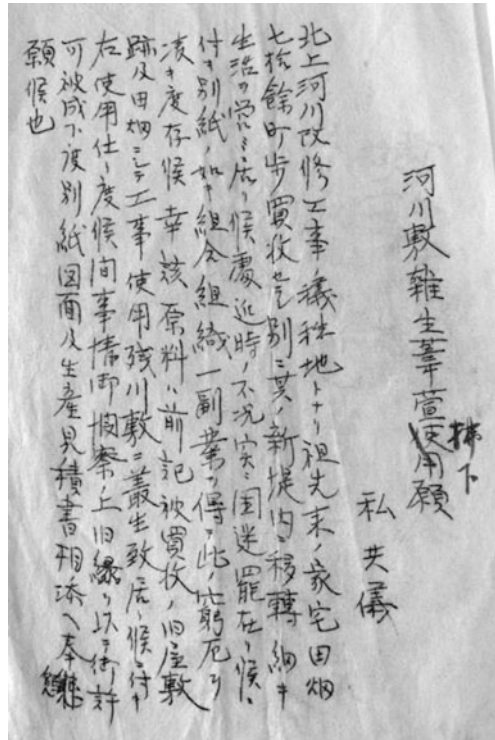
> We were victims of river improvement work. We were forced to sell our ancestral homes and rice paddies and were resettled. We live a meager life, and it is now very difficult due to the recent recession. Therefore, we have formed an association to cope with these difficulties. Fortunately, reeds grew where our former houses and paddies were located, so we would like to ask for permission to use them in consideration of our poor situation. (Kitakami Choshi Hensan Iinkai 2005a: 518)

The statement "We live a meager life" shows that the residents based the legitimacy of their claim on their need to have the reeds for their own subsistence. They insisted again on their "poor situation" in the last sentence of the petition, reinforcing the logic of subsistence.

But the petition cites the two previously mentioned factors as well: historical collectiveness and the memory of the rice paddies. The residents exhibited a sense of historical collectiveness by referring to their newly formed association, noting that their demand was grounded not on individual needs but on collective needs, which must have been socially recognized. They also referred to their memory of the rice paddies, noting that the reeds had grown "where our former houses and paddies were located." In effect, their (successful) appeal for legitimacy incorporated all three claims.

2.3.4   Profitability

Local businessmen became involved in the reed business in the 1950s, adding a fourth factor, profitability, to the construction of legitimacy. Businessmen engaged in the reed trade had to pay royalties to the communities. *Keiyakukos* always used these profits for community benefit (e.g., to build and maintain shrines and community halls), not for individual interests. In this way, the profits directly supported community well-being. Also, these business activities have created jobs. Because the locals stopped using reeds for their own roofs in the 1950s, local business activities harvesting and marketing the reeds became an excellent substitute, achieving financial profit and sharing it with the community. This financial benefit added legitimacy to the collective right.

2.3.5   Conservation Value

In the 1990s, a new trend started when a young man created a local company. This man had reevaluated the importance of local resources based upon his experience as a volunteer in the Philippines. Because his father was a local reed tradesman, he took over this business and further developed it. He started an integrated business using the reeds, not only harvesting and selling them but also engaging in construction and consulting. His business has twin purposes: earning a profit and reed conservation.

   The new business not only created jobs but also encouraged a fresh look at the reeds and their importance. The government and the media began to praise the reed landscape and the local use of reeds, mainly in light of their conservation value. Thus, this new reed business has become a major presence in local society. The legitimacy of this private company's involvement stems from its social creativity and from its conservation value. The communities have granted the company permission to function; in exchange, the company recognizes and respects the communities' rights. In this way, new reasons for legitimacy have been linked to the historical factor of collectiveness.

2.3.6   Disaster and Its Aftermath

The Kitakami area was heavily affected by the 2011 earthquake and tsunami. Seven percent of the population died. Rebuilding began almost immediately thereafter. Industry, housing, use of natural resources (especially fishing), and everyday life have almost returned to normal, although the area suffered substantial depopulation.

   In the process of community rebuilding, community cohesiveness has been prominent. The participatory process in Kitakami's housing relocation projects has been highly acclaimed. It was successful because the residents were already accustomed to collective governance procedures from their long experience in shared natural resource management (Nishikido et al. 2016).
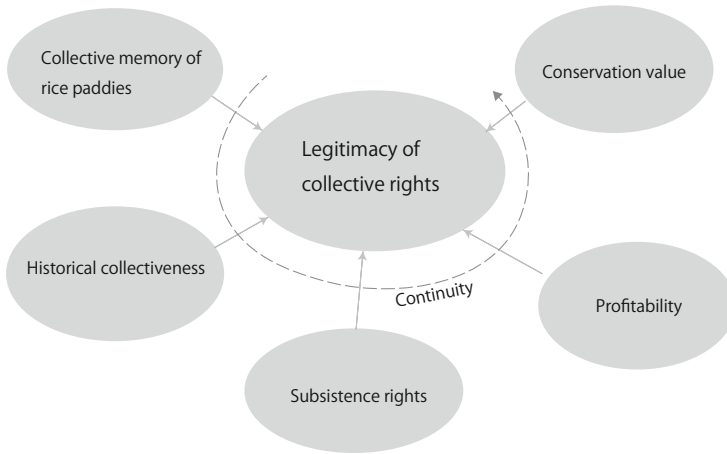
Fig. 2.8 Factors contributing to the legitimacy of collective rights

The reed area was also affected because of the subsidence of the riverbed. The total area containing reeds has shrunk. However, reed management and harvesting have recovered.

2.4   Discussion

The reed bed appeared in the Kitakami River mouth area in the 1930s because of a huge river improvement project. The area had been owned by the residents and was purchased by the government. Conflicts between hamlets arose as a result of the reeds' economic value, but the communities reached an agreement to set up borderlines and give each community the right to collect reeds in its own defined territory. Since then, this right to the natural resources growing in the state-owned river area has been socially recognized. At present, the reed landscape is highly praised not only for its biodiversity but also for its sustainable management. Scientists have stressed the importance of such reed beds for preserving biodiversity and bird habitats (Fujiwara et al. 1995; Nishiura and Yamagishi 1999; Pascal 1999; Hattori and Mae 2001; Fujii 2001).

Co-management by local people and the business sector has sustained this reed landscape. The legitimacy of this collective right has been constructed and maintained on the basis of several factors, as summarized in Fig. 2.8: collective memory of rice paddies, historical collectiveness, subsistence rights, profitability, and conservation value. These factors have accumulated over time, with new justifications being added to previous ones. There has been little contradiction between them, as the communities have managed the integration of the various legitimations.

Generally, governance in conservation is now considered to have a standard formula, relying on bottom-up participation and scientific evidence. However, this formula often does not function effectively in complicated real-life situations. Many intricate problems arise, such as who should be included, which values should be prioritized, and uncertainty regarding scientific data. This case study in Kitakami offers some implications for dealing with such problems in environmental governance.

First, legitimacy is the key to environmental governance. Legitimacy of rights, values, norms, precedent, and institutions matters in the real-life negotiation of environmental practices (Fukunaga 2013). Importantly, legitimacy is dynamic, not static. In view of this dynamism, adaptive governance that can adjust to changes in legitimacy is essential (Folke et al. 2005; Miyauchi 2013, 2018). Kitakami River communities have exhibited this adaptability, altering their system of utilizing the reeds in accordance with social and economic changes.

Second, in such a dynamism, multiple legitimacies should be accumulated successively, in such a way as not to contradict each other. The local history of nature and communities and the incorporation of local values and institutions are crucial to successful environmental governance.

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Forests to Revitalize Local Community: Adaptive Contribution Projects for Legitimacy by Mountain Bikers

3

Yuichiro Hirano

Abstract

Since the 2000s, the construction of participatory environmental governance for forest management has been carried out in ways that "shift" multiple stakeholders from their conflicting interests to the context of revitalizing local communities in Japan. This feature can be specifically observed in how mountain bikers, who were "newcomers" as forest users, resolve conflicts with other stakeholders and thereby acquire legitimacy for their forest and trail uses. They actually contribute to individual local communities, as they have not been able to rely on national-scale resource management and government institutions.

Amid this context, there has been a process that diversified forest users, including mountain bikers and the local residents and groups, have been adapting to the accelerated urbanization, national-scale population decrease, and "underuse" of forests and trails, especially in mountainous areas in Japan.

3.1 Introduction

In Japan, nearly 70% of the land area is covered by forests, which is one of the leading numbers among OECD countries, ranking third after Finland and Sweden (FAO 2015). Environmental governance thus becomes highly important to

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Fig. 3.1 A landscape of Japanese mountainous areas

improving the environment and to revitalizing local communities by utilizing the abundant forests of Japan.

However, Japan's forests have, in recent years, been considered to be "underused," which means not fully utilized. In the past, Japanese forests were exposed to excessive logging, which peaked during the Second World War. Subsequently, from the postwar period to the 1950s, the construction of large conifer plantations was promoted with the main purpose of securing future timber resources. The main players in establishing these plantations were the local residents and communities, mainly farmers who owned small-scale forestlands. Even today, about 40% of forests are spread among farming villages as planted forests (Fig. 3.1). However, since the late twentieth century, local communities with these forests have faced serious problems. As the postwar high economic growth was premised on urbanization and the development of heavy industry, the population rapidly drained from mountainous villages. Moreover, as of now, the aging population and the reduction in administrative and welfare services have made it difficult to maintain local lifeways and communities. In addition, the demand for timber in Japan, mainly from the planted forests, has declined due to competition with imported timber, the inefficiency of forestry production and distribution, and the decrease in the total population. As a result, in recent years, there has been a shortage of motivation and staff to use and manage forests sustainably in local communities, and problems such

as an increase in abandoned planted forests and reforestation, and the acceleration of natural disasters caused by them have been occurring.

The retreat of forestry for timber production in these forests and in surrounding local communities has been occurring not only in Japan but also in other OECD countries since the late twentieth century. For example, in the USA and Europe, the rise of environmental protection movements—rather than relying solely on timber production—has led to increases in sustainable and ecological forest management. At that time, what has been assumed in many regions is the diversification of forest values. In other words, various types of recreational activities, such as leisure and sports, and natural and landscape conservation have been incorporated into forest utilization in ways that compensate for the recession of timber production. The maintenance of forests and trails by conservation and management organizations has been carried out reflecting these new forest values. In addition, the development of related industries, such as outdoor activities and tourism, has replaced regional traditional economic development and employment. For example, the associated recreational spending in the USA was $646 billion in 2012, far more than the $340 billion in the automotive industry, with 6.1 million employees (Outdoor Industry Association 2012).

However, the diversification of values and users of forests generates conflicts among stakeholders, including landowners who own forests for a range of purposes, including for securing local livelihoods; conservationists who value the existence of healthy ecosystems or beautiful landscapes; recreational users who visit forests for refreshment or enjoyment; and administrative managers with responsibilities for local revitalization and/or sustainable and effective uses of forest resources. In particular, mountain biking, trail running, and other activities have been emerging since the 1990s, in addition to walking, camping, hunting, and horse riding, all of which have further diversified recreational users as stakeholders. For these reasons, it has become imperative to design institutions or systems that prevent as well as resolve such conflicts.

In fact, institutional designs have been developed to avoid conflicts between these various stakeholders in the USA and Europe at the same time. In the USA, such conflicts and institutional designs have been observed in publicly managed forests such as national forests and parks. From the 1960s to the 1970s, legislation was promoted on the premise of multiple uses of national forests (Wilkinson and Anderson 1987). From the 1970s, public management plans based on zoning for a range of uses, including the protection of wilderness areas, proposed as the so-called recreation opportunity spectrum (ROS), have been introduced mainly in national parks (Brown et al. 1978). In the UK, the legitimacy of diverse recreational users for access to forests and trails has been guaranteed through reflection on the legal rights for public access, which are historically established as "Rights of Way" and "Rights to Roam" (Riddall and Trevelyan 2007). Public entities such as county governments and National Park Authorities are in charge of coordinating these multiple interests and lobbying, which include recreational users, landowners, and local organizations for nature and landscape conservation (Hirano 2018a).

A notable thing here is that such stable institutional designs for coordinating and ensuring stakeholders' interests have never been seen in Japan until very recently, even though these regions have faced similar conflicts to be resolved while seeking environmental improvement and local revitalization. In Japan, there is no legal system that stipulates "who can use" or "how to use" most forests and trails, ROS has not been introduced in most of the public forests, and there are no legal rights for public access to forests or trails. On the contrary, the value of forests has undoubtedly diversified since the second half of the twentieth century, and many people still want active engagement with forests even after the decline of timber production. For example, a poll conducted in October 2019 showed that 60% wanted to walk, 27% wanted to run and cycle, and 21% supported having environmental educational activities in forests (Cabinet Office 2020).

The purpose of this chapter is to clarify the current characteristics of environmental governance in Japan by understanding how forest user stakeholders have acquired their legitimacy under these specific conditions surrounding forests. To highlight this process, I have focused on mountain bikers, who have needed to secure their legitimacy from scratch as one of the emerging users in recent years.

3.2   Development of Mountain Biking and Rising Conflicts

Mountain bikes (MTBs) are bicycles that can be used for biking over dirt roads, trails, and slopes; this style of bicycle was systematically developed in the United States in the 1970s. In Japan, the number of mountain bikers increased during the 1980s and 1990s, and the style of free-running trails in forests became popular along with professional races and daily transportation uses. Nowadays, the populations of mountain bikers who prefer to ride outdoors are around ten to twenty thousand in Japan (Hirano 2016). The abovementioned opinion poll has revealed that Japan's forests still have high potential domestic demand for mountain biking, and the expectation that foreign tourists will use MTBs to visit the Japanese countryside has also become higher.

However, with the increase in users, mountain biking faces severe conflicts with other forest and trail users. Since the trail soil is easily eroded along the ruts and brake points by MTBs, forest landowners and trail managers were concerned about the land damages, especially on steep trails and lands. In addition, as a result of increased friction with walkers (hikers, climbers, pedestrians, etc.) due to the danger of collisions and accidents along narrow trails in forests, the cases of landowners and managers restricting mountain biking by posting or fencing has increased. These conflicts have been especially observed in highly crowded areas such as suburban forests and famous natural parks that are easily accessed by many types of recreational users living in cities, including mountain bikers (Fig. 3.2). As the conflicts accelerated during the 1990s and 2000s, mountain bikers became more and more concerned that there might be no place for their enjoyment in Japan in the future (Hirano 2016).
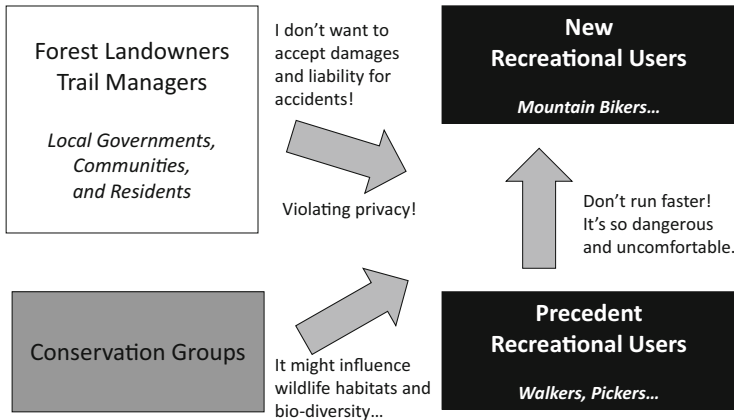
Fig. 3.2 Conflicts surrounding mountain bikers

In fact, these conflicts have also arisen in the USA and Europe as mountain biking became more widespread. In the USA, walkers and conservation groups repelled mountain bikers in many places after the 1970s (Watson et al. 1991; Moore 1994). Following their criticism, the managing entities banned the use of MTBs in the National Forest Wilderness and in many parks and trails close to cities (IMBA 2007; Felton 2015). Because of this ban, mountain bikers in the USA created user and advocacy groups, such as the International Mountain Bicycling Association (IMBA) in 1988; these organizations represented mountain bikers' interest to lobby the management entities to remove the bans (Hirano 2018a; Chavez et al. 1993). In addition, the U.S. mountain bikers have developed the concept of the "responsible use of trails," which means mountain bikers should spontaneously contribute to sustainable trail management at the organizational and local levels. Through these efforts, U.S. mountain bikers succeeded in securing constant legitimacy so that the use of MTBs has been approved in many planning processes and legal systems (Hirano 2018b). In the UK, even though conflicts between mountain bikers, walkers, and landowners have been observed, the legitimacy of the use of mountain bikes has been ensured through existing legal rights for public access by which cyclists can use certain categories of trails and lands (Hirano 2018a).

3.3 Adaptive Contribution to Local Communities by Mountain Bikers in Japan

Facing conflicts in Japan, mountain bikers tried to take advantage of these efforts in other countries in order to secure their own legitimacy and access. In particular, the experience gathered in the USA and Canada by establishing users' groups such as the IMBA to coordinate with other users and maintain and manage trails by their own effort was regarded as a leading model. Almost all of the mountain bikers'

Period of Interview researches: 2013—2019

A: Nishitama Mountain Bike
Friendship Association

B: Kanazawa Trail Bike
Organization

F: Trail Cutter

G: Minoo Mountain Bike
Friendship Association

C: Forest Bike in Odawara

H: Fukuoka Mountain Bike
Friendship Association

D: Yamabushi Trail Tour

E: Minami Alps Mountain Bike
Fan Club

Sapporo

Tokyo

Nagoya

Osaka

Fukuoka
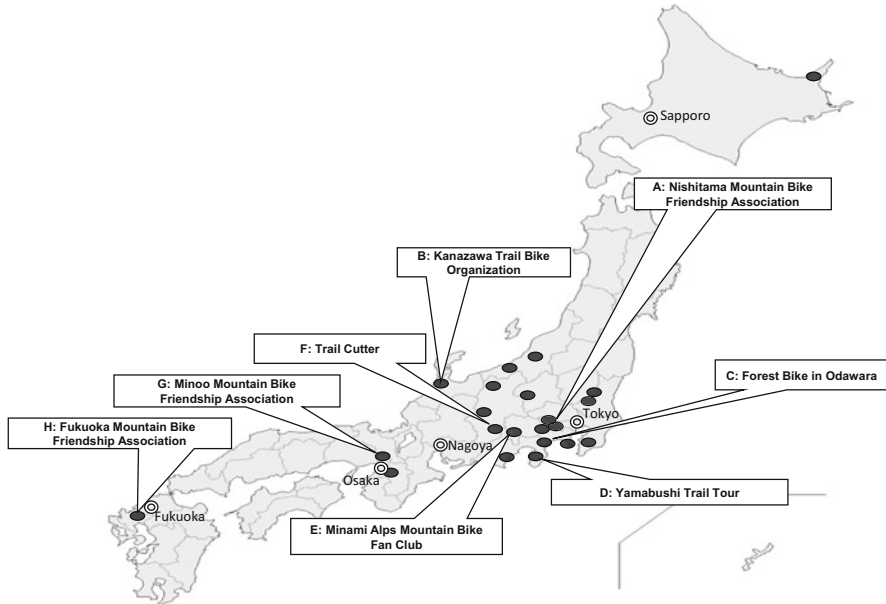
Fig. 3.3 Distribution of contribution projects by mountain bikers

projects described below are led by those who have been influenced by these precedents in overseas through their visits and personal exchanges.

However, as mentioned above, Japanese mountain bikers could not find established stable institutions such as legal systems that could legitimize their forest and trail uses through lobbying and negotiation at the national or regional level. As a result, their leaders were directed to individual local communities in an effort to overcome these conflicts.

Figure 3.3 shows the locations of contribution projects that mountain bikers have been implementing throughout Japan since the 2000s. The continuous interview researches by the author have been conducted in eight cases (A to H) that are typical examples of these projects.

First of all, these local contribution projects all derive from a sense of crisis among mountain bikers in these conflicts: They fear isolation and exclusion from access. Moreover, a common action of their leaders to secure their legitimacy as an emerging stakeholder has been to perform "useful" activities for local communities including local governments, groups, and residents who own or manage forests and trails. Cases such as A, B, and G have developed contribution projects in suburban areas where leaders and core members live or enjoy mountain biking on a daily basis. In these cases, mountain bikers are organized and actively participate in the maintenance and management of public parks and forests and nature and landscape conservation led by local governments or nongovernmental organizations (NGOs), taking advantage of their leaders' local connections. On the other hand, mountain

bikers such as in cases C, D, E, F, and H had never connected with the project areas before they started the projects. They migrated or visited regularly in the areas with forests that seemed attractive for mountain biking. They have also actively supported maintaining and revitalizing local communities and landowners who struggle with depopulation, aging, and the "underuse" of forests (Table 3.1).

In other words, the strategy of the mountain bikers' leaders in Japan to acquire legitimacy has been to proactively cooperate with solving the problems of local communities, not only in their residential areas but also in unfamiliar mountainous areas with attractive forests and trails. The various types of projects clearly indicate different mountain bikers' associations (usually named as a "friendship association" or "fun club") in which leaders organize bikers and mainly carry out volunteer activities as a contribution to local communities (cases A, B, E, G, H, etc.). Next, as a for-profit business, mountain bikers manage trails and fields that attract mountain bikers for guided tours or free ridings, while consciously contributing to the local communities (cases C, D, F, etc.). In each case, the common goal has been to secure a place to enjoy mountain biking in return for the contribution. These contributions to local communities can be broadly classified into the following three categories.

1. **Mountain Biker Initiatives: Trail Maintenance, Creation, and Restoration Projects.**
   This activity can be seen in all cases, whether in suburban or mountainous areas or on a volunteer or for-profit basis.

   For example, in Case B, an annual maintenance agreement was signed with the administrative department at an unused campsite in a public forest (prefecture forest) near Kanazawa City to maintain old trails running through the site. Maintenance is carried out by about 20 mountain bikers mainly living in Kanazawa. They also voluntarily do weeding and patrol the site.

   The project areas of cases D and F are aging rural mountainous villages that are becoming increasingly depopulated. The representative of the Case D project focuses on abandoned old trails, so-called *rido* in the forests of the Nishi-Izu area of Shizuoka Prefecture, and restores them from the perspective of local revitalization. *Rido* were traditionally built by local groups or residents for visits and daily life (Izumi and Hirano 2013). An agreement has been signed with the local villages and residents who are landowners, and the project members, including bikers from outside and local villagers, are restoring the old trails and using them for mountain bike guided tours described later (Fig. 3.4). The representative of the Case F project learned the skills of trail maintenance for mountain biking in Canada. With the cooperation of the local government and villages, he decided to migrate to the Ina area, Nagano Prefecture, and has built and maintained more than 30 kilometers of rural trails including *rido* in both community and private forests for multiple uses, including for guided tours for mountain bikers and for picking mushrooms by local residents (Hirano 2016).

   The creation, regeneration, and maintenance of trails by these mountain bikers themselves are generally well-received by local governments that are struggling with the "underuse" of public forests or parks, as well as by local groups and

Table 3.1 Types of contribution projects by mountain bikers

Project cases		A	B	C	D	E	F	G	H
Project types		Bikers'Association	Bikers'Association	Bike TrailsManagement and Trainning Course	Bike Trails Management and Guided Tours	Bikers'Association	Bike Trails Management and Guided Tours	Bikers'Association	Bikers'Association
Project areas		Suburban forests, public parks	Suburban forests, public parks	Mountainous area, a private forest	Mountainous area, community and private forests	Mountainous area, public, community and private forests	Mountainous area, community and private forests	Suburban forests, public parks	Mountainous area, community and private forests
Leaders' status		Local resident, cycle shop manager	Local resident, cycle shop manager	Migrant	Migrant	Migrants and visiting frequently	Migrant	Local resident, mountainbike racer	Migrant, cycle shop manager
Contribution	Trail maintenance	O	O	O	O	O	O	O	O
	Volunteer activities	O	△		△	O	△	O	O
	Economic effects	△		O	O	△	O		△
Local Collaborators		Governments, communities, regional groups, NPOs	Governments, communities	Private forest landowner	Communities, private forest landowners	Governments, communities, regional groups, NPOs	Governments, communities, private forest landowners	Park management NPO, governments	Governments, communities, private forest landowners

Trail maintenance: Forest trail creation, regeneration, and maintenance by themselves for multiple uses including mountain biking
Volunteer activities: Volunteer works to support local community and environment, such as cleaning, agriculture, traditional festivals, and forest management
Economic effects: Creating positive and remarkable economic effects on local society

Fig. 3.4 Regenerated Old Trail "Rido" for Mountain Biking in Nishi-Izu

residents who have faced a manpower shortage for trail maintenance. In Cases D and F, the regeneration and maintenance of old trails by mountain bikers have garnered the appreciation of local villagers, such as "it has become easier to enter for picking mushrooms" and "old memories have revived when walking through regenerated *rido*." In return, project members and attendees of tours become able to enjoy mountain biking on organized trails.

2. **Volunteer Activities for Supporting Local Communities and Environment.**
   Mountain bikers in Japan also engage in volunteer activities for supporting and improving local communities and environments, such as forest management, agricultural activities, cleaning, and participating in local events such as festivals, which do not seem to directly secure places for mountain biking. These are the mainstream activities in the mountain bikers' associations.

   Case A is the pioneer of this category of activities. More than 200 bikers led by a leader who manages a mountain bike shop volunteer for managing suburban forests, cleaning up city parks, and taking charge of executing outdoor education programs to support local governments and NPOs in the Nishitama area near the central city of Tokyo. In addition, this association has been developing activities to improve the manners of mountain bikers by taking care of the natural environment for other users such as walkers. The development of these wide-ranging activities is due to previous conflicts with landowners and other users in this area close to the metropolis. Therefore, to secure places for enjoying mountain biking,

Fig. 3.5 Mountain biking at a Suburban Forest in Nishitama

bikers must accumulate volunteer contributions to the local society for recognition, understanding, and trust from government officials, residents, and other users. This leader's strategy continues to lead to a measure of success, as their creation, maintenance and use of mountain biking courses in few forests have been approved. It has become possible to secure places where people can enjoy mountain biking without conflicts with landowners and walkers (Hirano 2017) (Fig. 3.5).

The mountain bikers' associations affected by Case A expanded to more than a dozen locations throughout Japan by the late 2010s. In Case G, which also targets suburban forests in Osaka Prefecture, dozens of mountain bikers participated as a group in cleaning and maintenance activities in a quasi-national park where the general park management was promoted by an NPO. This NPO targets nature and landscape conservation in the park; other user groups such as walkers and conservationists also participated in it. As they worked with other stakeholders to improve the park, the negative views initially directed at mountain bikers gradually faded. As a result, trails in the park can be run without hesitation by mountain bikers, and the NPO and local governments as the landowner have introduced a disused land nearby to the association to open up a dedicated course to enjoy mountain biking.

Fig. 3.6 Young mountain bikers actively supporting local communities in Kushigata

In contrast, cases E and H target rural mountainous areas. In Case E, dozens of mountain bikers from the outside built the association at the base area of Mt. Kushigata in Yamanashi Prefecture and are actively supporting local villages for holding festivals, cleaning activities, agricultural works, restoration and maintenance of old forest trails, among other activities (Fig. 3.6). They volunteered more than 50 times in 2016. These mountain bikers' activities delighted local villagers, as one of them was so depopulated that its number of households had reduced to four (Hirano 2017). Moreover, in Case H, bikers living in Fukuoka city, Fukuoka Prefecture, formed an association to frequently visit a depopulated mountain village at the neighboring Saga Prefecture, and more than ten members regularly participate in local events that require man-power, such as cleaning and weeding rural roads and trails, repairing canals, managing forests, and organizing annual festivals. Since there were only five people under 40 years old in this depopulated and aging community, the sudden appearance of a large number of young mountain bikers supporting and maintaining the village was a great help for the community and residents (Fig. 3.7). Through the volunteer activities, these projects succeeded in gaining the favorable impression and trust of the local villages and individual residents who were the landowners and managers of the forests and trails. As a result, the villages and residents were willing to allow mountain bikers to maintain and use the trails in forests near the villages, and to build special trails only for mountain biking in forests managed by the communities (Hirano 2017).

Fig. 3.7 Mountain bikers offering manpower for local events in Saga

3. **Holding Events (Guided Tours, Races, etc.) That Support Local Economic Activity.**

   Activities that attract mountain bikers as individual for-profit businesses (cases C, D, and F, among others) are premised on organizing events that have economic effects on the local communities.

   Cases D and F are both popular in Japan today as two of the leading guided tours to enjoy mountain trails by mountain biking. In Case D, one- or two-night stayovers of guided mountain biking tours are conducted by using the old regenerated trails in the forests. Tour participants usually come from city areas of Tokyo and Nagoya. Local guesthouses are used for accommodation, and the tour introduces participants to local restaurants and souvenir shops, which support the local economy. In Case F, the guided tour attracts more than 1000 bikers from city areas per year. Moreover, a local resident is hired as a driver of a shuttle bus to the summit where the guided tour begins. At the end of the tour, taking participants to local cafeterias and hot spring facilities also contributes to the local economy. The trails on these guided tours are also used by the landowners and local residents to collect mushrooms or wild plants. For this reason, each representative has set detailed rules for the mountain bikers, such as prioritizing local people, banning the harvesting of forest products, prohibiting the use of MTBs for anything other than the guided tours organized by them, and forbidding rides that

Fig. 3.8 Race event at the mountain village Chiyanoki in Saga

degrade the trails. These rules show a strong awareness of the leaders to maintain trust with the local community members (Hirano 2016).

In Case C, with the support of a large-scale local forest owner, mountain bike trails have been developed in his forest, and mountain bikers have access to a training course for the beginners and enjoy riding by paying a daily fee. This project helps to secure the income of the local forest landowner, as well as hiring residents and local mountain bikers as business staff and training guides.

There are also cases in which the mountain bikers' associations based on volunteer activities regularly hold races by charging fees and other events by gathering a large number of mountain bikers. For example, in Case H, the community and biker association work together to organize a race event every year. During this time, many professional mountain bike racers from outside visit the area with stayovers, bringing economic benefits and enjoying communication with local residents (Fig. 3.8).

3.4 Conclusions: Why and How Do Japanese Mountain Bikers Seek Their Legitimacy in Local Communities?

It is very clear why Japanese mountain bikers have sought to acquire their legitimacy by contributing projects to local communities. The answer is that the many kinds of effective methods that have come to legitimize the new users and let them participate in the environmental governance of forests and trails have been found not in the

national institutions such as legal rights, laws, and comprehensive government plans, but in the individual local communities of Japan. Mountain bikers with an early sense of crisis due to emerging conflicts were unable to find the targets for lobbying at the national level. At the same time, the reality was that without the approval and support of local residents, groups, and governments that have historically owned and managed forests, mountain bikers could not secure the places to enjoy themselves.

Moreover, the biggest reason is that today's local Japanese communities, especially in mountainous areas, have been facing problems not only in forest and trail management but also in maintaining their entire social system that has been affected by a decreasing and aging population and recession in timber production. After being faced with conflicts and exclusion, mountain bikers gradually realized that they could help solve the problems when they paid close attention to the places they were enjoying and the communities that had attractive places for riding. After this realization, the leaders of mountain bikers switched their focus from the direct conflicts between different uses and values of forests to the general problems of the societies: local revitalization and environmental improvement that are most important for those who might otherwise have potentially repelled them, including forest landowners and trail managers. Then, the leaders expected that if they could prove mountain bikers can contribute to resolving the general problems, people might accept them not as opposing stakeholders but as members of the local community, and their value and use of forests and trails would be approved. Miyauchi (2013) defined this process as "shifting" in adaptive governance for social and environmental sustainability. The leaders of mountain bikers in Japan were clearly aware of this "shifting" as a strategy; therefore, they began conducting projects for the local communities. In the face of depopulation and aging, there was a considerable need for young manpower in local communities with abandoned forests and old trails, as well as in local governments seeking to develop and manage public forests and parks for outdoor activities and environmental education. This simple need was perfectly suited to outdoor recreationalists, especially to mountain bikers who were young, and had plenty of power and energy. In this way, nowadays, "shifting" can exist in sustaining and revitalizing local communities in Japan, and there is a high possibility of matching both interests between local entities and mountain bikers, both of which have been and continue to be fundamental to navigate the strategies of how Japan's mountain bikers acquire legitimacy.

Refocusing on the process of mountain bikers' contributions to local communities, there were several points in embodying this "shifting" and matching their needs and interests.

First, the mountain bikers seeking legitimacy have made several "adaptive" efforts to elicit recognition from local communities. For example, with the realization of the conflicts and the needs of the local entities, skills and rules for maintaining and using forests and trails without degradation and disturbing other uses were actively studied by the mountain bikers. "Trail Solutions" (IMBA 2007), which summarizes the technology of sustainable maintenance of trails issued by IMBA from the viewpoint that mountain bikers fulfill their obligations by themselves, now has become the common reference book for Japanese mountain bikers when they

engage in trail maintenance. Moreover, it is not easy for young mountain bikers, especially those who have grown up in urban areas, to adapt to local communities where well-established complex human relationships and customary values and traditions exist. However, the leaders of mountain bikers have made persistent efforts by visiting many areas and asking to accept their contribution projects without discouragement, and even in some cases migrating to or settling in the local communities to show their earnest passion. One reason for this is that the value of their use of forests is based on their own deep-seated values, from enjoying their hobbies to satisfaction in quality of life. The leaders of the local contribution projects, such as professional racers or cycle shop managers, often link their efforts to quality of living. However, mountain biking is not a "means of livelihood" but is rather a lovable hobby for them. After facing early conflicts, the desire of the leaders to share this value with their community and the next generation became the driving force behind their local contribution projects. It seems that this value based on their passion for mountain biking is supporting the persistent success of mountain bikers in local communities. Of course, the members who support the projects have jobs as mountain biking is a hobby, therefore they are not completely committed to the projects, and there are also cases where the members become reluctant to continue the activities for local communities. However, on the other hand, technologies coming from the members' own jobs, such as civil engineering, landscaping management, transportation, food production, and corporate management, are regularly used in the project activities to produce effective results (Hirano 2017).

The second point is the presence of key persons on the side of local communities who provide platforms and work as bridges for mountain bikers' projects and to help combine the interests of both sides. In fact, early on, as negative images of mountain biking spread due to the conflicts, many projects planned by mountain bikers had failed at the beginning without gaining sufficient understanding from local communities in Japan. Among the successful cases (C, E, F, H, etc.), such key persons existed mainly in the departments in charge of local governments. They aimed to solve the issues of local communities such as "underuse" of forests, depopulation, and aging. Therefore, they took a proactive view of mountain bikers' visits, ascertaining the value and use of local communities; then, they introduced appropriate fields and community members to the mountain bikers. During this process, they also used their long-standing experience and personal connections in the local communities to limit the opposition to the "aliens" from community members and to play a key role in regulating potentially competing interests (Hirano 2017).

The third point is that all stakeholders have "collaborated" (Colfer 2005) in reaching the "shifted" goal of revitalizing the local society and improving the environment through the efforts of the mountain bikers and local key persons. Moreover, through collaborative and bonding activities, opportunities for "learning" to understand each other's values can be created (Miyauchi 2017). Many things need to be done to revitalize local communities and improve the environment, such as the management of parks and forests, cleaning and beautification, maintenance of *rido*, holding festivals, and operating community meetings. By participating in

collaborative and bonding activities, mountain bikers learned how forests and trails had been created and managed in the past by local groups and residents. Through engaging with the local people and understanding their traditions, thoughts, and values, mountain bikers' attachment and commitment to the field were enhanced. As a result, the desire to solve local issues and the necessary connections in life started to grow, and then, the option of migration and settlement to the local communities was created. On the other hand, through working together to revitalize local communities and to improve the environment with mountain bikers, local residents and other users had a more favorable impression of the new users who had been regarded as "aliens" or the "breeder of the conflicts," and "learning" the value of the new forest use and its possibility of supporting the local communities. Manning (2011) pointed out that educational programs to promote mutual understanding were effective in coordinating conflicts between recreational users, and the "learnings" through the mountain bikers' projects collaborating with local residents and institutions seem to lead to similar results.

3.5   Discussion

These case studies of the mountain bikers' experiences in acquiring legitimacy in the forests and uses of trails in Japan suggest the following points on building and managing collaborative environmental governance across groups.

First, the construction of environmental governance is "adaptive," which reflects the global, national, and local situations. Therefore, it can have a wide variety of processes and mechanisms. The mountain bikers in Japan, as the "globally" developed active new user, have realized the background of the urbanization and the decline of mountainous areas and forest uses led by "national" policies and economy since the second half of the twentieth century and have recently "adapted" to "local" communities that were suffering from a shortage of manpower to sustain and revitalize themselves. From a different perspective, social changes such as economic development to increase income and time for leisure, technological innovation, and advancement of information constantly create new entities that use resources such as mountain bikers. These emerging stakeholders, in order to secure their legitimacy in the face of conflicts, flexibly created, complemented, and/or adapted new strategies and approaches in adaptive participatory governance for sustainable environmental management, working closely with existing stakeholders in local communities.

The case study analyses in this chapter also suggest some constraints on building environmental governance in Japan at present. Practically, in regions where there are no leaders of mountain bikers who are willing to make a persistent effort to acquire legitimacy, and where there is no key person in the local community who can offer effective coordination, efforts at "adaptive" "shifting," such as local contribution projects, are not likely to happen. The leaders of mountain bikers are constantly struggling with the shortage of human resources and "free riders" of mountain bikers who ignore their local efforts and rules. Moreover, the key persons belonging to local governments could be difficult to keep their role by transfer departments or

retirement. Overcoming this limitation would eventually require some stable institutions that complement their projects. In other words, by sustaining environmental governance once it has been established; by establishing institutional mechanisms to help systematize the participation of mountain bikers in local contribution projects; and by establishing mechanisms in which the projects are not affected by changes in key persons and local communities: Through these efforts, the consensus and rights of forest and trail use as the result of the projects can be guaranteed.

Even though Japan continues to have many areas that can be the targets of the "shifting" and "collaboration" because of barely maintaining villages and residents, many of these local communities may disappear in the future, especially in mountainous areas. A report from the Japan Revitalization Conference 2014 suggests that half of the local governments may disappear by 2040 as a result of population decline (Masuda 2014). If there is no room or place for "adapting" and "shifting," it will be impossible to establish and maintain formal mechanisms of environmental governance. To avoid this, while it is essential to focus on local scale in order to find methods to bring out the adaptabilities of communities and all stakeholders, we might also need to find ways to regulate the national and global situation if we are also to bring out the adaptability at these scales.

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Creating a Space for Creativity: Agricultural Canals and the Endangered Species *Hemigrammocypris rasborella*

4

Yushu Tashiro

Abstract

This chapter is an example of agricultural engineering studies suggesting a specific form (structure) in which it might be possible to create relationships between humans and nature. It concerns the surprising rediscovery of the small freshwater fish Kawabata-moroko (golden venus chub, *Hemigrammocypris rasborella*), which had been thought extinct, in Shikoku Island of Japan's agricultural canals. To complicate matters, however, it had already been decided that the canals were to undergo renovation work. Experts and government agencies evaluated the rarity of this rediscovery and made the incorporation of conservation goals and methods a premise of the works. However, fierce opposition to conservation was expressed by local farmers due to their distrust of the rediscovery process. The conflict between these two positions was temporarily calmed by the adoption of an environment-conscious form of work including acceptable solutions for flooding, which had been a problem in the region. However, this environment-conscious form of work, which was supposed to have brought about consensus, was rejected due to damage to crops caused by akamimigame (red-eared slider, *Trachemys scripta elegans*), which were inhabiting the canals. Given this conflict between conservation and development, an approach based on "space and capacity for creativity" was proposed, a technical approach in civil engineering that builds in flexibility by designing for blank space so as to allow alteration after work is finished.

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4.1   The Current State of Paddy Field Agriculture in Japan

In Japan, which has a warm and humid Asian monsoon climate, rice accounts for 2.393 mn of the 4.379 mn total hectares of agricultural land (54.4%) (data from 2019). Furthermore, although some of these are terraced paddy fields, which are supplied by rainwater, the majority of paddy fields are irrigated with agricultural irrigation canals connected to rivers or irrigation ponds, with drainage to rivers through agricultural drainage canals. Paddy fields in Japan are also comparatively smaller than overseas, with the standard paddy field in Japan measured at 30 ares and the biggest at several hectares, compared to American and Australian paddy fields ranging from tens to hundreds of hectares. Accordingly, agricultural canals spread out in a mesh pattern, with a high density of gridded waterways. The combined length of these irrigation and drainage canals (henceforth referred to together as agricultural canals) is approximately 400,000 km, which exceeds the total length of trunk rivers in Japan (87,451 km).

The maintenance and management of these agricultural canals are the responsibility of the farmers who use them. For example, rules will be set in every village for routine maintenance and management: mowing the canal slopes two or three times a year, dredging and aquatic weed control one to two times a year. Furthermore, emergent repair work also arises when agricultural canals collapse. Farmers also carry out inspection and repair of basic infrastructure for production such as sluice gates, weirs, drainage stations, and pump facilities.

Therefore, Japanese policy relating to agricultural engineering projects has been aimed at increasing farmers' income by raising efficiency of agricultural production. Up to this point, farmers have had low agricultural production efficiency due to restricted agricultural land, with high volumes of labor invested in a given area. There is also a large amount of agricultural infrastructure, such as the agricultural canals mentioned above, and the maintenance work incurs a production cost; income for wetland rice farmers has remained below the average for workers in Japan. Accordingly, the government has promoted farmland consolidation projects since the 1980s, partly funded by farmers on the "beneficiaries pay principle," and as of 2016, the farmland consolidation implementation rate was 63.8% nationally. As a result, the number of hours required for rice cultivation decreased from 50 h for 10 ares to 24 h for 10 ares (2008). The production cost for wetland rice farmers also decreased from JPY150,000 per 10 ares to JPY98,000 per 10 ares. Renovation has also been undertaken on agricultural canals, transforming them from soil canals to agricultural concrete canals, which are less burdensome when it comes to maintenance work.
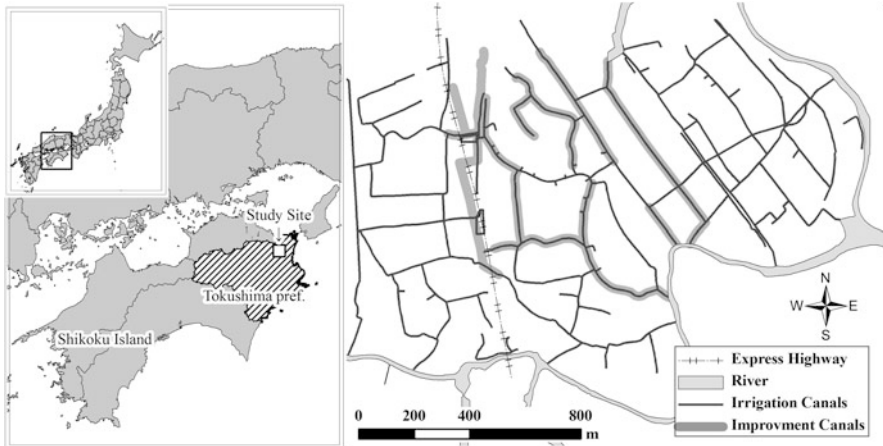
Fig. 4.1 Agricultural canals in rice paddies, Tokushima, Japan

News of the rediscovery of an extinct species was not favorably received by local residents in Tokushima Prefecture of this case study. Farmers who want to rebuild farmland and agricultural canals, going so far as to deliberately take on the cost burden of the works, aim for agriculture that is as much less maintenance burden as possible. They want to reduce routine management work such as mowing farm roads and cleaning canals as much as possible. The need for protection and conservation of creatures living in such places is viewed with skepticism, along the lines of, "what is so important about commonly seen small fish like that?" or, "they've been around from long ago, there's no need to go out of our way to protect them" (Kazama 2010). Concerning the proposed works, the farmers clearly stated their aversion in the following terms: "although we are fully aware of the need for environmental considerations, we are opposed to policy that sacrifices agricultural efficiency while considering the environment" (Tamura et al. 2006). Thus, as far as the farmers are concerned, agricultural engineering projects that involve the farmers themselves bearing the cost for the reconstruction of farms and canals should be easy to use and for the farmers' benefit. In other words, the discovery of a small fish, even an endangered species, is not reason enough to stop or scale back canal renovation work (Fig. 4.1).

4.2 The Species of Fish in Question: Kawabata-Moroko

The species of small fish dealt with in this chapter is the Kawabata-moroko (golden venus chub, *Hemigrammocypris rasborella*), a freshwater fish of the Cyprinidae family measuring only approximately 3 cm in length (Fig. 4.2). This is an endangered species found only in Japan, living only in the western area of the country. Because there had been no record of the species having been seen since 1946 in Tokushima Prefecture, the setting of this case study, the Kawabata-moroko

Fig. 4.2 The rediscovered
Kawabata-moroko (provided
by Tokushima Prefectural
Museum)

had been designated as "extinct" in the 2001 edition of the Tokushima Red Data
Book. However, when a freshwater fish enthusiast traveled around the prefecture
3 years later, in August 2004, Kawabata-moroko were found in the Danzeki, Oshiro,
and Daiko districts of Otsucho in Naruto, Tokushima Prefecture (henceforth referred
to together as Otsucho). In fact, this rediscovery after 58 years was widely reported
in the prefecture. At that time, however, the location of the discovery was not
disclosed due to concerns about poaching.

4.3   Events Concerning the Conservation of Kawabata-Moroko

4.3.1   First Contact Between Government Agencies, Experts, and Local Farmers

The problems followed after this. The situation changed significantly with a report
by the local newspaper The Tokushima Shimbun on August 10, 2006. The location
at which Kawabata-moroko were rediscovered was planned for highway construc-
tion and canal renovation work, which the local newspaper took up in a big way,
reporting fully on the need for protection. The article stated the following: "The
environs of the habitat is flooded by rainwater from upstream when there is heavy
rain, with poor drainage that even leads to road flooding, and some farmers have
called for renovation of canals to agricultural concrete canals. However, it is possible
that this important habitat for Kawabata-moroko will be lost if canal renovation
progresses." This was a report of the typical pattern of binary conflict involved
between the environment and development.

Because the location of the Kawabata-moroko discovery had not been disclosed
previously, farmers in the region discussed were made aware all of a sudden by this
report. Subsequently, a meeting was held for experts and the government agencies
responsible for the canal renovation work to "formally" explain the situation
concerning the rediscovery to representatives of the local farmers in Otsucho.

The view of researchers and the relevant administrative departments was as
follows. They recognized the rare value of the Kawabata-moroko, a fish that was
rediscovered after having been considered extinct. Furthermore, they appealed to the
local farmers that the establishment of the principle of environmental consideration
in the Land Improvement Act, which is the law underlying agricultural engineering

projects, is appropriate grounds for the necessity for conservation efforts within the canal renovation project.

On the other hand, local farmers asserted their distrust as follows: the highway construction and canal renovation work were itself planned much earlier than the rediscovery of Kawabata-moroko in August 2004, so "why have they been discovered now, when no one found them during the preliminary survey?" and "they say general freshwater fish enthusiasts made this discovery, but why aren't they being named?" As for the earnestly desired canal renovation work, which would free local farmers from intensive labor on maintenance in a target area with poor drainage, "is the intention to stop the work, or reduce its scale?" Fierce expressions of opposition were shouted, "the experts are talking about 'nice areas' where nature has endured, but that's wrong." This is agricultural land that the farmers expected to be modernized through agricultural civil engineering technology. The local farmers wondered why they had to conserve fish that had come from an unknown source when undertaking work for the purpose of improving their own agriculture. Therefore, first contact between local agencies and experts and local farmers unfortunately ended in failure.

4.3.2 The Perception Gap Between Experts and Local Farmers Highlighted at Local Briefings

Since the failure of the first contact between government agencies, experts, and local farmers, there was no further interaction between those parties on the subject of environmental conservation last for 2 years. However, representatives of the local farmers and government agencies coordinated to proceed with canal renovation work and held "local briefings" as an opportunity to explain the situation to the local farmers. These briefing sessions, to which experts were invited, took place three times in total and were attended by approximately 20 local farmers. At the first of these briefings, in October 2007, scientists explained that nearby wetlands are rich in biodiversity, where is the home to not only the Kawabata-moroko but also endangered wetland plant species. At the second briefing, in December 2007, considerations and plans for adaptive solutions in construction based on conservation of the Kawabata-moroko were explained. At the third briefing, in February 2008, five experts (in the fields of hydraulics, fisheries, environmental engineering, and conservation ecology, with the author participating as agricultural engineering) provided an explanation of the "Proposal for zoning of canal renovation for Kawabata-moroko conservation (environment-conscious measures)," the results of a survey and research project carried out over an approximately two-year period from April 2006 to January 2008. This paper provided a zoning proposal, which set out a specific approach to the canal work, and which sections of the canals would be treated as conservation zones.

As a result of the three local briefings, the state of affairs further deteriorated from the "first contact failure" to a "difficult situation with the parties in clear dispute." Even at the local briefings, the experts had thought, "we will set out the need for

conservation scientifically, and the local farmers are sure to understand if we explain it to them." For the local farmers, on the other hand, they were having this talk of a "Kawabata-moroko rediscovery" suddenly sprung on them despite the fact that canal renovation work had already been decided upon. As a result, their perception of Kawabata-moroko was as a nuisance raising complaints about matters that had already been settled. Further, not only did some of the local farmers have doubts about the legitimacy of the rediscovery itself; they also saw it as having conservation measures imposed on them unilaterally by experts at the local briefing sessions. This combination was never going to get them on board. In other words, the experts came across as an extreme environmentalist group impeding development work, siding with the nuisance Kawabata-moroko and pressing for conservation at all costs. All specific proposals on the approach to the work and zoning based on the proposal were therefore rejected, regardless of their substantive merits or demerits.

4.3.3 "Temporary Agreement" Obtained Through Incorporation of Flooding Control Measures in the Canal Design

November 2008, the commencement period for the construction work, came without the experts or government agencies have been able to come up with an answer on to proceed with the canal renovations. For the time being, the renovation work was postponed for canals inhabited by Kawabata-moroko, and taken forward for those canals not inhabited by Kawabata-moroko.

At this point, something happened that the local farmers did not expect. Because Otsucho was naturally a frequently flooded area, the main agricultural canals were built with a width of 7–8 m, in places up to around 10 m. This was so as to allow the canals to serve the function of a temporary retention basin for storing fallen rainwater, and the local farmers had thought that the canals should naturally be equipped with this function as part of the renovation work as well. The canal construction method that the local farmers wanted was the fence-type construction method (whereby vertical arms support horizontal wall panels), which imposes the least burden in terms of maintenance work (and the most harmful form of canal construction for Kawabata-moroko). If designed using this method, however, the cross section of the canals would be approximately one third of their previous width according to the nationally established design guideline. Strong opposition was voiced against this, on the basis that it would not prevent flooding.

Therefore, a temporary agreement was reached between the local farmers, who wanted the canals to have the retention basin function as an antiflooding system, and the experts and government agencies, who wanted to conserve the Kawabata-moroko. That is to say, the fence-type construction method that the farmers wanted would reduce the burden of maintaining the canals, but would also reduce the width of those canals. On the other hand, if an environment-conscious construction method were introduced, allowing conservation of the Kawabata-moroko, that would also allow the adoption of wider canals. Although the burden of maintenance work would not decline as significantly as with the fence-type construction method, this would

Fig. 4.3 An environment-conscious construction method allowing expansion of canal width. Gently sloping eco-blocks are used on the side of lotus root fields

lead to somewhat of a reduction in maintenance labor (Fig. 4.3). There was a complete reversal, and the project started to progress due to the incorporation of this regional issue of flood control solutions into the canal construction process. This seemed to be a technical solution that would conserve the Kawabata-moroko at the same time as being able to solve a regional issue. Opposition to the conservation of Kawabata-moroko was not heard for a while after that.

4.3.4   Damage to Crops Caused by Red-Eared Slider

Another problem arose in 2012, however, when canal renovation work had progressed in approximately half of the target area. In the early summer of that year, new lotus root shoots that were cut down to around 10 cm, as if bitten in half, were found in lotus root fields here and there (Fig. 4.4). This was a new experience for the local farmers, despite having been cultivating lotus root for many years. Before long, large "red-eared slider" (*Trachemys scripta elegans*), a turtle, were spotted around shoots that had been bitten down. Similar cases were also found in other areas (Arimai et al. 2008), and local farmers determined that the culprit was the red-eared slider. If the shoots that sprout toward the surface from each node of the lotus root's rhizome are bitten off, further nodes are unable to mature and it becomes

Fig. 4.4 Lotus root shoots
bitten down by red-eared
slider

impossible to harvest them as lotus root. That is to say, this phenomenon amounted
to crop damage by red-eared slider, reducing income for the local farmers. This
red-eared slider crop damage sparked trouble in an unexpected way. Forceful
opinions were directed at the government agencies and experts along the following
lines: "The damage is concentrated in lotus root fields along the renovated canals,
because the canals were built this way in the project!" and "Redo the work or we'll
sue!"

   Why, however, would the local farmers be pressing for the work to be redone,
despite having already agreed on the form of the work? At first, the Kawabata-
moroko was a nuisance to canal design, but a positive solution had come out of this
in terms of the ability to expand the width of the canals (providing the function of a
retention basin), which would aid in flood control. The local farmers had agreed with
the government agencies and experts that this was a suitable construction method.
However, from the perspective of the local farmers, this was not a project to which
they had agreed in recognition of the existence of Kawabata-moroko, but rather one
that they had reluctantly accepted in order to even slightly enlarge the width of
canals, in exchange for conservation. Considering the balance between the burden of
maintenance work and the risk of flooding, they ultimately decided that this
approach was the most reasonable in terms of efficiency of agricultural production.
Put simply, this was no more than a balance of the single issue of economics: "even
if there is something of a maintenance burden, that would be better than floods
wiping out our lotus roots." With significant loss to the lotus root harvest due to the
red-eared slider, this construction method was no longer entirely acceptable.

4.4 "Space and Capacity for Creativity" as a Venue for the Recovery of Plural Values

4.4.1 Local Farmers' Dissatisfaction with Fairness

Why was the canal renovation work to preserve the Kawabata-moroko so unsuccessful? The local farmers claimed, "we're just being treated unfairly." The way they saw it, they were supposed to be renovating the canals to make agriculture easier, and it was unreasonable that the local farmers were somehow being made to patiently take on the burden of conservation for some reason, just because of some rare rediscovered creature. On the other hand, the experts and government agencies had taken conservation of the Kawabata-moroko for granted and were asking "what are you able to put up with, for the sake of the Kawabata-moroko," in terms of methods to incorporate into the works. Compromise was impossible, because their positions did not touch on anything to do with resolving the injustice.

4.4.2 Former Connections Between People and the Canals

So, what kind of canal could we build in the renovation project such that the farmers would not feel a sense of unfairness? We tried to more deeply examine the connections that used to exist in this region between people and the canals.

That is, we looked into the existence of "*enta*" that there had been in this region. *Enta* are semi-submerged paddy fields created by dredging up the sediment from agricultural canals. *Enta* had existed in Otsucho until around 1970. Agricultural canals in low-lying regions rely on minute differences in slope of drainage to ensure water flow, meaning that dredging is essential in maintaining good flow. In times when there was no heavy equipment, dredging was done under human power and was extremely hard labor. "*Enta*" were conceived of as a way of obtaining some kind of economic benefit from dredging, which was back-breaking maintenance work (Figs. 4.5 and 4.6). Rice was planted in *enta* built on the banks of the canals, and a farmer could secure a year's rice from the *enta* alone. These e*nta* were not found only in this region, but have been confirmed in Japan's low-lying regions (such as around the coast of the Ariake Sea in Fukuoka Prefecture, and around Kojima Lake in Okayama Prefecture).

There was another connection between people and canals in this region. In February, each year the fishing ban would be lifted and all residents had a winter catch from the wide canals that had been given a retention basin function. Using a tool called a "*maigaki*" (a bamboo basket approximately 60 cm wide attached to the end of a bamboo pole three to four meters long), locals would scrape along the sediment and catch the fish that had been hiding there. In each family, the father would scrape with the *maigaki*, and the mother and children would follow after looking for fish in the mud. Local families would line up along the canals and use their *maigaki* as one, gradually moving along and repeating the process if they were

Fig. 4.5 The relic of an *enta*. An *enta* can be seen between the farm road on the left of the photograph and the agricultural canal on the right. Now the ground has raised, but when in use locals say that this space was a seasonally submerged *enta*

unable to catch any fish. A local farmer who experienced this at the time said, "We could catch fish with *maigaki*, and scrape up a considerable amount of sediment."

What might the real significance of these *enta* and *maigaki* be? It is true that they were clever approaches to obtaining even small economic benefits (in terms of supplemental rice and fish) from the hard labor of dredging the canals. However, more important is that the canal spaces involved a level of freedom in which the local farmers could come up with such ingenious tools and methods. Such spatial and temporal redundancy also enables to achieve intergenerational justice, for it will produce space and capacity for future generations to give potentials for ingenuity, creativity, and flexibility of ideas for their own and for their future generations.

Agricultural canals were used in common by farmers for agricultural purposes and could not be used in ways that obstructed their original purpose: the flow of water to, and drainage from, farms. However, looked at from the other direction, local farmers were free to create *enta* and use *maigaki*, as they did not obstruct the purpose of the canals. In other words, from the start the canals had "space and capacity for creativity," allowing use for other purposes and free change in form based on the ingenuity of the users.

Fig. 4.6 Photographs of a *maigaki*. One scoops up fish with the mud, using a tool created by attaching a bamboo basket with a diameter of approximately 60 cm to the end of a bamboo stick. The name of the tool is also the name for this act of catching fish in canals

4.5   Integrated Design for Use and Management of Local Resources

4.5.1   Canals Designed With "Space and Capacity for Creativity"— The Idea of "*Enta*-Type Dikes"

Let us return to the damage to crops caused by the arrival of red-eared sliders. Thinking about how the agricultural canals had originally been furnished with "space and capacity for creativity," they were not only spaces that the farmers had to work to maintain and manage, but spaces where ingenious creativity was possible and use for other purposes was not prohibited. That is to say, in the canal design we landed on "integrated design for use and management," envisaging a range of uses of the agricultural canals, as well as maintenance and management by the people using it. As a specific example of this in action, I, as an agricultural engineer, devised "*enta*-type dikes," and these were constructed during canal renovation work (Figs. 4.7 and 4.8).

With these *enta*-type dikes, concrete is used at both sides of the dike in order to reduce maintenance and management, but *enta* are installed as physical spaces in the canals. The *enta*-type dikes are characterized by the creation of an earth-retaining fence from pine stakes and retaining felt mats (used as a temporary form of construction), rather than fixing the *enta* areas in place with concrete or the like.

Fig. 4.7 Before renovation work of an *enta*-type dikes

Fig. 4.8 During renovation work of an *enta*-type dikes

This allows farmers or people who want to use the space to freely alter it by adding to the soil or digging it up. We have been careful so that, even if the farmers want to remove the *enta* after completion of the renovation work, they will be able to make such a change easily themselves. The *enta* areas have been given multifaceted functionality, serving as space for the dredging of canal sediment that will accumulate in the future, as well as a habitat and spawning ground for fish living in them, and a retention basin. Furthermore, the ability to use these *enta* spaces freely is guaranteed so that commercial crops can be planted as in the past and expenses raised to allow maintenance and management of these areas.

4.5.2 Unexpected Use and Limited Use

So, did these *enta*-type dikes end up as spaces giving rise to the kinds of relationships that we planned? One time, a cultivator from a lotus root field adjacent to the construction site planted two ears of wild rice (*Zizania latifolia*) in an empty *enta* area and said, "If there's no vegetation there won't be any fish either. But too much vegetation makes management difficult." Naturally, the farmers want to avoid an abundant growth of aquatic plants that obstruct the flow of water. Planting this aquatic plant themselves, not even a commercial crop as had been initially envisaged, was an unexpected use. And, even now, in the winter they are managing the space by burning the dead wild rice. This is the moment that they understood the

scale of what they could manage themselves and discovered how they used the canals in such a way as to enjoy the creatures living there.

Thereafter, the Gorgon plant (*Euryale ferox*), native to Japan, unexpectedly began growing in Otsucho, not far from *enta*-type dike construction sites, for the first time in 50 years. Some of the farmers welcomed this development with feelings of nostalgia. One local farmer said, "How about testing germination with different depths in the *enta* areas?" and another stated his view of wanting "to let the Gorgon plant blossom across the whole surface of the *enta*." Later on, the farmers sowed Gorgon plant seeds that had been collected and enjoyed watching over their development every year.

However, not all *enta*-type dikes were used freely. This is because all of the proposals and construction were undertaken by the experts and government agencies, and there was insufficient discussion of objectives and uses with the local farmers. We heard from a neighboring farmer at the construction site of an *enta*-type dike about a hesitance to freely use the space, "The canals belong to the village. To plant commercial crops for one's own gain feels somehow…" Despite there being an unexpected use of the *enta* spaces, their use was ultimately limited. In other words, creating areas with "space and capacity for creativity" does not automatically mean that they will be used; social norms establishing that it is fine to use the spaces, and agreement from stakeholders, are also essential.

4.6 How Can We Make Environmental Conservation Work?

I have set out why environmental conservation did not go well with the rediscovery, after 58 years, of the endangered small fish, Kawabata-moroko. In this case, the main reason that conservation did not go well lay in the fact that the experts and government agencies just talked about conservation, without eliminating from their deliberations for a solution the local farmers' dissatisfaction about unfairness.

However, the canals had diverse uses from the start, and there must have been plural values for the groups of people connected to them. The canal renovation work of the example given in this chapter involved "space and capacity for creativity" in order to integrate plural values as a specific design element. At the same time as being a technical solution that has "physical space" which can be freely used according to the ingenuity of users, it gave real form to "adaptability," which is important in environmental conservation.

The adaptability required in environmental conservation means expanding the spectrum of people who can participate, being able to plan for multiple goals in addition to the twin aims of conservation and development, and the flexibility to continue with trial and error even when there are failures. Planning for "space and capacity for creativity" as space for effecting plural values could be described as one answer to the question of how to bring about adaptability in practice.

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The Satoyama Movement and Its Adaptability: Beyond Ideology and Institutionalization

5

Masaharu Matsumura

Abstract

This chapter discusses the Satoyama conservation movement, a movement aiming to conserve secondary nature, such as coppices that had sustained the lives and livelihoods of people up to the period of rapid economic growth from the 1960s to the early 1970s. The movement emerged from the broader nature conservation movement in Japan and rapidly spread through the country as Japan entered an era that came to value biodiversity, tracing the movement's history, as set out below, with reference to case studies mainly around the Tokyo metropolitan area.

The importance of local "*satoyama*" in conserving biodiversity was recognized in the 1980s, and activity by citizen volunteers aiming for *satoyama* regeneration spread like fire in the 1990s. The conservation of *satoyama* has been a national goal since the 2000s, with national and local governments providing support to the movement. However, the outcomes, in terms of conserving biodiversity, have been poor, even as areas subject to eco-governmentality have expanded, making it more difficult to manifest suggestions from citizens to create new common areas in service to *satoyama* and biodiversity. In the 2010s, especially since 3.11 (the Tōhoku earthquake, tsunami, and the Fukushima nuclear disaster of March 2011), there has been a noticeable movement to use *satoyama* resources to establish "*shigoto* (work)" and livelihoods, distinct from the nature conservation movement that had developed up to that point. Their aim has a similar orientation to that of the grassroots Satoyama conservation movement of the 1980s and 1990s, even as the direction taken by this latent network holds the key to a sustainable society.

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5.1 Introduction

This chapter discusses the Satoyama conservation movement (the Satoyama movement), which emerged from the nature conservation movement in Japan and spread rapidly throughout the country from the1990s.[1] The reason for the focus on this movement is that biodiversity came to be emphasized in this era, and the Satoyama movement incorporated something new and different from conventional nature conservation movements in terms of both what it aimed to protect, and the means it would use for doing so. Another reason is that, in contrast to conventional nature conservation movements in Japan, which had been strongly influenced by European and American thought on nature conservation, there are aspects in which the Satoyama movement, while being influenced by such sources, appears to have spread after arising independently from Japan's historical and social contexts. Section 5.2 explains the characteristics of this movement, providing supplementary information on areas such as Japan's modern history and environmental awareness at the local level.

Section 5.3 looks at two case studies from within Yokohama City, where the Satoyama movement is thriving. From the example of Maioka Park, considered by many as one of the hearths of the movement, we confirm that this involved the creation of a community of citizens participating to collaboratively manage *satoyama*, and an effort to create new common areas for themselves. Then, with the example of *satoyama* governance in the Niiharu District, we can trace the particulars of the challenges placed on key persons in the collaborative relationship between citizen and government actors brought about by the success of the movement, with additional analysis on the causes using the concept of eco-governmentality. In turn, Sect. 5.4 examines the development of the Satoyama movement since the 2000s, when *satoyama* conservation became a national objective, and mobilization of volunteers was promoted by local governments in what approaches eco-nationalism. Statistically, the number of organizations involved in this movement increased, but the effects on biodiversity conservation were meager,

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[1]From 1999 until the present, the author has been conducting fieldwork based around participant observation and interviews, while also engaging as a practitioner in the Satoyama movement in and around the Tokyo metropolitan area. Since 2003, he has worked for the NPO Yokohama Satoyama Institute, becoming a representative in 2005; Sects. 5.3 and 5.5 below use data obtained through this NPO's independent projects, as well as projects undertaken under consignment from Yokohama City or the like (Matsumura 2018). For the two case studies in Sect. 5.3, in addition to intermittent interviews with Mr. J and Ms. Y, reference has been made to Murahashi (1994), Jumonji (1999), Asaba (2003), Tanami (2003), and Sawada (2009).

and participants are steadily aging as volunteer numbers have stalled. Furthermore, this section points out the problem of how, as Satoyama conservation efforts were encouraged under government leadership from the national level to the municipal level, the significance of this movement as an effort by people themselves to reclaim a relationship between nature and society was neglected, making it difficult to harness the creativity of citizens.

Section 5.5 introduces efforts in the 2010s, such as *satoyama*-oriented social entrepreneurs and new farmers that have emerged independently from developments in nature conservation movements up to that point, especially since 3.11. Their efforts to autonomously create "*shigoto* (work)" and livelihoods from the unused space and biomass resources of the *satoyama* that remain around urban areas may be individual and sporadic, but have nonetheless developed into a quiet movement. Their aim has a similar orientation to that of the grassroots Satoyama movement of the 1980s to 1990s, and it is anticipated that the direction taken by this movement's latent but growing network holds much promise for making key contributions toward a sustainable society.

5.2 What Is the Satoyama Movement?

5.2.1 Rapid Economic Growth and the Fossil Fuel Revolution

In 1945, Japan suffered defeat in the Second World War, but recovered rapidly with political and economic support from the USA and others, achieving annual economic growth of more than 10% from the mid-1950s to the early 1970s. Japan's GNP surpassed that of the UK, France, and West Germany (as it was at the time) in each year from 1966 to 1968, with Japan boasting of economic power second only to the USA. Japan's industrial structure also changed significantly. In 1950, almost half of Japanese people were engaged in primary industry, but in 1970 this had decreased sharply to fewer than one in five people; meanwhile, the proportion of people employed as office workers rose to almost two thirds. The standard of living for Japanese citizens also rose, with ownership of the "Three Sacred Treasures"[2] (televisions, refrigerators, and washing machines) proliferating from the mid-1950s, and of the "3Cs" (color televisions, air conditioners, and cars) from the mid-1960s.

In the latter half of the 1960s, the degradation of nature and pollution (including air and water pollution) became social issues in Japan, problems brought about by the rapid economic growth. An extraordinary session of the Diet, the national legislature, held in November 1970, referred to as the "Pollution Diet" because it deliberated on bills relating to the control of pollution, established the Environmental

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[2]The "Three Sacred Treasures" (the Mirror, Sword, and Jewel) have been inherited by successive generations of emperors as the symbols of Japan's imperial throne. In turn, the term is used here to refer to three representative everyday necessities.

Fig. 5.1 Villagers' perception of the *satoyama* landscape
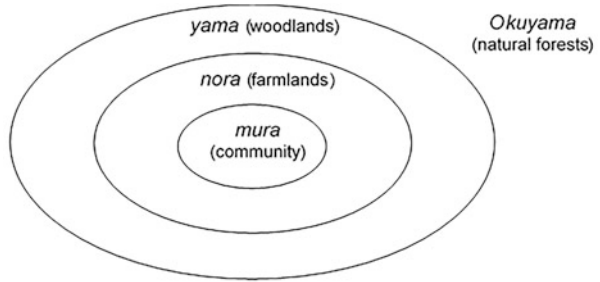
Agency in July 1971. Global interest in environmental issues was growing: In 1972, the Club of Rome published "The Limits to Growth" report, and the United Nations Conference on the Human Environment was held in Stockholm in 1972. Influenced by this global environmental movement, movements aiming to combat pollution and conserve nature also spread in Japan.

Because the nature conservation movement in the 1970s tended to understand the relationship between humans and nature as antagonistic, it generally had the objective of preserving wilderness with a high degree of vegetation naturalness—allowing natural transition and excluding human influence were taken to be desirable. Accordingly, in the case of movements aiming to protect forests, there was a common practice of people using their own bodies to bring development to a halt, aiming to stop the felling of even a single tree. Although people in Japanese society at that time understood the need to protect untouched nature, the familiar *satoyama*—forms of nature that people had come to manage on a daily basis—were not recognized as an object that should be protected.

At this point, let us look at the meaning of the Japanese term *satoyama*, of the utmost importance in this chapter, with reference to illustrations.

Figure 5.1 is a schematic representation of the structure of traditional rural landscapes in Japan from the perspective of villagers. At the center of the rural village environment is the *mura* (village community) in which people live, around which are *nora* (farmlands), and then *yama* (woodlands). This concentric arrangement of *mura-nora-yama* comprises the nature relations recognized by people in the community as their territory, a human–nature space. Strictly speaking, *satoyama* refers only to the *yama* area, but in a broader sense *satoyama* refers to the entire rural village environment that has come to be regularly managed by people.

Today, the term *satoyama* is generally used in the wider sense, so in this paper the *satoyama* region is defined as the rural landscape that has come to be managed by the local villagers—in other words, the territory in the diagram including the entirety of the *mura-nora-yama* areas. It is significant that, from an ecological perspective, the scope of the term encompasses forms of so-called secondary nature, which are subject to human intervention. Natural forests, referred to as *okuyama,* usually continue from outside of the *satoyama*. People from the community rarely enter into the *okuyama*, a space exclusively for wildlife that has become territory of the
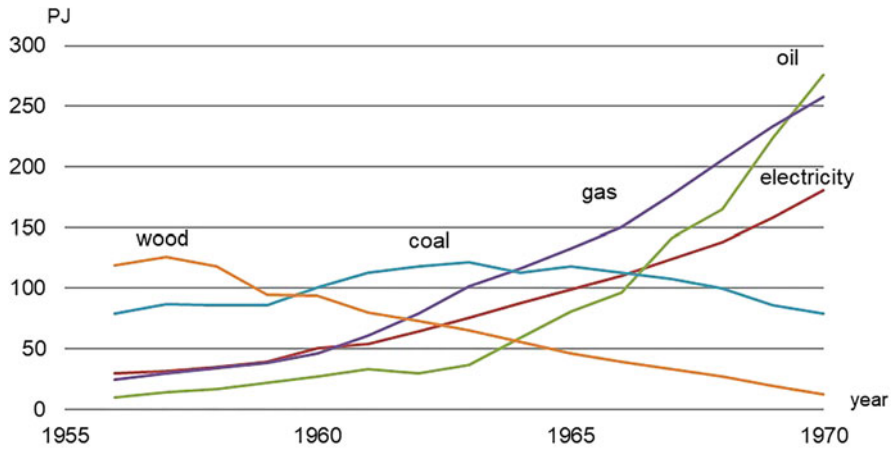
Fig. 5.2 Changes in household fuel consumption (This figure was created with reference to the Ministry of Internal Affairs and Communications' "*Nihon no chōki tōkei keiretsu* [Historical Statistics of Japan]" (accessed January 13, 2020: http://warp.da.ndl.go.jp/info:ndljp/pid/1111 9581/www.stat.go.jp/data/chouki). The source of this data is the Japan Gas Association's "*Gas jigyō binran* [Gas Business Handbook].")

kami (spirits that can be elements of the landscape or forces of nature and can influence the course of natural forces and human events) rather than of humans.

The form of vegetation that characterizes the *yama* in *satoyama* is the coppice. Before Japan's rapid economic growth, coppices were managed as sources of fuel (wood and charcoal) and for agricultural use and had supported people's lives and livelihoods.

Figure 5.2 shows changes in household fuel consumption. As can be seen from the graph, wood and charcoal were the main sources of household fuel in 1955, and coal was the most used fossil fuel. However, a "fossil fuel revolution" took place during the period of rapid economic growth and from the 1960s electricity, gas, and oil spread rapidly, so that at the start of the 1970s wood was hardly used, and coppices lost their value as a supply of fuel. Fertilizers, essential for growing crops, had been made from fermented fallen leaves but were replaced by chemical fertilizers as well, meaning that coppices also lost their value as agricultural forests. Thus, from Japan's period of rapid economic growth, many *satoyama* ceased to be managed, and development of residences and factories progressed in city suburbs.

5.2.2 The *satoyama* Renaissance and Expansion of the Satoyama Movement

The Nature Conservation Society of Osaka, established in 1976, is thought to be the first organization within the nature conservation movement to have deliberately used the term *satoyama*. This group surveyed the state of wildlife inhabiting the Osaka

Prefecture and found that many species inhabited low-lying areas close to human settlements, known as *satoyama* in 1983. Following this "discovery of *satoyama*," the term has been actively used in the strategy of citizens' wildlife protection movements (Okada 2017).[3]

Since the latter half of the 1980s, academic research has sought to reevaluate *satoyama*, especially in response to nature conservation movements focusing on *satoyama* around urban areas. An ecological paradigm shift lay behind this, coming to emphasize biodiversity when evaluating nature (Reid and Miller 1989; Takeuchi 1991; Wilson 1992; Takacs 1996; Washitani and Yahara 1996). Abundant research emerged asserting the importance of *satoyama* for preserving biodiversity, including claims that as many species exist in the secondary nature observed in *satoyama* as in untouched nature and that *satoyama* were spaces preserving species that have endured since the last ice age (Moriyama 1988; Ishii et al. 1993; Tabata 1997).

It had taken regular long-term effort to maintain the *satoyama* landscapes, and people would need to continually manage them if they were to continue to be abundant and healthy. However, since the fossil fuel revolution, *satoyama* entered into a state of low use, insufficient to assure the health of these *satoyama* ecosystems, as efforts from human beings became more infrequent or stopped. A question therefore arose concerning who would take on *satoyama* restoration and management and, in particular, who would go on to do the appropriate maintenance and management work for those *satoyama* that had already been abandoned and where ecological succession was progressing.

When it comes to this issue, a movement had already emerged from the mid-1980s in large cities, such as Osaka and Yokohama, of citizens with no relevant landownership rights voluntarily going to *satoyama* landscapes in order to undertake conservation work, including mowing and thinning back trees. These were voluntary movements with the intention of independently managing those *satoyama* locations that had become unsightly due to ecological succession that had occurred in the absence of management. They were to be managed as new commons, from the motivation of preserving the landscape as it had been. At that time, the significance of their activities was supported from a conservation ecology perspective, so efforts aiming for *satoyama* regeneration received strong support.

Back then, participants in the movement often referred to the practices of the British Trust for Conservation Volunteers (an environmental NGO now called The Conservation Volunteers) when it came to practical techniques (Shigematsu 1991). People in Japan became aware of how the British Trust for Conservation Volunteers involved large numbers of volunteers and maintained and managed natural sites and cultural assets scattered throughout the country. This led to an increased enthusiasm

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[3]For example, a symposium was held in Osaka City in 1986 for the first time with the theme of satoyama conservation, the Satoyama Trust was established in Kanazawa City in 1990 to protect the secondary nature from development by citizens, the Satoyama Study Group was formed in Kyoto City in 1992 under the leadership of ecologists, and the Satoyama Summit was held in Tsuchiura City, close to Tokyo, in 1993 to promote the protection of rare migratory birds that come to the satoyama in summer.

that citizens in Japan could also play an active role by taking on responsibility for *satoyama* regeneration and maintenance.

In the 1990s, the Satoyama movement expanded rapidly from city suburbs to the whole country. The *Zenkoku-Zoukibayashi-Kaigi* (Congress for the Coppices of Japan) and the *Shinrin to Shimin o Musubu Zenkoku no Tsudoi* (National Gatherings to Connect Forests and Citizens) began from 1992 and 1996, respectively, allowing citizens involved in Satoyama conservation from around the country to gather and share their knowledge and experience. Furthermore, the previously overlooked visual beauty of *satoyama* landscapes and the richness of the lives of those living within them were conveyed through public broadcasts and collections of photographs from the mid-1990s, stirring feelings of nostalgia in people and leading to what could be described as a *satoyama* boom throughout the country, which spurred expansion of the Satoyama movement. However, the Satoyama movement developed into a large movement not under the guidance of a core national organization, but as a result of volunteers personally deciding to work hard and participate in conservation activities in order to protect *satoyama* in their local areas.

Beginning in the early 2000s, conservation of *satoyama* became part of the environmental policy of the state and local governments. A report from the Ministry of the Environment in 2001 showed evidence that 60% of endangered species were concentrated in *satoyama*, which is a greater distribution than in untouched nature (Ministry of the Environment 2001). The Second National Biodiversity Strategy, formulated in 2002, stated explicitly that insufficient care for *satoyama* threatened biodiversity in Japan (Ministry of the Environment 2002). Additionally, the "Satoyama Initiative" was proposed in 2007, disseminating Japanese *satoyama* to the world, as the tenth Conference of the Parties (COP10) to the Convention on Biological Diversity (CBD) was about to be held in Nagoya City in 2010. It aimed to realize a sustainable society together with people around the world by referring satoyama, where people live in harmony with nature.[4]

Today, it is said that there are four risks that biodiversity faces in Japan. The first is the threat of extinction of organisms caused by the strong influence of human activity, strongly linked to problems of overuse such as overdevelopment and overexploitation. The second risk is the problem of underuse—that is to say, the danger caused by reductions in work where people had been working in close use relations with nature. The third risk concerns issues caused by foreign species or chemicals not found in nature but which humans have brought into *satoyama* landscapes. The fourth risk is the global threat brought about by global warming (Ministry of the Environment 2012). Of these, the second risk could also be described as a crisis for *satoyama*, and presently, the whole country is promoting the Satoyama movement in order to conserve biodiversity in Japan.

Figures 5.3 and 5.4 show examples of the Satoyama movement around urban areas. These are photographs of an NPO that recruited ordinary citizens and, with the

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[4] Please see The International Partnership for the Satoyama Initiative (accessed January 13, 2020: https://satoyama-initiative.org/).

Fig. 5.3 Citizen participation
in weeding and brushing in an
planted forest

permission of the local government, carried out conservation activities on poorly
maintained public land. Figure 5.3 shows weeding and brushing in a planted forest,
and Fig. 5.4 shows citizen participants mowing the banks of rice paddies. As these
examples show, citizens and government have been working together more and
more to preserve *satoyama* in recent years.

5.3   The Satoyama Movement within Yokohama City

5.3.1   The State of *satoyama* Within the City and Conservation
Systems

The revitalization of *satoyama* and the rise of the Satoyama movement, which began
in the environs of urban areas in the mid-1980s, had spread throughout Japan by the
early 1990s, and conservation of *satoyama* soon came to be promoted as

Fig. 5.4 Citizen participation in mowing the banks of rice paddies

environmental policy by national and local governments by the early 2000s. Looking at efforts aimed at conserving *satoyama* at the national level, the grassroots citizens' movements from the bottom and environmental policies from the top seem to have a similar orientation, but if one observes activity at the local level one can understand that a gap has arisen between the two. In order to look at this gap, let us focus on the movement and policy in Yokohama City, which emerged as a leader of the Satoyama movement, tracing developments in that area in order to establish the situation and issues as it spread.

With an area of 435 km^2 and population of 3.75 million people (as of January 2020), Yokohama City is the second largest city in Japan after Tokyo in terms of inhabitants. Because it is within commuting distance to Tokyo, the city grew rapidly (by approximately 100,000 people each year) during the period or rapid economic growth from 1960 through the early 1970s, as the capital expanded. As can be observed from Fig. 5.5, during this period the residential land area more than doubled, from approximately 60 km^2 to approximately 140 km^2, matched by a loss of approximately a third of the area of farmlands and woodlands (now called *satoyama*), from approximately 230 km^2 to approximately 150 km^2.

From the mid-1960s to mid-1970s, against a background of intensifying urban problems associated with rapid economic growth, progressive leaders emerged throughout the country who hearing the concerns of local residents called for the promotion of welfare and environmental policies. In the midst of such circumstances, from 1963 to 1978, Ichio Asukata, a politician form the Socialist Party, served as mayor of a progressive local government in Yokohama and
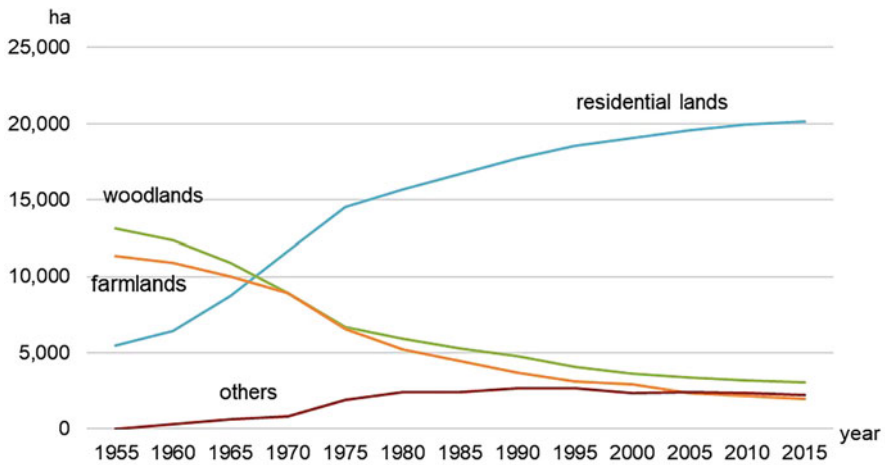
Fig. 5.5 Changes to area by use in Yokohama City (This figure is created on the basis of the "*Yokohama-shi Tōkeisho* [Yokohama City Statistical Report]". The "woodland" category comprises the total area of *san'rin* (mountain woodland) and *gen'ya* (fields), and the "farmland" category comprises the total area of *ta* (rice fields) and *hatake* (other cultivated fields). These data do not include land exempt from fixed property tax, such as public land owned by national and local governments, public roads, conservation forests, school land, and the precincts of religious corporations. Parking lots and storage facilities make up much of the "others" category.)

commenced with efforts aiming toward environmental conservation faster than in other local governments, in response to reduced *satoyama* following rapid population increases and urbanization of lands. For example, when the new City Planning Act came into force in 1970, approximately one quarter of the area of the city was designated as "urbanization control areas," in which development activities were significantly restricted. Before anywhere else in the country, a government bureau was established for green space conservation efforts in 1971, and a *satoyama* conservation system unique to the city was launched, as represented by "*Shimin no Mori* (Citizens' Forests)."

It was generally recommended that land be purchased as public land so as not to be developed, in order to reliably secure green space. However, buying large areas of land in urban areas, where land is expensive, is difficult. Therefore, the "Citizens' Forests" system was devised as a way to protect forestland in which there were strong pressures to develop. Under this system, Yokohama City entered into lease contracts with landowners, which aimed to preserve land provided as "Citizens' Forests" and to open the land to the public, having provided the minimum level of sidewalks and rest facilities required. Meanwhile, landowners for whom development activities became prohibited received preferential treatment in terms of exemption from property taxes and city planning taxes. Additionally, instead of seeking light work for tasks such as patrols within the forests, cleaning, mowing, and repair of facilities, this system involved Yokohama City subsidizing the "*Shimin no Mori*

Aigokai (Citizens' Forests Protection Associations)," which was formed through landowners.

5.3.2 *Satoyama* Conservation Initiatives with Citizen Participation—The Example of Maioka Park

In Yokohama City, the political opportunity to promote *satoyama lands* opened up during the years 1963–1978 in which a reformer politician served as mayor and established a culture of considering public policy and public works with citizen participation; since then, advanced initiatives have been established across the country. Of these, I would like here to introduce the example of Maioka Park, which can be said to have been a source of significant influence on the Satoyama movement thereafter.

Maioka Park is a regional park with an area of approximately 30 hectares, making use of the *satoyama* land type. Characteristic of this park are the facts that valuable *satoyama* landscape has been preserved in the environs of the city so that citizens can enjoy farming in the park and that the park has become a space in which people from many walks of life are active, and citizens were deeply involved in the creation of the park, from planning to administration.

The distinctive creation of this park started when the "*Maioka Mizu to Midori no Kai* (Maioka Water and Greenery Association)," a citizens' group established in 1983, stated its objection to Yokohama's original plan to reclaim wetland that had been paddy fields in order to convert it to grass squares, which would surely have meant destroying rich ecosystems in order to create the sort of typical city parks one can see anywhere. Mr. J (a young man, born in 1960), who found this group, thought that there was an obligation to take care of the coppices and fields that had been in this area and wanted to offer an alternative to the city's park plan. Because of the Japanese government's strong preference for the following precedent rather than proceeding with work for which there had been no demonstrated results, Mr. J proposed temporarily attempting to regenerate *satoyama* in the proposed site for Maioka Park so that his proposal might be more acceptable to the government. This proposal was accepted, and the group obtained permission to use the proposed site for the park. They revived rice production in fallow fields, resumed management of coppices, implemented related agricultural activities, and began environmental education activities. Through this citizen-proposed social experiment, they developed an experience-based program while accumulating *satoyama* management know-how and demonstrated concrete alternatives based on the results of that program. As a result, the final design for the park was drawn up in a form that reflected many of the proposals. Furthermore, these ambitious initiatives were evaluated by Yokohama City, and when the park was opened in 1993, responsibility for the management and operation of Maioka Park was given to an NPO formed from the basis of this citizens' group, which has continued to manage the park ever since.

The example of Maioka Park reflects the characteristics of the Satoyama movement. The main approach of nature conservation movements at that time was to request that the government regulate development on land that should be protected. On the other hand, because the land that required protection in Maioka was *satoyama*, work was necessary in order to preserve it. However, it was not expected that citizens would undertake agricultural or forestry work in a city park, and naturally, there were no rules regarding the treatment of rice, vegetables, or wood obtained through such management activities. Accordingly, in order to bring about something unprecedented in a city park—in order to resume activities that had continued from before the space became a park—a citizens' group undertook a social experiment in *satoyama* management, presenting an alternative park plan based on their experience through this trial and error process and taking on the management and operation after the opening of the park. In other words, the Satoyama movement became a movement trying to create environmental self-government; opposing the situation established by the government regarding the appropriate form for remaining *satoyama* now that the relationship between people and nature had weakened; creating a new community of people to take care of local nature; and creating a *satoyama* commons suitable for the values of the times.

Because of the success of Maioka Park, when developing *satoyama*-type parks, Yokohama City now seeks to create scenarios that envision citizens undertaking the management and operation after opening. Citizens are brought together and listened to from the beginning of the planning stage, which is reflected in facility development, and the formation of groups by participants is encouraged. This form of progressing with park creation involving citizen participation is Yokohama City's way of responding to an era in which parks systematically set up according to government-led designs were criticized as "uniform and boring," and people questioned "to whom does the park belong?" Today, the doors of citizen participation are wide open, the result of the pioneering Satoyama movement, and the government has come to expect that citizens voluntarily participating in public landscape creation will be good collaborators.

5.3.3   *Satoyama* Governance by Diverse Actors—The Example of the Niiharu District

Attempts to stay ahead of the times face challenges faster than anywhere else and require further change to overcome them. In order to understand how the work of the Satoyama movement has progressed in Yokohama City since Maioka Park, let us next turn our attention to the Niiharu District, Midori Ward, from the latter half of the 1990s.

The Niiharu District area is positioned as one of the "Seven Major Green Bases" for which Yokohama City prioritizes conservation. Of these, the Niiharu District (where more than 100 hectares of forest and farmland have been retained) is regarded as a strategically important area in Yokohama City's *satoyama* conservation strategy. In order to conserve the *satoyama* in this Niiharu District, Yokohama

City applied the "Citizens' Forests" system to privately owned land and implemented the organization of parks with citizen participation on publicly owned land.

In the latter half of the 1990s, when Yokohama City began preparations for the designation of forests in the Niiharu District as "Citizens' Forests," the majority of the landowners had not been managing their land for several decades. Furthermore, because the landowners were themselves elderly or were not living nearby, they could not themselves form a protection association and manage the land even with subsidies from the city.

In order for Yokohama City to open "Citizens' Forest," a protection association was needed to manage them, but at that time there was an increasing number of places like the Niiharu District where the landowners were unable to take on that role. Therefore, since 1994, the city had been implementing projects to connect *satoyama* that require work with ordinary citizens who want to participate in the conservation movement. These projects involved holding a series of courses to equip people with the necessary knowledge and skills for *satoyama* management and supporting attendees so they are able to organize and create *satoyama* conservation volunteer groups once or twice each year. Therefore, in the Niiharu District as well, the city planned for the organization of a protection association that included citizens interested in conservation activities, rather than only landowners.

Between July and December 1999, Yokohama City held a series of lectures for 60 citizens with an interest in *satoyama* conservation in the Niiharu District, with the objective of providing them with an understanding of the situation in the area and the skills for conservation management. Some of the landowners were wary of outsiders entering the local *satoyama*, but a series of dialogues over six months with the citizens who gathered after the public advertisement caused a change in sentiment and acceptance. The intermediary of local government officials made the landowners feel safe to talk with the citizens in a safe manner and were able to get to know each other smoothly. Then, in February 2000, the "Niiharu Citizens' Forest Protection Association" was created, with an unprecedented 113 members, and the "Niiharu Citizens' Forest" opened in March, boasting an area of 67 hectares which made it the biggest Citizens' Forest in Yokohama City.

There was one landowner, Mr. O, who had summarized the opinion of many landowners on the designation of Niiharu as a Citizens' Forest. However, he suddenly passed away in October 2000, after the Citizens' Forest had opened and at the request of his bereaved family his mansion and the surrounding forest were donated to Yokohama City. Respecting the last wishes of the deceased, who had tried to protect the Niiharu *satoyama* landscape, the city prepared plans for the organization of a city park on that land. These plans proceeded with the citizen participation model, based on the developments in park creation in Yokohama City that had continued on from Maioka Park.

In 2003, Yokohama City opened the former mansion of Mr. O, which plays a key role in the park, and established a "Council for Reviewing the Use of the Former Mansion of Mr. O," consisting of representatives of nearby organizations with an interest, as well as general participants who went through a public selection process.

The council held discussions about mechanisms and rules for use of the facilities and about the creation of a body responsible for their operation. From 2004, this council transitioned into the "Executive Committee for the Use of the Former Mansion of Mr. O" and was trained as an organization responsible for the operation of the facility, while conducting independently planned trial projects for the continuation of *satoyama* nature and culture. In 2009, the former mansion of Mr. O was renamed the "*Niiharu Satoyama Kōryū Center* (Niiharu Satoyama Cultural Exchange Center)" and Niiharu Satoyama Park was opened; immediately after opening, an NPO was established on the basis of the executive committee and took charge of management and operations.

In this way, in order to conserve the city's largest *satoyama*, land was designated and set out as a Citizens' Forest and city park, while active citizen participation was encouraged and the organization of management bodies was supported in order to care for them. Additionally, the Niiharu Citizens' Forest represents *satoyama* in Yokohama City, so the city gave its support and set up conservation and management plans and continues to advise the protection association on adaptive management on the basis of these plans (Uchiyama 2010; Yokohama City 2011). Furthermore, though not introduced in this chapter, Yokohama City has also implemented its own projects with respect to farmland and rivers in this district as well and has established a comprehensive system for *satoyama* conservation. As a result, a system has been established in the Niiharu District involving cooperative planning by government, citizens' groups, and landowners, for the integrated conservation of the forests, parks, farmland, and rivers that constitute the *satoyama* landscape, with the "Niiharu Satoyama Cultural Exchange Center" as its base. This system is regarded today as best practice for *satoyama* governance in Japan.

5.3.4   The Evolution of Environmental Governance and the Responsibility of the Coordinator

It should be noted, however, that going forward does not necessarily mean that one is making progress. *Satoyama* lands around cities are considered highly public areas that require conservation, even though they may of course include both public and private lands. Accordingly, the civil society of today expects highly transparent decision-making processes from actors associated with *satoyama* conservation, as well as highly effective conservation impacts at low cost. Responding to these demands in good faith requires that the actors involved establishing conservation plans democratically, conduct conservation activities that demonstrate as much initiative as possible, and review and provide feedback into plans while monitoring and clarifying the results of such initiatives—that is, adaptively and collaboratively managing *satoyama* ecosystems. That being so, the advances in *satoyama* governance observed in the Niiharu District can be seen as inevitable outcomes reached when striving to meet the demands of civil society.

The concept of eco-governmentality, which uses Michel Foucault's idea of governmentality, is useful in such an analysis (Darier 1999). "Governmentality"

refers to the internalization by people of certain norms and rationalities, and factors (such as knowledge and power) influencing how they act as subjects. In order for economically rational governance to function in a neoliberal society, citizen volunteers are encouraged to find problems that small government cannot address and to try to independently find solutions to them. Eco-governmentality, on the other hand, extends this concept not only to social systems but also to socioecological systems. In today's civil society, consideration of the environment is an important value, in addition to values ascribed to liberty and democracy. In order to adapt to a society governed through eco-governmentality, it is necessary to internalize a mindset or mentality of concern for the environment—that is, environmentality (Agrawal 2005).

From a third-party perspective, the evolution of eco-governmentality around *satoyama* seems completely appropriate. It is difficult to argue against a form of governance that maximizes *satoyama* ecosystem goods and services, based on democratic decision-making among actors, and takes advantage of public funding while also involving as much volunteer initiative as possible.

However, how do things look from the perspective of those responsible for *satoyama* conservation? In the Niiharu District, citizens are required both to work as needed to conserve biodiversity in the Citizens' Forest Protection Association and to take on suitable responsibilities as city park managers. For example, a particularly large governance burden was placed on Ms. Y (born in 1964), executive secretary of the NPO that operates Niiharu Satoyama Park and a key person for *satoyama* governance in the region. She reports that, in addition to the large volume of office work imposed by the city, she is also required to allocate a great deal of time to coordinating affiliated groups and government officials with whom she is collaborating and also has her hands full dealing with case study inspections, cooperating with academics and students on research, among other duties.

The existence of Ms. Y, who has been operating the Niiharu Satoyama Park and organizing a range of actors for many years, with a wealth of knowledge and experience relating to *satoyama* conservation, is a significant factor in the strong functioning of *satoyama* governance in the Niiharu District. Responsible local government staff rotate positions every 3 years or so, meaning that citizens with continuing involvement in the region are better placed than government staff to coordinate efforts relating to *satoyama* conservation in the district. In fact, because there is insufficient time for a proper handover of work within the government office every time the responsibilities of government staff change, asking Ms. Y to take the lead in these situations has become the norm.

However, because it is difficult to objectively evaluate her expertise as a coordinator, the salary paid to Ms. Y as executive secretary is kept at the level of the minimum wage, which is extremely low when compared to equivalent local government staff. NPOs may be organizations with an objective other than the pursuit of profit, but having specialist knowledge and experience, and the expertise to be able to coordinate volunteers, should surely be properly valued. Even so, NPOs are perceived as charitable organizations by the government, and there is a common perception that NPO staff can be treated as unpaid volunteers or part-time workers at

most. Ms. Y said, "The city government is asking us to work at the minimum wage level, so I don't think we're in a position to take responsibility. We don't earn enough money and yet we are even assigned detailed responsibilities." Even though she is proud to be involved in the conservation of *satoyama* that represents Yokohama City, she also feels that she is too ready to take on a similar level of work to government staff and often questions whether she can continue to work the way she is currently treated.

With the evolution of eco-governmentality, actors who progressively improve ecosystems through the pursuit of economic rationality and democratic decision-making processes become "environmental subjects" (Agrawal 2005). In socioecological systems governed by eco-governmentality, adaptable actors are cultivated as environmental subjects. The grumbles and frustrations one can hear from key people in *satoyama* governance in the Niiharu District seem to indicate the limitations of acting as exemplary environmental subjects.

A neoliberal reform of public services in Japan was carried out in the 2000s with cries of, "From 'public' to 'private'," and, "From government to governance." In particular, the Koizumi administration (2001–2006), under the economic policy slogan of "structural reform without sanctuary," promoted a policy of cutting public services by the government through privatization and other measures. However, even with loosened regulations, as can be observed in *satoyama* governance in the Niiharu District, important matters such as the forms of cooperation and ways of improving treatments are still positioned under government initiatives. Therefore, citizen actors who cooperate with the government are liable to change into low-cost supplements for administrative functions.

These issues cannot be solved merely by holding government accountable. This is because such a transformation is desired in civil society, in which personal liberty is respected and which demands the accountability of democratic transparency and processes. Civil society has actively introduced third-party evaluation in order to eliminate vested interests and obligations. Civil society has called for rigorous quantitative assessments of environmental, economic, and social outcomes in order to know the cost-effectiveness of public services. This congregation of citizens demanding objective evaluation on the basis of distrust has gradually strengthened eco-governmentality.

5.4 The Limits of the Government-Led Satoyama Movement

5.4.1 Approaching Eco-nationalism and Volunteer Mobilization

In narrating the Satoyama movement from its source, its origin was with citizens more than with the landowners taking ownership of the problem of the abandonment and degradation of secondary nature that people had managed for many years, building a movement in order to create a community that would independently manage such areas as new commons. However, as is evident from the discussion to this point, the movement demanding environmental autonomy may become just

another cog in the governmentality machine, taking on functions required by the socioecological systems increasingly governed by eco-governmentality. How should we respond to this soft form of governance? In order to consider this question, let us move away from the example of Yokohama City and look at the development of the Satoyama movement since the 2000s.

From the 2000s, when *satoyama* conservation was adopted as a national political objective, government documents have been seen to make an easy connection between nostalgia for *satoyama* and nationalism. In the "2010 National Biodiversity Strategy" (Ministry of the Environment 2010), for example, because "Rather than standing in opposition to nature, the Japanese people [have formed] a diverse culture that cultivates various forms of knowledge, technique, distinctive arts, and rich sensitivity and aesthetic awareness, in forms that respond to nature," it is stipulated that people should "learn the traditional wisdom and perspectives on nature that have valued nature and resources, which are limited (as seen in *satoyama*)." Here, one can recognize eco-nationalist ideas, looking to solve environmental problems by spreading the traditional culture of one's own country or ethnic group. Adoration for *satoyama* based on such an ideology can be criticized for taking up only one aspect of the past, which is desirable to people today, while ignoring past problems such as pollution. Not only has the ideal relationship between people and *satoyama* that the government is praising almost vanished in modern Japan, but it cannot be said that *satoyama* landscapes were always good environments even in the past. Research in environmental history has shown that there are many forests blessed with abundant greenery today that were bare mountains or grassland in the past (Chiba 1956[1991]; Totman 1989; Matsumura and Kohsaka 2010; Ogura 2012).

Despite these issues, while the government vigorously pushed for neoliberal reform, local governments in various areas tried to nurture citizen volunteers to manage poorly maintained public lands, in order to achieve the goals of *satoyama* conservation. The Forestry Agency launched the Forest Volunteer Support Office in 2003, increasing the number of groups working to maintain forests for public benefit by promoting a national movement to accelerate such activity.

Figure 5.6 shows changes to the number of groups subject to the "*Mori Zukuri Katsuyō ni tsuite no Jittai Chōsa* (Survey into the State of Forest Creation Activities)" conducted every 3 years by the Forestry Agency. The number of groups increased steadily since the start of the survey in 1997. However, there has been a stagnation or slightly downward trend since coming into the 2010s, and it seems that membership has stalled and participating members are aging, with a not insignificant number of groups in a dormant state.

Specifically, Fig. 5.7 shows responses to the question of which age range most participants in each group's activities belong to, and two-thirds of groups responded that most participants are in their 60s or over (1325 valid responses); many groups are facing the problem of whether or not they will be able to continue in the future,
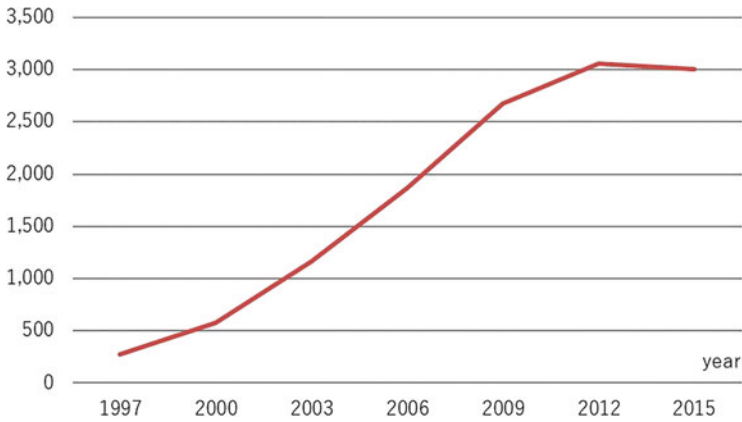
Fig. 5.6 Numbers of groups subject to the "*Mori Zukuri Katsuyō ni tsuite no Jittai Chōsa* (Survey into the State of Forest Creation Activities)" (Created with data from the Moridukuri Forum (2016))
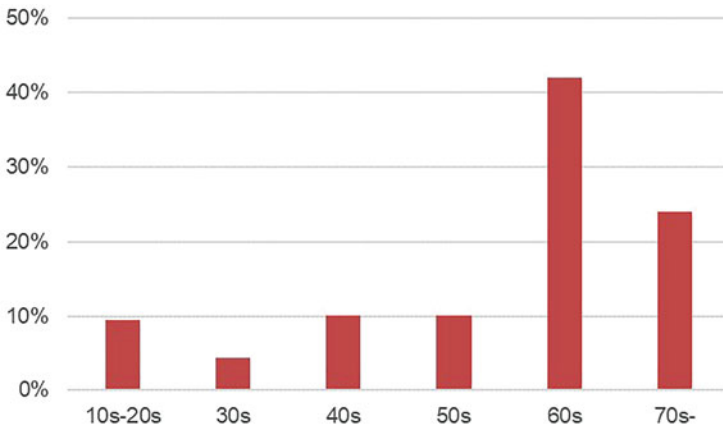
Fig. 5.7 Age range to which most participants in group activities belong

due to young membership not increasing.[5] Volunteer activities taking responsibility for *satoyama* conservation have been promoted up to this point, but there seems to be no way to break through the impasse today.

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[5] Based on results from the 2018 "*Mori Zukuri Katsuyō ni tsuite no Jittai Chōsa* (Survey into the State of Forest Creation Activities)" conducted by the NPO Moridukuri Forum with assistance from the Forestry Agency.

5.4.2 The Significance of Citizen Participation Breaking From Governmental Environmental Policy

Why have efforts by national and local governments to mobilize volunteers to promote *satoyama* conservation not been effective?

For one thing, there is a shortage of volunteers. To begin with, abandoned *satoyama* covers a vast area that cannot be managed through a reliance on volunteers. Nevertheless, until the early 2000s, there were many people who participated in volunteer activities as a second life after reaching their 60s and retiring. However, in 2004 retirement age was mandatorily extended to 65, and it appears that the number of people who think they will work during their working years and then head into volunteer work after retirement has decreased. Additionally, Japan's population peaked at 128 million people in 2008 and then entered a period of decline, with an accumulation of social problems associated with a declining birthrate and aging population (such as pensions, health care, and nursing). In today's world, in which it is difficult to forecast prospects for the future, it seems that even if young people have a high environmental awareness and strong sense of social responsibility, it will be difficult for environmental conservation volunteer activities to continue.

As another reason, one can point to the fact that the significance for people participating in the Satoyama movement is being neglected. Unlike conventional nature conservation movements that involve the protection of nature from human interference, this movement was a novel approach whereby humans actively intervene in order to preserve nature. Previously, the relationship between humans and nature had to be eliminated whether one was protecting nature or pressing on with development. In contrast, the Satoyama movement from the 1980s to 1990s reestablished, in a form appropriate to the times, the relationship between humans and nature that had formerly been observed in *satoyama*, and saw citizen participants creating new commons for themselves through collaborative and adaptive management. Where urbanization had led to a decline in nearby green spaces, and remaining *satoyama* lands were protected by the shield of a green lands system, the Satoyama movement had succeeded in fundamentally questioning the tendency of government to monopolize decisions about the appropriate form for those spaces. Therefore, if the activities of the people involved are evaluated by the government only in terms of biodiversity conservation and wrapped up in its environmental policies, then it will become difficult for this citizen-inspired movement to exercise and enhance its potential.

For example, there are many restrictions on activities in *satoyama* managed by the government. Although people used to make bonfires in *satoyama* and use blades for their management, the use of fires and blades is prohibited in order to avoid risks, due to their dangerous nature. This makes it extremely difficult to pass on important cultural aspects of *satoyama*. Furthermore, because it is a principle of volunteer activity that it be uncompensated, it is not permissible to generate profit by using the resources generated from *satoyama* conservation work. Additionally, uniform fairness is emphasized, and people with a deep connection to the land are treated equally

to those visiting it for the first time. Meanwhile, in order for conservation activities to receive government approval, an enormous amount of work is required preparing complicated documents.

Under such constrained conditions, it is difficult to pass on the *satoyama* culture that has been handed down in a region, the cyclical use of resources comes to a halt, and it becomes challenging to foster a sense of self-government based on collaborative and adaptive management. Still more, the *satoyama* that do remain together around cities are put under the shield of a green space conservation system in which involvement with *satoyama* is only possible under government control.

5.5 A Quiet Movement to Make Use of *Satoyama* in City Suburbs

5.5.1 A *Satoyama*-Oriented Lifestyle and Perspective on Work

What are the essential values and practices of the original Satoyama movement, and how can they be passed on to a new generation of citizens? In order to answer this question, let us look at activities that young people have been undertaking in *satoyama* in city suburbs in recent years.

The 2008 global financial crisis and the 2011 earthquake served to show modern urban residents how fragile a system their lives had been entrusted to. In particular, the Tōhoku earthquake, tsunami, and the Fukushima nuclear disaster of March 11, 2011, made us realize what our lives had been supported by. After that, large-scale demonstrations against restarting nuclear power plants occurred at many locations, including in front of the prime minister's official residence; even in Japan, where international comparisons show that a remarkably low proportion of people participate in demonstrations compared to other countries, it was said that ordinary people started participating in demonstrations. Since the Fukushima nuclear disaster, public opinion in favor of abandoning nuclear power has remained at high levels[6] but even in the fifth Strategic Energy Plan, revised in 2018, nuclear power remains an important source of baseload power, and it is written that measures for reactivation and the handling of spent fuel which prioritize safety are being steadily advanced.

Some people, having gone through such times, may feel that nothing has changed even after the occurrence of this severe nuclear disaster. On the other hand, however, people have emerged who are trying to autonomously create a living from the resources and spaces of *satoyama*, which have limited market value, and improve the areas in which they live for themselves to the extent that they are able to take the

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[6]According to a nationwide public opinion survey conducted by the Japan Atomic Energy Relations Organization in 2019, 61% of people want to end nuclear power, compared to only 11% who want to increase or maintain its use. (accessed July 7, 2020: https://www.jaero.or.jp/data/01jigyou/tyousakenkyu_top.html).

initiative, rather than trying to change society by changing the larger political situation.

One aspect of such efforts is introduced in "*Satoyama Shihonshugi* (Satoyama Capitalism)," published in 2013 (Motani and NHK Hiroshima Bureau 2013). The term "Satoyama Capitalism" was coined with the idea of indicating a contrast to money capitalism, which relies on the procurement of money from global markets, and referring to another way, the idea of linking the unused resources of *satoyama* to economic activity. The book introduces examples such as power generation and heat supply using local wood biomass, jam production adding value to the local special fruits, and using abandoned arable land for grazing. These social businesses are provided as illustrations of the potential for businesses that make use of dormant local *satoyama* resources with the hope of revitalizing the regions as a counterbalance to overconcentration in Tokyo, and so their objective was not *satoyama* conservation. However, if commercialization is successful and abandoned *satoyama* are properly used, this could be connected to the conservation of biodiversity and ecosystem goods and services. Thinking this way, the potential of social businesses based on Satoyama Capitalism suggests itself as a way to counter the stagnation of the Satoyama movement, rather than trying to expand volunteer activities.

This movement is spreading steadily not only in regions blessed with vast *satoyama* resources, but also in the suburbs of the Tokyo metropolitan area. Many of its practitioners reconsidered their disconnected urban lives as a result of 3.11. In fact, in the fields of energy, environmental education, health and welfare, and community development among others, social entrepreneurs creating new jobs based on local nature and culture, and new farmers, have been appearing in urban areas. For example, there are people who climb high trees with ropes to perform pruning and trimming work, people who work on carpentry with wood from coppices, people who offer programs to experience nature in *satoyama* for children, people who have rented abandoned fields and turned their hands to farming, people who run events inviting urban residents to *satoyama*, and people who maintain bamboo groves as employment support and social participation for people with early-onset dementia. There are also people who, while maintaining a main business, create bread or processed agricultural goods by hand with an expertise in the locality, and people working on crafts or miscellaneous goods. People who operate local markets where such people congregate can also be reasonably included in this movement. These people are mainly in the late 20s to early 40s age range, overlapping with so-called millennials (Ito 2012; Matsunaga 2015).

They are trying to create jobs that make use of local *satoyama* resources at a level that is sustainable. Aiming for an appropriate work–life balance that does not overly focus on economic activity, they are very interested in a simple life that constrains unnecessary spending and considers how to generate profit without recklessly increasing sales. Working in city suburbs, they can start a social business by renting land and facilities at low cost using their personal network, creating websites at no cost, and raising money through crowdfunding. They respond to requests from the government with an awareness that they are not dependent on the government. They

Fig. 5.8 Changes to the
relationship between people
and *satoyama*

Prior to period of rapid economic growth

Forestry & Farmwork

Farmers → *Satoyama*

Food & fuel
(rice, vegetables, wood and coal etc.)

1990s to 2000s

Volunteer conservation activity

Citizen volunteers → *Satoyama*

Meaning / purpose

2010s to present

Using resources and space

Social entrepreneurs & new farmers → *Satoyama*

New ecosystem service businesses
(environmental education, health and
welfare, community development etc.)

are trying to create the kind of work that they would like in the society of the future, while taking on risks themselves as practitioners.

Each of these efforts is small in scale, has an individual character, and a different visual form. Nevertheless, they are each loosely connected and form a network that can cooperate when necessary. It appears that there is a shared sense of the times and of a set of values that underlies their activities, and this could be recognized as a quiet movement. And while it may currently be difficult to recognize in these efforts the politics that appears in traditional social movements, this voluntary latent network may itself be a modern social movement.

These activities may be similar to the ecosystem conservation activities of citizen volunteers in terms of taking place in *satoyama* lands, but they have followed a separate path of development. They are interested in *satoyama*, which are unused local resources, due to a focus on the local level against a background of unceasing globalization and a hope for social businesses that create solutions to environmental and social problems through economic activity.

Figure 5.8 sets out changes to the relationship between people and *satoyama* in city suburbs, as described above, in three stages. (1) Before the period of rapid economic growth, farmers undertook forestry and worked in the fields in order to obtain food and fuel, but after the fossil fuel revolution there was an increase in areas that could not be maintained. (2) From the 1990s, citizen volunteers started

participating in *satoyama* management in search of meaningful work, and their activities spread throughout the country. However, as we came into the 2010s, there were problems with the numbers of participants stalling, and participants aging, leading to a rise in groups that were unable to continue with their activities. (3) After the Tōhoku earthquake and tsunami of March 11, 2011, and the accompanying nuclear disaster in Fukushima, there have been strengthening private efforts to create new ecosystem services and create work, as social entrepreneurs and new farmers use local *satoyama* resources to improve their regional environment and society.

5.5.2 The Potential for Creating Work Using *satoyama* in City Suburbs

Efforts since the 2010s to improve local nature and society in one's community have objectives in common with those of the Satoyama movement of the 1980s and 1990s. Might it not be possible to see these dispersed and individual efforts as the manifestation of a social revolution, albeit one that is occurring quietly and thence to amplify this swell of effort? Thinking along these lines, I launched the "*Machi no Chikaku de Satoyama o Ikasu Shigoto Zukuri* (Creating Work using Satoyama in City Suburbs)" project in 2016. Specifically, I have created a widened network while holding frequent symposia and workshops for those interested in this latent set of values and set up a website in collaboration with volunteer groups in order to present such efforts. Rather than providing direct support for entrepreneurship and the establishment of businesses, this is creating a space where those with an interest can exchange necessary information with each other and a space where subsequent action can arise in context. Indeed, new local markets have begun, and new organizations with the objective of fostering leaders in *satoyama* regeneration activities have been formed, as a result of people meeting in this space.

The reference to "Satoyama in City Suburbs" in the project name reflected a desire to take on the current of the Satoyama movement, which began from city suburbs. Also, because there are many people who have a conception of work as something done in cities and living as something done in the countryside, there is also the conviction here that work and life can be achieved in city suburbs. *Satoyama* in city suburbs are not large, but characterized by an abundance of people living nearby. The value of this land would surely increase significantly if comprehensive services such as education, medical care and welfare, sightseeing, and recreation could be offered to the urban residents living close to *satoyama* in these areas.

The word "*Shigoto*" within the project name is also important. The philosopher Uchiyama Takashi noticed that there were two types of traditional regional community labor in Japan: "*kasegi* (earning)" and "*shigoto* (work)". The term "kasegi" refers to labor that the villagers do not really want to do but are forced to do in order to earn money. In contrast, what is expressed in the term "work" is something that must be done in order to live in the village. For example, they had to grow subsistence crops on the field, manage trees in the mountains, fix the roads in

collaboration with the neighbors, attend village meetings, and protect the family. In other words, "*kasegi*" is the undertaking of labor for money and "*shigoto*" is human activity that maintains local nature and society, and the lives of those involved. (Uchiyama 1988). The efforts of young people visible in *satoyama* lands in city suburbs are clearly oriented toward "*shigoto*" rather than "*kasegi*". Living in a low-growth era, what we need is to consciously create work in order to improve the nature and society around us, rather than earning in order to support consumption.

I started this project because I wanted to accelerate efforts to protect places where people can live independently, by shifting the topology of political and economic movements. Of course, political and economic trends have a major influence on the lives of individuals. However, the nature of this influence is uncertain, and the period of slow economic growth can be expected to continue. In order to survive in such a society, it would be good if we were able to acquire the ability to assemble sustainable lives for ourselves and to maintain and manage the surrounding environments that support such lives. In order to achieve this, we need to work and create value from the resources of *satoyama*, which are not valued by neoliberal and conventional markets. We also need to perceive their noneconomic value and use such valuations to improve quality of life. Learning the techniques to achieve this would serve us well. Furthermore, the *satoyama* in city suburbs could be described as a treasure trove of unused resources, an environment where we can use these techniques, and which can certainly contribute to solving urban problems other than simply the survival of individuals.

Satoyama regeneration will not progress if biodiversity conservation is not established as an objective. It will progress energetically when people think of *satoyama* as necessary for living well together and try to manage *satoyama* ecosystems themselves. The trial and error of the Satoyama movement, which began in the mid-1980s, has continued up until today from both above and below, but has not yet arrived at its objective. Whether we are able to transform the relationship between people and nature and move toward a sustainable society in the future may be revealed by the direction taken by the work being creatively developed in *satoyama*.

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Recontextualizing Wildlife Management to Community Revitalization

6

Katsuya Suzuki

Abstract

In rural Japanese communities undergoing depopulation and aging, human–wildlife conflicts are becoming a serious social issue, giving rise to concerns about the sustainability of these communities. To resolve this issue, research on and implementation of community-based wildlife damage management are advancing and achieving results in some communities. There are many communities, on the other hand, where the results are not turning out as expected. Sociological research on underlying values among citizens in these areas has indicated a diversity of values regarding wildlife and countermeasures to human–wildlife conflicts, and limits to approaches aiming solely to reduce human–wildlife conflicts. As depopulation and aging are expected to continue across these regions in the future, what will be needed is an approach that aims to connect all of the immediate issues being faced locally with issues regarding inclusive and effective solutions to human–wildlife conflicts. Effective solutions must also resolve these issues while designing site-specific processes in service to community revitalization. Also, it is anticipated that not only will the people affected by human–wildlife conflicts collaborate, but also too will people with diverse skills and knowledge. As such, through collaborative, co-creation of methods by which the community can be enlivened, given the impetus for inclusive solutions to human–wildlife conflicts, they may also create new goods, services, and values that have not been seen before in the rural communities of Japan. While the demand to resolve the social issue of human–wildlife conflicts in Japan grows bigger on the one hand, a problem exists with regard to insufficiencies of human resources and institutions in Japan's local government bodies that have expertise in these best practices. In the future, a role

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for social sectors is anticipated in supporting local inclusive and effective solutions to human–wildlife conflicts, themselves in service to community revitalization while teaming up with local government bodies and other organizations involved.

6.1 Human–Wildlife Conflicts in Rural Japan

6.1.1 Japan's Depopulating Rural Communities and Human–Wildlife Conflicts

The landscapes of Japan's rural communities are known to have been maintained through the daily lives of rural citizens engaging in activities such as farming the fields and paddies (including *nora*), coppicing in the hills, and clearing weeds from field borders and streams. These historical activities were in response to demand for life resources such as food, clothing, and other materials; agricultural resources such as fodder and fertilizer; and energy resources such as firewood that were necessary for people's lives. Such landscape, which has historical interaction of human and nature, is called *satoyama*. *Satoyama* covers agricultural (*nora*), village area (*mura*), and forests (*yama*).

Satoyama was a place that was used and managed as a cooperative system, where festivals and rituals were conducted to give prayers and thanks for the harvest or console the spirits of the deceased. The demand for these "cultural resources," however, has gradually faded in importance due to modernization of lifestyles and agriculture such as revolutions in fuels and fertilizers and development of distribution systems. Furthermore, Japan's rural areas have led the world in population decline and aging. As a result, village functions have declined, and it has become hard for them to maintain the *satoyama* landscape and the traditional rites and festivals that have been passed down from long ago. Now, yet another problem is adding to their troubles, that is damage to agriculture and forestry caused by wildlife.

In recent years, there has been a sharp increase in conflicts between wildlife and human activities in many parts of the world. Across rural regions of Japan, the main animals causing damage include the sika deer (*Cervus nippon*), Japanese wild boar (*Sus scrofa*), and Japanese macaque (*Macaca fuscata*), which are causing serious problems by damaging agriculture and forestry and diminishing human quality of life. According to Japan's Ministry of Agriculture, Forestry and Fisheries (MAFF), damage caused by mammalian wildlife amounts to about 16.1 billion yen in 2020. The seriousness of the economic damage to local agriculture and forestry goes without saying, but what cannot be overlooked is the impact on daily life when

wild animals invade villages and the noneconomic damage to household vegetable gardens cultivated diligently by communities' aged citizens day by day.

For example, by digging up embankments and ridges between rice fields, wild boars ruin farm roads, and agricultural waterways, necessitating expenditures of large amounts of money and labor to repair. Non-native nutrias (*Myocastor coypus*) build nests by tunneling into embankments of rivers and small reservoirs, giving rise to concerns about cave-ins or collapses. Macaques even invade people's homes, entering storerooms and houses and damaging parts of the buildings. In not a few areas, people face danger close at hand from physical harm by Asian black bears (*Ursus thibetanus*) that invade their backyards to eat persimmons growing on trees in their gardens. In areas where sika deer numbers are growing, their grazing causes understory vegetation to decline on mountain slopes near villages, resulting in loss of the forest's water retention faculty, increasing the risk of soil runoff and other issues.

An even worse impact is the harm done to local agriculture for personal use. Farming for personal use has enriched the daily meals of families since ancient times and is part of their lives and cultural traditions. It also provides joy and a sense of purpose to older people in the community. In many of Japan's rural communities these days, it is not difficult to obtain vegetables from supermarkets and other stores, but the luxury of being able to grow food for oneself, harvest fresh, juicy vegetables and prepare and serve them that very day is the true charm of farming village life. There are many people who continue farming not only for their own household's consumption, but also from a wish to provide fresh vegetables that their children and grandchildren can enjoy without worry (Suzuki and Muroyama 2010). Having others enjoy the produce and hearing them joyfully exclaim "that was delicious" provides an incentive for some of them to keep farming.

Currently, human–wildlife conflicts are recognized as the most serious problem facing Japan's rural communities, but it is not only an economic impact expressible in terms of monetary damage. The negative impacts from wildlife affect not only farms, but also citizen safety and security and include many forms of diminishment of the prosperity and well-being of rural community life. If wildlife repeatedly damages the fields that residents have put arduous work into, they gradually lose what little joy there is in harvesting their own fields, and some farming families have abandoned the fields they had been cultivating until recently. To make matters worse, in rural communities where depopulation and aging are progressing, there is a shortage of manpower available for human–wildlife conflict resolution. If not enough context-specific solutions can be implemented as that shortage progresses further, the damage becomes more and more serious, and the number of people giving up farming increases further. Young people attracted to rural communities who move in and newly take up farming find "no one can farm in such a place," and they give up and leave the community. As a result, rural communities become more and more impoverished. Human–wildlife conflicts threaten the continued existence of rural communities, not to mention the will to engage in farming.

6.1.2 Local Factors Exacerbating Human–Wildlife Conflicts

The role played by local citizens is considered important where human–wildlife conflicts are a problem in Japan, as in many activities concerning environmental conservation. When considering factors in the occurrence of damage caused by wildlife, increasing numbers of animals are not necessarily the sole cause. Rather, it is thought that the villages themselves have environments that attract wildlife, and therefore, their habitat distribution shifts toward areas of human habitation.

To wildlife that live by seeking out small amounts of food in forests, farmed vegetables, fruit, and other crops high in nutrition and digestibility are an attractive food source like nothing that has ever existed in the forest. The edible parts of crops are abundant as well, and they are cultivated intensively in farmlands, which can thus be said to have extremely high feeding efficiency and thus an ideal place for wildlife to eat. What these wild animals are feeding on in the villages consists not only of produce needed by people for food. There are also many trees around the villages such as persimmon and chestnut that people are not currently utilizing for food. Unharvested vegetables past their prime may be left in the field, or there may be places where food scraps, vegetable waste, and such are dumped at the side of the fields or in the village that wildlife feeds on (Fig. 6.1). These include things that people do not "sense as damage," but they are a high-quality source of food for wildlife, and villages with an assemblage of these kinds of feeding places can be said to be a highly attractive environment that does not exist in the forest.

While villages have favorable conditions in terms of food, they also have disadvantages such as frequent chances to encounter people, dogs, and other dangers, making it difficult for wild animals to ensure their own physical safety. However, depopulation and aging of rural communities have proceeded in recent

Fig. 6.1 A troop of monkeys relaxed and eating in the vegetable garden

years and new rules require dog owners to keep their pets tethered. The *satoyama* groves are no longer being maintained, so thick bamboo forests and copses are spreading to the immediate vicinity of villages. These help wildlife approach closer to villages through abandoned agricultural lands (*nora*), which increase year by year, and thus providing further cover for wildlife entering villages (*mura*) areas.

Even where tangible technology is employed to prevent damage, many issues arise. For example, protective fences can be an excellent countermeasure if used properly, with high immediate effect. If fences are built using wire netting or other netting materials that are too high for animals to cross over, penetration by animals can be physically blocked. For macaques and other able tree-climbers, electric fences, in which high-voltage current is passed through electric wires set at certain intervals in the fence, providing an electric shock whenever touched, are an effective device for preventing penetration beyond the fence. Recently, various protective fences have been developed that provide protection against animals with different behavioral characteristics, and the cost of installing them has become quite cheap compared to initially. However, the characteristics of the fences' structure and the nature of the animals they guard against are not fully understood yet, and there have been not a few instances where trouble was taken to install effective protective fences only to find their function could not be fully achieved (Suzuki 2007, 2009, Suzuki and Muroyama 2010).

There is also a method of protecting not only individual farmlands, but entire villages by installing sturdy permanent fences of tough material like metal netting, spanning long distances such as along forest edges and through mountainous areas. The greater the scope of the fences installed, the broader the area protected by them, so at first glance they look like an effective countermeasure. What one has to pay attention to first, however, is that protective fences are installed for long periods outdoors where they are exposed to the elements, so if they are left untended problems will inevitably arise such as damage from falling trees, causing breaches through which wildlife can find ways to enter (Fig. 6.2). For that reason, to maintain the fences' effectiveness, it is absolutely crucial that the citizens perform the task of checking them on a daily basis, and the larger the scope of the fence the bigger that burden will be. Long fences also cost a lot, so almost all of them have been built using subsidies from the national or local governments, but thus far almost no information has been presented beforehand about what is involved in their maintenance. As a result, the villages fail to establish sufficient systems for checking and repairing these fences, resulting in gradual loss of their effectiveness in many cases. On the other hand, villages that assign responsibilities and conduct regular inspections, making efforts such as quick remedial action when problems are discovered, and soundly establish a system for maintaining their protective fences (Fig. 6.3) demonstrate high effectiveness over the long term. Even so, villages where depopulation and aging are progressing are likely to face shortages of people able to undertake this as the years goes by and many community members have concerns about continuing maintenance in the future.

Fig. 6.2 The tree fell down and breached the fence to prevent wildlife

6.2   Re-Contextualizing Wildlife Management in Pluralistic Values

6.2.1   Promoting Community-Based Wildlife Damage Management and Issues Involved

In recent years, an evolving set of principles and practices has been presented in wildlife damage management, which are gaining respect on the scene for solving Japan's human–wildlife conflict issues. These practices seek to prevent wildlife damage efficaciously: By using knowledge of the ecology and behavior of the wildlife involved and by incorporating the actions of the farmers and other local citizens, as mentioned above, as integral factors in addressing wildlife damage (Inoue 2002; Muroyama 2003). Also, regarding the actions of farmers that are at issue, the necessity to provide a support system offering appropriate knowledge and information has been pointed out (Inoue 2002), and activities aimed at creating villages resilient to damage from wildlife under the concept of "village-wide" have shown increasing popularity across Japan during the past 15 years. The community unites as one for these activities, with the citizens themselves studying knowledge on factors in the occurrence of damage and implementing countermeasures to the damage, not leaving it up to the government to take measures for reducing the damage occurring in villages or individual farmlands.

Recently, the number of researchers and people engaged in businesses related to resident-led damage control has been increasing. Development of explicit

Fig. 6.3 Local citizens
maintaining fences

technologies that communities can implement, such as ways of managing farms that
do not attract wildlife and effective protective fences developed on the basis of
behavioral characteristics, and activities to propagate them are gradually increasing.
In addition, human resource development through workshops on human–wildlife
conflict solutions making use of this knowhow and financial support such as
subsidized projects are becoming more substantial year by year. Research results
establishing the effectiveness of community-based human–wildlife conflict
countermeasures have also been accruing (Saitoh et al. 2006; Yamabata 2010a;
Yamada 2012; Suzuki et al. 2013), and conducting human–wildlife conflict
countermeasures, village-wide with the community united together, is rated as a
desirable method for efficiently reducing human–wildlife conflicts. Recently,
villages have been noted that have made use of this support and successfully reduced
human–wildlife conflicts, and they are beginning to be introduced as a model for
other villages to aim for.

    However, while some villages are reporting successes from efforts like these,
there are many cases in which the district overall has difficulty making progress in
countermeasures. In not a few cases, even methods that have worked well in some
districts have had no effect at all when introduced in other districts. In the shadow of

each success, many failures lurk in obscurity. What problems are happening in the places where human–wildlife conflict countermeasures have been implemented? When places implementing human–wildlife conflict countermeasures were investigated, promoting enforcement of countermeasures to human–wildlife conflicts—a serious issue in farming and mountain districts—appears to match the goals of the community's citizens, but current conditions have arisen in which enforcement of these countermeasures is not necessarily accepted unconditionally.

6.2.2 At "Variance" With Communities' Diverse Values

Sociological research in recent years on dominant values among the residents of rural communities has indicated the existence of diversity in values regarding wildlife and human–wildlife conflict countermeasures. For example, even if human–wildlife conflict occurs, the residents' attitude toward it may not necessarily be negative. Diverse values exist, including affirmative values such as "They're charming" or "They live here," despite the damage being done (Maruyama 1997; Akahoshi 2004; Suzuki 2007). From the standpoint of implementing human–wildlife conflict solutions, in agriculture giving priority to social or spiritual values rather than economic incentives, such as farming for personal use, the value of the harvest may be obscure, and there are cases in which "damage is tolerated" where countermeasures could be taken (Suzuki 2007, 2009, Suzuki and Muroyama 2010). In the case of full-time farmers, on the other hand, it has been pointed out that they have the rational option of "taking no countermeasures" when making individual business decisions on measures that would not contribute directly to higher earnings, such as removal of things that attract wildlife, such as abandoned fruit trees that provide food for wildlife in winter (Suzuki 2013).

To reduce damage to oneself, it is natural to turn to self-supporting efforts, but the decision by affected farmers on whether or not to implement human–wildlife conflict countermeasures can be considered to be made on the basis of the projected results gained versus the necessary costs in terms of labor, time, money, and so on. For countermeasures that directly guard crops, such as protective fences, it is easy to calculate the value gained for the costs paid. However, countermeasure options such as control of abandoned fruit trees and other extant resources attracting wildlife within villages or maintaining forest-edge environments that make it difficult for wild animals to approach constitute measures expected to have indirect damage reduction effects, and the anticipated results for the costs paid by the famers are indistinct. In addition, awareness of the value of the results gained through these countermeasures is inconsistent. There are differences between full-time and avocational farmers, of course, and differences among people farming for personal use in terms of how the harvest is used and the amounts needed, and these differ again for each type of item harvested (Suzuki 2007). Moreover, many villages, in fact, include non-farming families too.

Village-wide solutions are effective at reducing human–wildlife conflict efficiently, but they require a targeted space and lots of work so they exert large social

and economic costs on communities. With regard to this, diverse values exist within communities. Also, human–wildlife conflicts are only one of many problems villages face, so in not a few cases "efficacy" for reducing human–wildlife conflicts may not be given top priority. The existence of such "variances" is a factor impeding the promotion of community-based human–wildlife conflict countermeasures.

Recently, where various environmental conservation-related projects have been carried out, problems have arisen as a result of "variances" between the values/ways of reckoning that have formed over the course of the history of the activities of a community's citizens and the goals/approaches deemed scientifically or socially "appropriate." The need for methods and schemes for recognizing such "variances" and rectifying them has been pointed out (Miyauchi 2013). Many districts where human–wildlife conflicts are occurring have insufficient knowledge and technology currently regarding human–wildlife conflict countermeasures, and one important course of action in the future will be popularizing and propagating the latest knowledge so that the citizens can easily make use of it. Even in cases where interest in community-based human–wildlife conflict solutions is low initially, there has been empirical research on raising citizens' awareness that has arisen from honest propagation efforts (Yamabata 2010b). It has been shown, however, that examples exist in which it was difficult to raise citizens' willingness to undertake this simply by providing knowledge and information on technology alone (Suzuki 2007). Also, in farming and mountain villages, resolving human–wildlife conflict issues is only one of various problems communities face, so there are indications that an approach is needed that looks at concerns familiar to each community's citizens (Makino 2010).

6.2.3 Re-Contextualization From Human–Wildlife Conflict Solutions Toward Community Revitalization

In coping with human–wildlife conflict issues, community-based solutions are essential. Even then, however, rural communities face depopulation and aging along with reduced village functions due to modernization of lifestyles and agriculture, as well as conditions in which it is difficult to maintain rural community resources. Furthermore, community values are diverse, never presenting conditions in which monolithic efforts would work in human–wildlife conflict solutions.

As depopulation and aging are expected to advance more and more in the future, how should the goals and approaches of human–wildlife conflict solutions be assessed? To escape from the vicious circle caused by human–wildlife conflicts in rural communities, an approach has been proposed that aims to solve the problem by linking human–wildlife conflict solutions with all of the familiar issues these communities are facing in their own context, while designing a process for recontextualizing appropriate solutions in the direction of "community revitalization" (Suzuki 2013). In addition, the necessity has been suggested that social sectors acting as intermediaries provide support for these kinds of efforts in a cooperative relationship with local governments (Suzuki 2017).

6.3 Co-Creation Through Social Sectors

6.3.1 Intermediary Support Aimed for By Social Sectors

Along this line of thinking, I teamed up with local citizens and activists supporting them, who were confronting worsening human–wildlife conflicts in the vicinity of Tambasasayama City, Hyogo Prefecture, in west-central Japan west of Kyoto to establish a nonprofit organization, *Satochi Satoyama Mondai Kenkyusho* (Research Institute for the Sustainable Advancement of Traditional Outlying and Mountainous Neighborhoods, SATOMON for short), in Tambasasayama in May 2015.

In teaming up with local municipalities and other organizations involved in and supporting communities' human–wildlife conflict solutions from a standpoint familiar to local community members, what SATOMON aims for is a model in which human–wildlife conflict countermeasures are used as an impetus for enlivening the community. Specifically, we aim to identify attractive features such as *satoyama* life and abundant seasonal agricultural and forestry products, to create related products, and through measures such as supporting local community businesses, develop a variety of businesses that can contribute to community revitalization. Together with the communities' citizens, we aim to convey the richness of the rural communities that they wish to continue protecting from human–wildlife conflicts, guard and share them together with people who sympathize with them, build networks to inherit them, and create social business models for their sustainable management (Fig. 6.4).
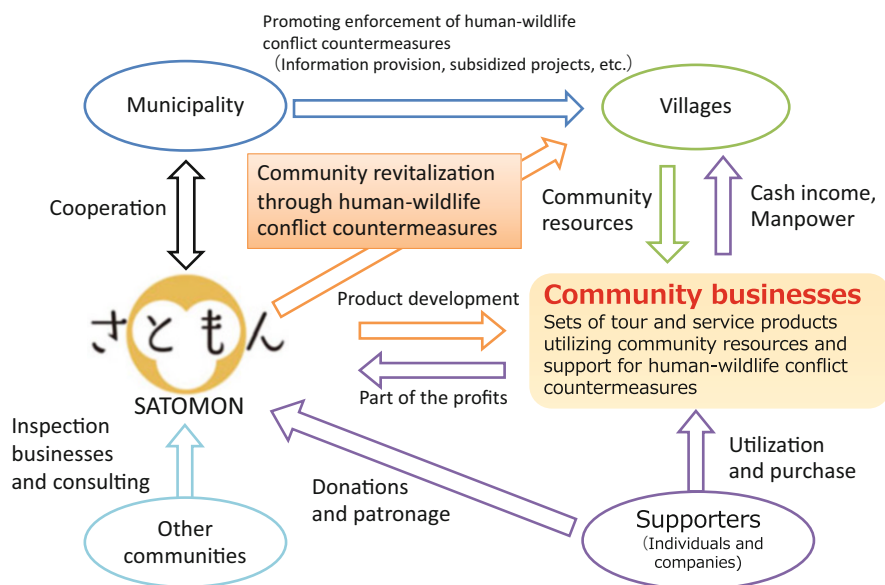
Fig. 6.4 The social business model SATOMON is working towards

Fig. 6.5 A owner family harvesting black soybeans with smile

Specifically, on a daily basis, we are maintaining a website, dispatching informa-
tion via SNS, and publishing an e-mail magazine to attract and maintain supporters.
We are also introducing efforts to resolve issues affecting the *satoyama* and other
rural areas, such as human–wildlife conflicts, and preparing a variety of venues for
involvement of outside human resources who are interested in helping.

For example, while it would be desirable for the communities themselves to take
the lead in implementing human–wildlife conflict countermeasures, they lack suffi-
cient manpower for their own citizens to handle it. Therefore, we provide a list of
human–wildlife conflict countermeasure options (such as bamboo forest and
satoyama grove maintenance, measures against abandoned fruit trees, and inspection
of protective fences in mountainous areas) and hold events for people supporting
human–wildlife conflict countermeasures, matching urban citizens interested in rural
community life with ways they can help. For people who have attended one event
and have further interest, we have plans for an ownership system through which they
can become involved in crop cultivation, making use of abandoned farmland and
thereby protecting it from human–wildlife conflicts (Black Soybean Ownership
System—featuring a local specialty)(Fig. 6.5) and are continuing to hold
bi-weekly volunteer activities (Fig. 6.6). Through these and other activities, we are
also creating a system that enables support to be provided to communities from afar
through things such as sales of crops protected against human–wildlife conflicts,
which can also sustain and expand their connection with the communities, in which
urban citizens can participate in ways suited to their own interests and concerns.

Fig. 6.6 Building protective fences around the rice field with volunteers

6.3.2 Linking Rural Communities and Cities Together in a Gift-Gift Relationship

Increasing the involvement of those living outside the region often means that they bring relevant knowledge and capacity to community revitalization efforts. These contributions, in turn, are reciprocated through the acceptance of outsiders into the community. For example, in the following responses to our questionnaire survey by urban citizens who had participated in a community's ownership system for 1 year, sympathy and affection for the communities' agriculture and lifestyle values can be seen, with the realization that these should be protected from human–wildlife conflicts.

> The information I could receive regularly, even regarding activities aside from events, and observing the growth process of the black soybeans made me aware of the difficulty of raising crops and hard work involved in harvesting them, and the beans we actually harvested and ate were delicious like nothing I've ever had before!! I have been able to learn many things about human-wildlife conflict solutions, and have gained a keen sense of the importance of activities to preserve Japan's agriculture and traditional foods. (Ms. O, Itami City)

> By experiencing black soybean production, I was able to get a sense of the thoughts of the people producing them for us. I became aware of how grateful we should be for agricultural crops. Moreover, they were delicious! (Ms. Y, Osaka City)

Until now, I thought that black soybeans were expensive, but when I found out the truth of how much sweat and toil goes into their production, I think they'd be a good deal at even higher prices. (Ms. I, Akashi City)

Until now, my thoughts on wild animals were "How cute!" But I got a sense of how difficult it is to coexist with nature. I became acquainted with the other participants and am really glad—it's like I have my own hometown in the countryside now. (Ms. H, Kobe City)

I took a stroll through the community and became aware of how full of treasures it is, not just the crops, but also the spiritual and local historical aspects. I think how truly awesome the density of these treasures is—they are all over the place. (Mr. A, Sapporo City)

From the communities' point of view as well, the local citizens gave their impressions about having received volunteer support and participation in events from outsiders and their contributions, as follows.

Every year, the resident living alone next door has the rice fields she has devoted the utmost care to torn up by wild boars and has to repair them repeatedly. It was getting to the point that she was losing her will to keep farming. This time, she received help. Thank you so much. My heart was so gladdened. (Beneficiary of volunteer work to repair a protective fence). (Ms. Y, Tambasasayama City)

In Tambasasayama we have Tamba chestnuts, *matsutake* mushrooms and many other diverse specialties. Of course, we also produce delicious rice not bested even by the famous rice from Uonuma in Niigata Prefecture, so if you are in the market for rice from other areas, buy some from our area. (Mr. M, Tambasasayama City)

We have benefited from interest by people from the city in the countryside and have seen many different ways of thinking. Just killing off pests to reduce their numbers as we've always done is not the only solution. I think we should consider how to set up our farmlands and local environment so that animals and humans can coexist here. (Mr. K, Tambasasayama City)

In rural communities where depopulation and aging are advancing, the functions of villages are decreasing, and they face difficulties not only with finding human–wildlife conflict solutions, but also with sustaining their *satoyama* landscapes and resources that were previously maintained through involvement in utilization. Currently, with the modernization of lifestyles and industries, values underlain by farming and lifestyles have diversified among citizens of communities facing human–wildlife conflicts. In other words, each community's conception of "what kind of farming and lifestyles to protect" from human–wildlife conflicts is becoming if anything more obscure.

In this context, making use of the vantage point of outsiders and their values related to nature can lead communities to see their own attractions and discover or

imagine new resources they previously had not realized they had. As the values of outsiders deepen their relationship with these local communities, they continue to shape the communities' future image and vision of what they would like to protect and to pass along to younger generations. Undertaking human–wildlife conflict solutions together with companions who share such goals means providing the communities not merely with labor, but also the shared goal of "community revitalization," and leads to further increases in people cooperating toward that (purchasing farm produce, asking for cooperation from neighboring areas, etc.)

Given the impetus of support for human–wildlife conflict solutions, the communities can offer chances for outsiders to enjoy the local rich natural environment, culture, and traditions and provide opportunities for them to obtain fresh farm produce directly from the producers. They can also offer attractive programs as a venue for environmental study and experiential learning. Offering these programs creates enthusiasts for the communities and is hoped to contribute to assurance of increased numbers of repeat visitors and even people relocating to the communities in the future. These collaborative efforts also develop community businesses that utilize the communities' resources in order to resolve issues facing the community using business approaches and enable economic results to be contributed to the communities involved.

Recently, Japan has been casting about for schemes to call for human resources, especially young people to come out to these communities that are experiencing manpower shortages due to depopulation and aging, and bring about changes. What is most desirable for the communities is that the emigrating (for permanent residence) population increase. However, for urbanites, the hurdles are high, with many disadvantages such as fewer conveniences, fewer medical facilities and schools, and differences in culture and practices. Temporary visits for sightseeing, on the other hand, do nothing to relieve manpower shortages, even if they provide some economic benefits. Here, a new kind of relationship is being imagined, in which outsiders, with their skills and resources, become repeat visitors and as their relationship with the community grows and their love of involvement itself in the community increases, they become involved in community-building. It is thought that even for resolving the conflicts between people and wild animals and to bring vitality to communities, it is important that this population be increased.

SATOMON is engaging in activities for the purpose of bringing together local communities and outsiders, not to gain something that neither side has, but to create a relationship of giving to one another the resources that each side can offer, such as knowledge, technology, and networks that can meet the other side's needs or solve their problems (we call it a "gift–gift" relationship, as opposed to a "win-win" one). This kind of relationship not only helps solve each other's problems and meet each others' needs, but by increasing the participants' sense of usefulness and self-esteem, can lead to more autonomous activities and make it possible to deepen a developmental relationship among all participants.

6.3.3 Toward Promoting Co-creation Through Participation by Diverse Human Resources

As depopulation and aging are predicted to proceed further in the future in Japan, new measures are required that not only reduce "damage" caused by wildlife through reliable methods, but also to bring vitality to these communities, using human–wildlife conflict solutions as an opportunity to shift the goal toward "community revitalization." To achieve that, methods need to be devised that use human–wildlife conflict solutions as an impetus and a means to revitalize the community, with involvement not only of the people directly affected by the damage, but of through the diverse human resources that locals and outsiders bring to these affected communities.

Hopeful future candidates for new participants in human–wildlife conflict solutions are not limited to urban residents. We are conveying our communities' call to those persons and institutions who have had little connection in the past with rural communities, such as enterprises, universities, and organizations outside the communities, as well as junior high and high school students, people living in residential districts, and housewives within the same local municipality. We are calling for the communities and new manpower to be united in a gift–gift relationship and for co-creation to be promoted with participation of diverse human resources, aiming to bring vitality to the communities involved while resolving their human–wildlife conflict issues. Tambasasayama has been holding a forum for this purpose once a year since 2018 (with about 200 people attending in 2018 and about 150 in 2019). In connection with this forum, it has also held a series of five lectures called "Experiential Course on Human-wildlife Conflict Solutions that Revitalize Local Communities" targeting people newly exercising responsibility, especially the local high school students. Through the methodology and technology of human–wildlife conflict solutions and experiences in the field offered by this course, the outsiders contributing participating take a look ahead at the advancing depopulation and aging of society, and consider specific ideas on how to support both human–wildlife conflict countermeasures and community revitalization in a workshop format, presenting their final plan proposals at the forum (Fig. 6.7). High school students have announced proposals such as for human–wildlife conflict tours to convey the reality of human–wildlife conflicts and community revitalization involving utilization of abandoned persimmon trees. High school students from within the area who had participated in the course or forum expressed the following thoughts on it.

> Even after I graduate from school, I want to be involved in some manner.

> I want to try actually implementing the plan we conceived.

> I never think about human-wildlife conflicts in daily life, so I am glad to have had the opportunity to learn more deeply about them, express my views and also think about them with everyone. I think learning and thinking about human-wildlife conflict countermeasures will have been useful when I become an adult and the time comes to contribute to my

Fig. 6.7 A scenario workshop for community revitalization

> hometown. I think this ought not be limited to Sasayama, but applied in resolving human-wildlife conflict issues in the many other communities where they are occurring

Thus, approaches and mechanisms are being considered to encourage participation by diverse human actors in the future, positioning human–wildlife conflict issues in the context of community revitalization.

These kinds of efforts are underway in other municipalities as well. In 2019, the town of Misato in Shimane Prefecture came up with the concept of "Misato Valley," the human–wildlife conflicts version of "Silicon Valley," centering on human–wildlife conflict solutions in which the community's citizens had been making united efforts and effective utilization of trapped wildlife as wild game for consumption. Universities, research institutes, enterprises, nonprofit organizations, and others from Japan and abroad have come together there under the theme of human–wildlife conflict solutions and developed approaches aimed at creating an environment where people, resources, and money gather. Tambasasayama and Misato concluded a partnership agreement in December 2019 for the purpose of promoting human–wildlife conflict solutions and for revitalizing their communities through the participation of a cross-section of stakeholders and skill sets. They are trying to convey to all of Japan the principle of linking human–wildlife conflict solutions with community revitalization and thereby to promote the sharing of know-how and exchange of human resources between municipalities. Co-creation by different types of people, enterprises, and organiza7tions with differing standpoints is anticipated to lead to the creation of new products, services, and senses of values never seen before in Japan's rural communities.

In the future, it appears that the movement for recontextualizing human–wildlife conflict solutions as part of community revitalization will be occurring all over Japan. For this to happen, the participation of a cross-section of stakeholders and skill sets not only from the community but beyond it as well will be necessary. The problem is who will ascertain the needs of potential stakeholders and take on the role of bringing them together with the community in a positive relationship. As the need to resolve the social issue of human–wildlife conflicts in Japan grows more urgent, another problem exists of insufficient human resources and institutions with expertise in this field among governmental bodies in Japan, who are in the position to provide official support to the citizens' efforts. This is a problem special to Japan, which has only a short history of managing its wildlife, but as the rural population ages and declines further in the future while the government tries to streamline its services, how to maintain and create human resources and systems with expertise to ensure a wildlife management system will be a pressing issue.

One form of governance anticipated in the future may be like the model introduced by SATOMON's example of providing support as an intermediary to communities for their human–wildlife conflict countermeasures and community revitalization, while the social sector forms ties with government institutions and related organizations. The conditions for managing these activities sustainably, however, have yet to be arranged. It is thought that at the very least, management rooted in the community is called for, but there are many things that must be considered such as how wide an area it can be applied to, what kinds of expertise and roles are required to be filled, what kinds of systems and links to governmental and other involved institutions and organizations to have, and how to procure funding for operations. On the other hand, if these new governance models are constructed, they will probably be applicable to many other communities facing similar problems. In the future, new governance models and best practices must be considered so that nongovernmental organizations are capable of both managing human–wildlife conflicts and revitalizing communities. These must occur while referring not only to the future efforts of SATOMON that have been described above, but also to the activities of nongovernmental organizations that are providing support as intermediaries for human–wildlife conflict management, natural resource management, and community revitalization for comparison.

These efforts will not only help pass along Japan's rich rural communities and their traditions to younger generations, but will also contribute to the creation of local societies that can coexist sustainably with diverse nature, including wildlife.

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How Urban fishers Listen to Nori Seaweed to Learn to Better Live with the Sea: The Importance of Ecological Reflexivity for Environmental Governance

7

Mayumi Fukunaga

Abstract

Among the values of environmental governance such as sustainability, resilience, and adaptability, ecological reflexivity seems an essential but elusive value, both among practitioners and in academic literature. Ecological reflexivity is the capacity of an agent, structure, or process in contextualized social–ecological systems (SESs) to recognize and reconfigure themselves in response to their reflections on the interactive impacts of their performances by transforming their values and practices. Although promising, this essential value remains only in the early stages of inquiry, both theoretically and pragmatically, even as chronic and acute human impacts continue to alter earth systems across socioecological scales. How might we incorporate ecological reflexivity, its ethical processes, and its virtuous outcomes, into SESs? This question is central to this chapter.

Specifically, this chapter illustrates how fisher communities in the Seto Inland Sea in Japan developed methods and critical interactions related to ecological reflexivity for environmental governance during their long-term efforts at regenerating the health and resilience of the Seto Inland Sea SES. In this region, spatial environmental governance had been institutionalized since 1973, initially in order to manage forms of pollution and in service to the rehabilitation of the "clean sea." Despite early achievements in this rehabilitation, the chronic loss of marine productivity has led to persistent suffering among these fisher communities since the 1990s.

The exploration of historical trajectories of the sea as an SES, including the experiences of multigenerational fishers, and of knowledge and schemes to adapt and manage environmental changes in order to promote resilient incomes—all

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these led fishers to recognize that their historical aspiration to better live *from/with the sea* as an essential reference could bring about adapted practices and relations, leading to a localized sense of ecological reflexivity. In particular, the fishers' ongoing dialogue through working with *nori* seaweed came to support them in their efforts to enhance the rehabilitation and regeneration of current and future resilience in their livelihoods, as well as the mitigation of present-day uncertainties, related to *nori* production. The fishers have thus focused their intergenerational and still-evolving sense of how to better live *from/with the sea* as a contextualized reference for ecological reflexivity, adapting their socioecological practices and relations in service to achieving more resilient livelihoods. This case study is an illustration that contributes to clarifying and contextualizing the notion of ecological reflexivity as linked to near- and long-term SES resilience and thus how to better live *from/with the sea* in service to fishers and the sea, thereby helping stakeholders to assure themselves as connected, sustained, and prosperous in their own resilience.

7.1 Environmental Governance with Reflexivity

7.1.1 Essential Values for Environmental Governance

Environmental governance is a mechanism to influence the identities, relations, and trajectories of social–ecological systems (SESs). What constitutes foundational values in effective environmental governance has been explored and established (Chaffin et al. 2014; Erickson 2015; Folke et al. 2005; Kay et al. 2001). For example, to address complexity and uncertainty in SESs, adaptability and resilience have been seen as the leading values for adaptive governance, which in turn aids flexible and integrative forms of policy-making and management across scales (Folke et al. 2005; Olson and Gunderson 2006). Adaptive governance also intervenes in a continuous feedback loop of reconstruction, preservation, and disturbance, with such interventions further aimed at enhancing resilience and robustness (Chaffin et al. 2014; Kay et al. 2001; Olsson et al. 2006).

Additionally, to manage competencies and to develop collaborations among actors seeking shared futures, legitimacy functions as an underlying value, practice, and aspirational outcome for environmental governance. Amid such legitimatizing competencies and collaborations, we encounter vocabularies such as future-oriented scenarios, visions, and goals that are contested, refuted, negotiated, revised, and even replaced with ones newly and iteratively produced. The legitimatizing processes that stakeholders bring to questions and decisions about where these futures might go,

can be a co-creative social learning experience, and they can challenge the grounds for contributions to science, local values and norms, and even historical precedent (Armitage, De Loë, and Plummer 2012; Awung and Marchant 2018; Decaro et al. 2017; Fukunaga 2013). Furthermore, assuring that governance is democratic—open, fair, consistent, and just—in procedures, participation, and distribution is another penetrating value in practice and a virtuous goal in all stages and processes of environmental governance. While other essential components are instrumental for managing governance, fairness and justice represent core ethical practices and ethical outcomes that reflect how human society should be in SES relations and outcomes (Awung and Marchant 2018; Malin and Ryder 2018).

7.1.2 Ecological Reflexivity as a Core Value of and Ethical Aspiration for Environmental Governance

In efforts to achieve and maintain socioecological abundance and resilience, the transformative-ness of individual, group, institutional, and organizational actors has also been recognized as central in guiding social learning among environmental stakeholders (Castro-Arce and Vanclay 2020; Chaffin et al. 2016). Such transforming processes require being reflexive through dialogues with other actors; reflexivity is thus another core pragmatic value embedded in effective environmental governance (Hendriks and Grin 2007; Dryzek and Pickering 2017; Meadowcroft and Steurer 2018) and is associated with sociological reflexive theory (Beck et al. 1994). We face and live with uncertain, open, and problematic futures more than ever in late modernity, where spatial and meaningful boundaries of our cognitive and experiential worlds become subsumed or marginalized due to globalized mobilities of hegemonic forms of capital, commodities, state and corporate actors, and people. Both individual persons and social structures interactively monitor, reflect, reproduce, and then monitor again, seeking relevant narratives and identities, instead of organically enabling engagement and participation. Furthermore, in the Anthropocene, as human activities increasingly influence and change regional and global earth systems, such reflexive explorations face an urgent need to avoid path dependency, which has contributed to ecological degradation, exacerbated disruptive feedbacks, and marginalized and ignored the voices of nonhuman actors (Dryzek and Pickering 2017; Pickering and Dryzek 2019). In other words, the conditions that we now face amid the Anthropocene demand reflexivity through dialogues with nonhuman actors, which we must explore through our individual and shared narratives and identities, and through more cognitively and consciously engaged partnerships with nonhuman actors.

As for environmental governance, ecological modernization theory extended its theory to introduce an ecological orientation into conventional institutions such as markets, nation-states, and political systems for adapting to environmental changes and to near and long-term uncertainty. In the main, these extendings have too often focused on quick and effective institutional responses to changes in ecological

conditions and on forces to internalize motivations for creating innovative ecologically oriented structural changes (Mol 1996; Voß and Bornemann 2011).

Political scientists J. S. Dryzek and J. Pickering have engaged the concept of "ecological reflexivity," framing it as concerned with social–ecological systems rather than just human systems and human–actor-centered institutional changes as ecological modernization has evolved. They have defined ecological reflexivity as the ability to listen to and to interpret signals from the nonhuman world (Dryzek and Pickering 2017; Pickering 2019; Pickering and Dryzek 2019). With the revision of Dryzek's conceptualization of reflexivity, Pickering paraphrased ecological reflexivity as an analytical framework for human–actor to listen consciously to ecological voices, as follows:

> the capacity of an entity (e.g. an agent, structure, or process) to: recognise its impacts on social-ecological systems and vice versa; rethink its core values and practices in this light; and respond accordingly by transforming its values and practices. (Pickering 2019: 1150)

This conceptualization contains recognition of ecological contexts and sensitivity to ecological feedbacks, which can cultivate cognitive or conscious efforts to achieve ethical inter- and intra- generational human and nonhuman relations. At the same time, how to create relevant reflexive actions through dialogues with nonhuman actors requires more theoretical and empirical explorations, especially through an abundance of case studies. That is, how can we consciously create dialogues with nonhuman actors so that we may recognize heretofore unknown trajectories of relations, and how might we adapt these in service to near- and long-term abundance and resilience for humans and nonhumans and their habitats?

This chapter presents a case study of how fishers in Japan's Seto Inland Sea came to develop a contextualized and ethical ecological reflexivity comprised of intra-species and inter-species processes, relations, and interactions through their ongoing dialogues with *nori*, a form of seaweed that is farmed commercially in the region and which we can now posit as a kind of *SES indicator species*, a bioindicator of abundance, resilience, and thus health in the SES. This case study seeks to contribute to showing how ecological reflexivity can be theorized as embedded in and central to contextualized environmental governance, leading to bottom-up theoretical insights. Already, anthropological and sociological literatures have accumulated theories and illustrations on more-than-human agencies and multispecies politics and ethics, associated with actor network theories (Callon 1986; Haraway 2016; Swanson et al. 2018). This chapter further contributes to such more-than-human agencies and perspectives. In particular, it characterizes the political regimes inherent in environmental governance in the Seto Inland Sea SES and frames historical, con-temporary, and future-oriented scenarios that fishers came to envision and enact through their intergenerational practices and relations with socioecological actors such as the *SES indicator species*, *nori* seaweed.

7.1.3   Case Study: Dialogues Among Fishers and *nori* Seaweed Co-Creating Ecological Reflexivity

The case study illustrates how the essential practices and relations that define ecological reflexivity arose among local fishers in their cognitive and conscious efforts for better environmental governance in the Seto Inland Sea region of Japan. Due to fishers' historical experiences of acute and chronic environmental degradation after World War II, their efforts to establish effective spatial marine governance have included relevant local-to-national stakeholders in the service of rebuilding and sustaining their resilience in their livelihoods. These long-term efforts have included, since the early 1970s, the goal of the ecological regeneration of the Seto Inland Sea's marine ecosystems. Amid this historical involvement in the regeneration of the sea, the fishers came to recognize *nori* seaweed farming as a symbolic and pragmatic facilitator that could contextualize their efforts to imagine and create future scenarios that assured the long-term resilience of their livelihoods. In the words of one fisher, "the sea can feed fishers enough, particularly fishers who can care and keep the productivity both for the sea and for human."

Nori seaweed farming has composed much of the fisheries production incomes of the coastal fishers in the Seto Inland Sea since the 1960s. *Nori* seaweed can be simultaneously a facilitator to establish and enhance habitats for other nonhumans, influencing such important ecological variables such as water temperature, nutrient flow, tidal current systems, and seabed biophysical complexity. Their restoration efforts helped to establish processes to co-contextualize ecological reflexivity among stakeholders and to embed it as an essential and normative component of and for effective environmental governance. That is, these efforts served to recognize historical social–ecological relations within multiple SES contexts, helping the fishers to rethink their previously core values and practices and thereby to reimagine SES scenarios, transforming relevant values and practices for humans and nonhumans in service to long-term abundance and resilience.

This chapter presents a case study exploration of ecological reflexivity and in particular how it can mutually co-constitute and enhance stakeholder-generated exploratory SES scenarios for abundance and resilience. Data for this article are drawn selectively from a larger research dataset that historicizes aquaculture governance in postwar Japan, archival research of official documents, personal notes of experts and policymakers, semi-structured interviews with fishers, and ethnographic observation during ongoing fieldwork from 2012–2016.

I particularly focus on the historical archival resources from panels and meetings held by local and national governments and their efforts at reviving the Seto Inland Sea, as well as the processes of relevant political regime actors and future scenarios that led marine governance. Along with the analysis of archival research, to understand how stakeholders, especially local fishers, has evolved a language to express their historical and experimental ideas of a desired status for the Seto Inland Sea, I conducted ethnographic observation and semi-structured interviews, mainly focused on Sumaura Fishers Club (SFC, *Sumaura Ryōyūkai*), a local branch of the Kobe Fishing Cooperative. Their livelihoods are sustained mainly through *nori* seaweed

farming, gill net fishing, and boat fishing. The focus on this harvesters' organization enabled empirical characterizations of the ways in which they form, use, and update their notions of their "sense of how to better live *from/with the sea*" (*umi to no seikatsu-kankaku*) as ethical practices and aspirations themselves tied closely to fishers' evolving notions of ecological reflexivity.

7.2 Regenerating the Sea: The Antipollution Scenario for *kirei na umi* or "Clean Sea"

7.2.1 The Waters Once Called "the Dying Sea" and Fishers as the Canary in a Coal Mine

Sumaura fishers have long been the canary in a coal mine linked to socioecological degradation of the Seto Inland Sea despite generations of communally managing their multipurpose coastal resources. Beginning in the early 1950s, forms of industrial pollution began to threaten their resilient livelihoods as socioeconomic rehabilitation and rapid industrialization came to dominate postwar Japan. Among industrial coastal sites in Japan at the end of WWII, the Seto Inland Sea contained five coastal industrial zones. Given the region's historically well-known advantageous conditions for industrial siting, such as proximity to transportation, ability to build on coastal reclaimed lands, and accessibility to large urban economic hubs, these zones were rapidly redeveloped after the war, including the addition of multiple petrochemical complexes. Already by the end of the 1950s, many FCAs in the Seto Inland Sea were having trouble with devastating damage to clam harvesting and *nori* seaweed farming due to polluted waters, which they called *akusui* or "bad water," as well as fish kills and falling market prices for locally caught fish. By 1956, Japan's Fisheries Agency had already come to understand the acute devastation of the fishing industries, and the harm to the fisheries had doubled since 1945 (Inoue 1961, 1963). Amid this socioecological devastation, a rising antipollution movement and fishers taking on industries and governmental agencies began to increase noticeably.

Despite such movements, under a nation-wide developmentalist mandate that placed top priority on seeking additional economic breakthroughs beyond the immediate postwar recovery, voices of these industrial pollution victims were too weak to influence the political status quo. The fisheries industry had very little weight in Japan's gross national product as well as within the national government strategy for economic growth. In this light, policymakers at the time recognized the sufferings of fishers and the degradation of coastal environments as acceptable sacrifices for the sake of national economic development. "*The abandoned,*" the victims called themselves. Such an attitude penetrated political relations, even after the official recognition that widespread ecosystem- and livelihood-threatening pollution, including the now-famous Minamata disease, had led to many deaths and intergenerational suffering (Funabashi 1997; Fukunaga 2013).

Prioritizing rapid reindustrialization in turn led to lapses in regulatory oversight, governance, and the management of pollution. Despite the establishment of Japan's

Clean Water Act and Factory Wastewater Regulation Act in 1958, these legislations could not stop the expansion and aggravation of industrial pollution problems (Harada 1985; Iijima et al. 2007). In 1967, the Basic Act for Environmental Pollution was established to integrate and control pollution measures nationally, but the act also dictated that measured compensations for and the prevention of pollution would be "harmonious" with economic activities. This sentence was soon criticized as "the harmony article," as it showed that the government placed more weight on economic development than environmental protections. Pollution continued, unabated.

Across much of the Seto Inland Sea, water pollution soon led to eutrophication and habitat loss due to sand extraction, dredging, reclamation, and engineering. These developments continued to impact coastal marine environments, and by the late 1960s, locals had given the sea such names as "the dying sea." The color of the sea lost its creamy deep blue-green, becoming instead "dark brown, just like soy sauce" (Seto naikai kankei gyoren, gyokyō renraku kyōgikai 2012). Red-brown and blood-colored industrial wastewater flowed directly into the sea, and concrete-engineered coastlines and land reclamation activities were rapidly and permanently changing the coastal seascape and its ecosystems. Fishers noticed early on the impacts of water pollutants, as the algae around the very edge of the sea where fish spawn had disappeared. Then, clams were gone, and fish started to emit an oily odor. Their shapes showed deformities. Oily, dark sludge accumulated in the sea, giving off noxious gasses. Fishers were scared of diseases caused by direct industrial pollution, which greatly decreased the prices of their fish in the market (Setonaikai osen Sōgō Chōsa Jikkō Iinkai ed. 1972). To maintain their income, the fishers increased aquaculture of fish such as yellowtail through compensation funds from the government, but toxic red tides and hypoxic water often caused consequential declines in both boat fishing catches and aquaculture production. For example, 14 million farmed yellowtail died in 1972 due to a toxic red tide, further projecting the image of a "dying sea" to the wider Japanese society.

For fishers, changes in watercolor and smell embodied the whole spectrum of negative impacts on the sea. Of course, the fishers were not alone in recognizing these changes. Already by the middle of the 1950s, even the children near Sumaura noticed that something was wrong in the sea where they played. When they swam in the sea, black dots like oil balls with a strange smell stuck to their chests and bodies. The distance between the sea and nearby residents grew physically and mentally because of the chronic bad odors emanating from the water, strange watercolor, disappearances of beaches due to reclamation, and reduced physical access to the coastline increasingly fenced by industries.

7.2.2 The *kirei na umi* (Clean Sea) Scenario as an Antipollution Policy

The situation began to change after a national legislative session on pollution was held in 1970, responding to heightened political dissent. The Basic Act for Environmental Pollution was revised, and "the harmony article" was deleted. Among the

14 legislative acts on the environment that were revised or established in this session was the Water Pollution Prevention Act (*Suishitsu Odaku Bōshihō*), which also initiated water-improvement programs both at national and local government levels. These laws began to more strongly prohibit, control, and manage water pollution.

Learning from these new moves, in 1971 the Governors and Mayors Alliance Conference for Environmental Protection of the Seto Inland Sea (GMAC, *Setonaikai Kankyō Hozen Chiji Shichō Kaigi*) established the Seto Inland Sea Environmental Protection Charter (the Seto Charter, *Setonaikai Kankyō Hozen Kenshō*) to protect the economic, sociocultural, and aesthetic values of the Seto Inland Sea, thereby more fully representing local stakeholders' voices. Behind this action, the claims and lobbying by FCAs to both national and local administrators dramatically increased, and together, such efforts moved relevant administrators and politicians to acknowledge the seriousness of the 'dying' of their sea and local sea-based industries, including fisheries. The conference members included the governors of all 11 prefectures bordering the Seto Inland Sea, as well as the mayors of its three major cities. The conference called for the establishment of a new law for comprehensive and cross-jurisdictional measures to protect the environment, recognizing that heretofore specialized and segmentalized laws could not provide effective measures for environmental protection. Moreover, they wanted more proactive measures for environmental protection and prevention that would better control the expanding powers and desires of industries. In other words, the conference wanted to establish a legally effective spatial management scheme and to restructure the heretofore segmentalized laws toward more comprehensive governance and for more practical outcomes for environmental health.

GMAC lobbying of Japan's EPA, the Ministry of the Environment, its head, the Minister of the Environment, and members of Japan's national legislature pushed them to establish the Seto Conservation Temporary Act (*Setonaikai Kankyō Hozen Rinji Sochihō*) in 1973, which became a permanent law in 1978 as the Seto Conservation Act (Act on Special Measures concerning Conservation of the Environment of the Seto Inland Sea, *Setonaikai Kankyō Hozen Tokubetsu Sochihō*). The law contained the following targets: the establishment of a spatial environmental governance system, integrated water pollution control, regulation and control of landfill and industrial reclamation, and the establishment of nature protection areas. The law established the first experimental shape of spatial environmental governance, undertaken through a collaboration among national agencies, prefectures, and their local agencies. With its institutionalization, each prefecture was given the legal responsibility to develop an operation plan every five years and to submit an official report of its results. In particular, the Seto Conservation Act developed more stringent water pollution standards than the previous Water Pollution Act and required local governments in designated areas to install and operate total volume control of nitrogen (TN), phosphorus (TP), and oxygen demand (COD). This method was introduced back into the Water Pollution Control Act in 1978 and led it to be revised. Since then, the control of industrial-polluted water and improvement of household sewage systems have undergone further development in each local district under the supervision of the Ministry of the Environment.
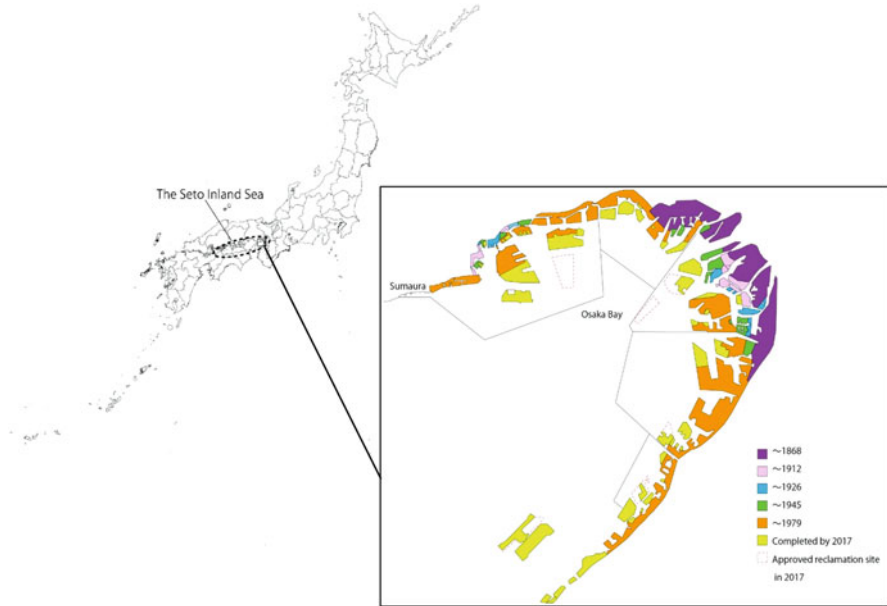
Fig. 7.1 Sumaura Fishers Club in Osaka Bay, and near-shore land reclamation history (Adapted from Setonaikai Kankyo Hozen Kyokai 2017: 43)

However, when it comes to controls on spatial conservation by landfills and industrial reclamation and the establishment of natural protected areas, economic interests continued to be prioritized via "special exemptions." These special exemptions were applied by developers and local governments to landfills of garbage and reclamation sites for industrial land and airports, once again rationalized as economic development (see Fig. 7.1, land reclamation map, for details). Their justification was on the grounds of contribution to the betterment of water quality or solutions for other environmental problems, such as noise mitigation (Gotoh 1999; Nakayama 2002). Although it may sound contradictory, demanding water quality improvement and the desire for development through landfills and land reclamation were logically associated with each other by national and local jurisdictions. The waterfront development through landfills and reclamation was expected to enhance environmental aesthetics, converting the visual landscape of polluted water and its degraded ecological productivity into modernized tourism scenery with promising estimated economic productivity. In this context, officials created and implemented their own aspiration of and scenario for a "clean sea (*kirei na umi*)" as one of the components of beautiful waterfront scenery. Thus, the socioecological regime of a "clean sea (*kirei na umi*)" came to define environmental governance after the Seto Conservation Act was established.

7.3 Cultivating Essential Dimensions of Ecological Reflexivity

7.3.1 Recognizing What the Regime of a "Clean Sea (*kirei na umi*)" Achieved

Efforts at water quality control in the Seto Inland Sea first appeared toward the end of the 1970s. Water quality improved, especially COD and subsequently also TN and TP. Except for the inner part of Osaka Bay where the water had been compartmentalized by companies and contained dysoxic and even anoxic areas, the pollution control policies under the regime of a "clean sea (*kirei na umi*)" were well implemented, and the scientific evidence soon showed great improvement in water quality (Abo et al. 2018; Tanda et al. 2014). In response to that, fish catches and aquaculture production in the Seto Inland Sea achieved new peaks during the 10 years from 1975 to 1985. The combined reasons for this achievement included the results of water pollution control, such as the decrease of toxic red tides, but also included fishing mechanization, the introduction of scientific–technological devices such as fish detectors and aquaculture technology development.

Fishers recognized the return of cleaner waters. One old-timer in the fisheries remembers his day-by-day realization of the improvement.

> Fish tasted good, smelled good again. The wind conveyed the smell I had remembered in childhood. The soy sauce color has gone, and the creamy green color came back. Fish were everywhere, so you could drop a gill net and get as much fish as you wanted.[1]

They used the word "clean," taking it to mean a state of water presenting improved color and smell, and production capacity returning to what they and older generations had known before the pollution. As such, efforts at restoring cleaner water became the representative expression for the rehabilitation of the fisheries grounds.

Despite these early successes, fishers once again started to face a decline of marine productivity by the 1990s. Early on, fishers thought that overfishing was the cause, and so they put more effort into rearing artificial stocks to enhance natural stocks. In 1962, marine-ranching stock enhancement projects, advanced by Japan's Fisheries Agency, began as a part of compensation for fishers as victims of pollution, as well as for aquaculture development. The project aimed to release farmed juveniles to the sea to increase natural fishery stocks with popular and high-value market commodities such as clams, Japanese tiger prawns, and sea bream. Despite persistent efforts and increasing numbers of fish releases throughout the 1990s, fish and clam catches kept decreasing. By 2000, these catches were down to half of the 1985 catches in the entire Seto Inland Sea. Moreover, by the middle of the 1990s, *nori* seaweed farming also faced the problems of discolored *nori* and decreased production. These problems started from the west side of the sea and then spread to

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[1] 2013, August 13, in the semi-conducted interview with a retired fisher in his 80s in Kobe.

the eastern areas by around 2000. Though farmed *nori* seaweed should be glossy black as a commodity in the market, the *nori* seaweed farmers found the color had become an almost transparent green that could never be marketed or eaten. The *nori* seaweed farmers started reflexively to explore for explanations for these new realities despite their "clean sea" achievements and started to explore different pathways for ecological rehabilitation from these new realities.

7.3.2   Exploring Historical and Enduring Ways to Better Live *From/With the Sea* in Service to Living with Nonhuman Assemblages

7.3.2.1 Situating Fishers' Historical Senses of How to Better Live *From/With the Sea* in Service to Living with Nonhuman Assemblages

Why were the "clean sea" efforts not able to renew abundance and resilience in fishing and in *nori* seaweed farming? The Sumaura fishers also faced the loss of production of *nori* seaweed in the early 2000s, and some of the individual *nori* farmers in the SFC quit *nori* farming due to chronic losses in earnings. They were some 200 strong fishers around 1975, but by 2000 only 14 fishers were involved in *nori* farming. Amid chronic declines in *nori* production, fishers started rethinking their methods by asking the old-timers about the past to understand how "clean" their sea was—how the water smelled, what color it was, and how much and what fish they could catch. The *nori* production crisis led them to undertake their own historical research, which increasingly involved reflexive ways of exploring and thinking. In parallel, they recalled their own younger days with the sea at that time and remembered former generations of fishers in the community. Their reorganization and understanding of historical changes in the realities of fishing came to shape their explanatory discourses, such as:

> In my father's generation, they did not have to think about their skills. As for flounder, as you know, they were just there on the beach. When you were tired of swimming, just set your foot on the sand below the water, and you could easily step on a flounder in the sand. That's a quite common story that everybody his age experienced. I did, too. Maybe less than at his age, though. In their words and with my experiences helping them in my childhood, I would say, they could catch a decent number of fish wherever they set their gill net. Not like the easiness in his days, but until around 2003, we could still assure ourselves of a good gill net catch. I even earned a million yen in a day once, and the average was 100 thousand yen a day in those days. Now I can only get 50 thousand yen, which actually means a deficit. Whether you can judge what is good and bad about the sea depends on one's current gut-feeling of how to live *from/with the sea* (*umi to seikatsu suru kankaku*), that we have gotten somehow.[2]

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[2] 2014, June 7, fisher B in SFC in his 50s, in the SFC office.

According to the old-timers' stories, not only the amount of fish catch, but also changes in the species caught since around the 1970s were obvious, as well as changes to physical ecological system variables such as beaches, river water flows, tidal currents, rainfalls, and even winds and moisture coming from land.

Continued explorations of their historical and current gill net fishing led the fishers to identify and begin to adapt their "sense of how to better live *from/with the sea (umi to seikatsu suru kankaku)*," practices that had sustained their resilient livelihoods as well as their identities as knowledge holders of the sea they have lived with and lived from. That is, fishers re-recognized that their identity as boat fishers sustained through boat fishing and how those operations required, cultivated, and identified them as the experts of the sea. As such, they came to amend their "gut-sense of how to live *from/with the sea*" as fishers, seeing it as a reimagining their practices and relations with nonhumans, not just as an anthropocentric "living *from the sea*."

> Listening to the old-timers and reflecting on my own experiences, such recurrent practices have given me a lot. Including, so to speak, a kind of intuition and sense for livelihood (*seikatsu no kan*). I can know, or sense, how the fish behave, what they think, what they want. Then I can make my strategy on how to fish for my living. Of course, the practices give us a lot. Experience will not always be successful, but you cannot experience if you do not have any old-timer around you, who sustained their resilient livelihoods *with* and *from* the sea.[3]

Fishers soon came to realize that they held, as a set of practices and aspirations, an affective and necessary sense of how to better live *from/with the sea*, and they found that old-timers also held a similar sensibility. This has enabled fishers to equip their cognitive and conscious abilities to better perceive how the nonhuman assemblages of marine life surrounding them live—what habitat a certain species requires and likes, and how they could earn their incomes within these ecological realities. It is not a simple ecological sensibility, but rather an assemblage of awareness and sensibilities that enable them to live an abundant and resilient life *from* and *with* the sea.

The old-timers had developed a rich and nuanced vocabulary to express knowledge about micro-habitat conditions in the sea, and they literally could sense them. When they said the wind from the southeast conveys a stormy sea here soon, surely it did. The most recent generation of fishers has learned to listen to the old-timers' knowledge, combining it with their insights from the latest technology, for example, using smartphone weather apps to raise the precision of the forecast. Also, fishers came to discern nuances in the topography of the bottom of the sea—and thus its localized conditions and habitats—as readily as if they were seeing the landscape in terrestrial areas, describing rivers as currents, springs, forests, sands, rock hills, little caves, and mountains in the water. In short, by combining the narrative explorations of former fisher generations with their own,

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[3] 2014, June 7, fisher A, the leader of the SFC in his 50s, in the ship of gill net.

contemporary fishers came to learn that they have been knowledge holders of local ecological knowledge that has accumulated inter- and intra- generationally, enabling them as practical, adaptive users of these forms of knowledge in their everyday fishing and aquafarming operations. Through these shared insights and understandings, they started to recognize their inter- and intra-generational stories as being in close alignment with an ethical and necessary sense of how to live *from/with* the sea, such that they could merge these stories with scientific evidence to renew abundance and resilience in their livelihoods.

7.3.2.2 Fishers' Evolving Sense of How to Better Live *From/With the Sea*—Seeking the Ethic of an Abundant Sea (*yutaka na umi*)

With the increasing recognition that their sense of how to better live *from/with the sea* would benefit sustainable and ethical SES relations, fishers also came to trust these sensibilities in recognizing and working toward the meanings of the sea as an expression of an "abundant sea (*yutaka na umi*)." Along with exploring old-timers' stories, the fishers started to collaborate with other FCAs and other research facilities, private company laboratories, prefectural and city research agencies, and even a local aquarium, in order to collect data on water quality, nutrition and marine salinity, flows and tidal dynamism, and marine organisms and their habitats, in littoral and benthic habitats. Besides investing in natural stock rehabilitation in marine ranching for targeted species, the SFC started to verbalize their own and old-timers' experiences and shared intuitive understandings and practitioner senses in service to recognizing detailed changes in the sea and thence to find causes.

Such explorations about possible causes of decreased fish catches resulted in finding accumulated environmental damages that had only appeared several years after the completion of reclamation projects, dredging, and gravel extraction. For example, the Kobe Port region that includes Sumaura has been continuously developed as an urban-industrialized waterfront since the postwar era. Sumaura fishers historically contextualized those development records and recognized in particular that the artificial island development called the second stage Kobe Port Island development in the very late 1980s—which created urban waterfronts and the international port—had been the turning point. The first stage of its construction had started in 1966, creating 443 ha of reclaimed lands, but from the fishers' experiences, the southern construction in the second stage that started in 1987 and landfilled 390 ha had more impact on water flows and fish passages. Furthermore, to maintain the international port, continuous dredging for tanker access was also causing widespread and consequential damages underwater. During this time, the artificial island for Kansai International Airport was being built in the south of Osaka Bay. Adding to those accumulated environmental changes, in 1999, the reclamation for Kobe Airport in the south of Kobe Port island started and had an even greater impact on the marine ecosystem. Fishers explored such historical changes and concluded that degraded critical marine conditions caused by reclamation and dredging had reduced and were continuing to reduce marine productivity. According to one fisher:

This sea, as an urbanized body of water, is now continuously losing its possibilities and abilities of production. We did not notice this until the fish told us with their disappearances, some three or five years after we created the landfill islands. Ten years later, we live our everyday lives as fishers with a lot of regrets, asking ourselves why we allowed reclamation. Twenty years later, we see something negatively impacting fish now spreading across the entire sea. [. . .] When we allowed dredging and gravel extraction 20 years ago, we had never imagined what a huge negative impact on the environment it would give. Continued dredging of tanker-channel depths to 12m, 14m, and now to 16m have been changing the tidal flows and the landscape of the bottom of the sea. Now we think that dredging is much worse than reclamation. And, we now know that tidal flow is very important for marine productivity. I say, after 10 billion yen worth of development, we need 10 billion yen worth of rehabilitation for the sea to be an abundant sea (*yutaka na umi*). We have harvested these marine resources as the result of thousands of years of work by nature, and we have extracted too much of what we had wanted in too much of a selfish way, only caring for ourselves.[4]

With these narratives, the leaders of the SFC asked themselves what responsibilities they should have taken before reclamation, dredging, and gravel extraction occurred. Then, they made a declaration that they should work for the cultivation and regeneration of marine productivity itself.

To express the state of the sea that they want to regenerate, they chose the expression "the abundant sea (*yutaka na umi*)." The adjective "*yutaka na*" had been used for the national and prefectural projects of marine ranching (*saibai-gyogyō*, cultivation for/of fishing) in the aftermath of pollution in the 1970s. For fishers, the marine-ranching projects designed to enhance natural stocks had been an effective and experientially proven measure to increase fish catches. Since the Fisheries Agency started the first marine-ranching projects, regenerating an abundant sea (*yutaka na umi*) was the core concept and represented the desired state of the sea. Abundant sea means a sea of enough marine productivity to sustain fishers' incomes, their sociocultural ways of life, and self- and local respect as fishers (Matsuda 2017). Furthermore, in the context of marine ranching, to cultivate marine productivity means not only assuring sustained increases in profitable fishes, but also regenerating their habitats, such as seaweed beds, fish reefs, and tidelands, with ecological engineering (Ohshima 1994). An abundant sea should be a source of power and possibilities of productivity and rich biodiversity with sufficient ecological habitats to sustain them. These can enhance fishers' livelihood strategies, in close moral and ethical alignment with their virtuous sense of how to better live from/with the sea—aspirations for an abundant and resilient SES. The adjective "abundant" contains such conceptual expansion outward from its direct meaning of abundant fish resources.

The expression is now a part of their everyday language, and sits in strong contraposition with "clean sea" when the fishers explain both the current and desired state of the sea. The SFC has experience-based events for education and local communities such as beach seining and *wakame* seaweed aquaculture ownership

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[4]2014, December 12, fisher A, the leader of the SFC in his 50s, in the SFC office.

activities. In such events, fishers often explain the current and desired state of the sea to participants. Their usual explanations include such statements as:

> Look, such transparency! Clean water means that it contains almost nothing. No nutrients, planktons, or anything. We fishers want an abundant sea, not a clean sea. We need fish.[5]

7.3.2.3 *Nori* Seaweed Farming Further Cultivates Fishers' Evolving and Ethical Sense of How to Better Live *From/With the Sea*

How can we understand, socioecologically, essential meanings of abundance in relation to the Seto Inland Sea? For this question, Sumaura fishers came to recognize *nori* seaweed as a signifier to complement their maturing sense of how to live *from/ with the sea* and for how to characterize and build in abundance. Although boat fishing has been central to local ecological knowledge production, to fishers' cultural identities, and as a signifier of relations among fishers and nonhumans for a hundred years, currently *nori* seaweed farming occupies 95% of the yearly income and the remaining 5% comes from the gill net fishing done by SFC fishers. As Fig. 7.2 shows, their main operations have been multiple and have changed, intimately associated with market prices, industrial structural changes, labor mobility, and marine resources fluctuation. *Nori* seaweed farming started in 1961 for supplementary income in winter during the seasonal decrease in fish catches (Fig. 7.3). In 1965, large production and machine processing was achieved, and since then, *nori* seaweed farming has been a stable seasonal job in winter, complementing summer

Main business (*Kasegi*)		
Small scale troll fishing		
Basket net fishing		
Gill net		
Nori sea-weed aquaculture		
Fishing tours for urban residents		
Summer beachside shops		
For education and local communities		
Wakame sea-weed aquaculture		
Beach seining		
Sub busines and Non-monetary subsistence (*Nagusa*)		
Fishing leisure guide for summer cottagers		
Basket net fishing (for their everyday meals)		
Other fishing and foraging around the beach		
Year	1945 1950 1955 1960 1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015	
Number of the fishers (lisences) in the SFC	73 40 18	

Fig. 7.2 Historical changes of the fishing operations in the SFC

[5] 2015, February 14, in the field observation of *wakame* seaweed aquaculture ownership event. Fisher B explained the current situation of the sea to a university student group.

Fig. 7.3 Sumaura Fishers as *nori* seaweed farmers in the urbanized water

fishing incomes (see Fig. 7.4). The SFC has had demarcated fishing rights that ensure them the ability to communalize their beaches and waters. *Nori* seaweed farming sites are in these demarcated areas, and until 2014, individual fishers with a license in the SFC negotiated with each other, including to rent the spatial use of the partitioned sites from the SFC in the demarcated areas for farming. The proportion of seaweed farming in fishers' yearly incomes had increased because of its higher economic stability than the fluctuating gill net catch particularly after the early 2000s, when gill net fishing started running a deficit due to declining catches. Yet simultaneously, the production of *nori* seaweed farming also started to decrease. Out of 18 fishers, 14 fishers followed the combination of *nori* seaweed farming and gill net fishing, and the other four run fishing tours all year round. Reflecting on these "new normal" realities, the Sumaura fishers decided to communalize the *nori* seaweed activities and made a joint business venture in 2014 for more inclusive fisheries and farming grounds management, with aiming to foster regeneration as well as to streamline management.

Ongoing historical explorations of their social–ecological relations through boat fishing to determine the causes of decreased fisheries production have brought Sumaura fishers a new recognition of *nori* seaweed farming. They noticed that

	Main Business					Education	Nagusa
	Gill net fishing	Nori sea-weed aquaculture	Beachside shops	Fishing tours	Beach seining	Wakame aquaculture	Nagusa
Jan		Peak season of nori sea-weed harvest		All seasons			All seasons
Feb						Harvest	
Mar		Cleaning up the site and nets					
Apr							
May	**Starting fishing**		Open				
Jun					Open		
Jul							
Aug							
Sep	Ending fishing	**Starting cultivation**	Close				
Oct		Spreading nets at the site			Close		
Nov							
Dec		Starting to harvest nori sea-weed				**Starting cultivation**	

Fig. 7.4 Seasonal activities of Sumaura fishers in SFC

cultivating better habitats for fish requires understanding broader complex ecological dynamics in the bay, including tidal and nutrients flows. From the experiences of *nori* seaweed farming, until then, fishers already had understood that they needed to take care of the tides and watershed dynamics that convey nutrients from mountains to the coasts in order to produce good-quality *nori* seaweed. These understandings seemed to fishers to be logically connected. The *nori* seaweed farming site is about 3 ha in waters near their beach, and they carefully manage the site and which direction they spread the net, observing the tide and currents flows, especially from the estuaries, every year. Particularly, Sumaura's *nori* farming method is called a floating type (*ukinagashi*) that spreads the net horizontally under the water, different from a prop type that uses the vertical interval between the ebb and flow tides. The fishers know to carefully choose the site where they spread the net:

> To find a better site for *nori* seaweed is very essential. How the site can catch nutritious water decides the quality of *nori* seaweed of that year. For gill-net fishing, we observe different aspects of the tidal flows from what *nori* seaweed needs, thus seeing different things. But they are also all part of the dynamism of the current flows.[6]

As this insight shows, the fishers also noticed that knowledge for gill net fishing and for *nori* seaweed farming is complementary and connected ecologically. As for the seasons, they can observe all the seasonal changes when they operate their works; from spring to autumn for gill net fishing, and from autumn to spring for *nori* seaweed farming. Gill net fishing obliges that they move around making ecological observations, and *nori* seaweed farming offers them fixed-point observations. Gill net fishing asks them to understand fish habitats, and *nori* seaweed asks them to grasp the nutrient conditions in the bay. In turn, understanding food chains for fish correlates with the nutrient system that *nori* seaweed needs, also enhancing conditions much lower on the food chain for desired fish species. Thus, different organisms, their ecological needs, and the relationships among them shape fishers' dynamic understandings of the sea, further integrating their particular SES knowledge and understandings. Now, Sumaura fishers recognize that *nori* seaweed is another essential facilitator, a kind of *SES indicator species*, for monitoring and recreating better conditions for marine productivity.

7.3.3 Rethinking What an Abundant Sea (*yutaka na umi*) Means

Tracing trajectories of social–ecological relations and exploring fishers' evolving senses of how to better live *from/with the sea* in service to assuring resilient lives has led fishers to rethink what needs to be at the core of their work for their resilient livelihoods and for sustainable marine governance, in other words, how and as whom they want to live. This also shapes the central idea of what an abundant sea

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[6]2015, December 6, fisher B in the field observation of *nori* seaweed farming. Fisher B, C, and D (D is in his 20s) took me to watch the net check.

means and what they can challenge and adopt as they continue to transform their actions and ideas for the betterment of their resilient livelihoods.

For Sumaura fishers, the current versions of their core values are to be a guardian of productivity of the sea; to be a producer of the commons for locality and a cultivator of a local, sustainable sense of how to live *from/with the sea*; and to work toward intergenerational inclusion and support for future generations.

Fisher A, as a leader of the SFC and an individual from an old fishing family in the community, repeatedly recounts the following narrative as a way to gain legitimacy as a stakeholder and one whose opinions should have weight in the decision-making process of marine governance. We can see in his statement that fishing activities provide specific practices of noticing and forms of ecological memory that can create unique practices of reflexivity:

> Once we quit having fishers in the area, it becomes extremely difficult to restore fisheries as an industry in this site. Fishing needs human resources with knowledge and skills as well as the investment of equipment. Just like agriculture, once you quit, it becomes very difficult to restart. In that sense, we are the representatives of local history, and we also recognize ourselves as the guardians of the sea of resources, the sea of production. [. . .] People have more concerns about the sea of leisure, and very few concerns about the sea as a productive site, especially in these urbanized waters. I enjoy that so many people who can visit our sea find their ways of enjoying and recognizing our sea as beautiful, joyful, and recreational. However, for us, as fishers, and, I would like to say, for us as humans, the sea is a more fundamental part of our lives. We live with the sea every day. Every day with the sea is what our livelihood is.[7]

In this context, production does not only mean the physical products of fisheries, but also the spatial co-production of local social, cultural, and political capital and assets. Sumaura has kept their beaches, while other beaches in the Osaka Bay were converted to a hardened industrial waterfront. This occurred partially because Sumaura's beach scenery has been inherited as a local cultural asset, one that appeared as long ago as a seventh-century poem, as well as in the famous classic novel written in the early eleventh century, *The Tale of Genji*. After the war, Sumaura became a typical urbanized suburb as part of metropolitan Kobe. The mobility of the population is high due to its popularity as a residential area, and a partial reason for this popularity lies in Sumaura's natural richness around the beach as an amenity value. Moreover, it has functioned as an urban summer leisure site as the nearest swimming beach for residents of metropolitan Osaka and Kobe. As such, the communal property of the SFC has reproduced sociocultural spaces and values beyond the territory of fisheries grounds. In that sense, their manifold relationships with the sea cultivate ethical practices and aspirations for making their livelihood. Truly, every day with the sea is what their livelihood is, binding fishers' sense of how to live from/with the sea with an abundant, resilient sea central to what they have been, to who they are, and to that to which they aspire.

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[7]2014, December 12, fisher A, the leader of the SFC in his 50s, in the SFC office.

Fisher C, in his 30s and a leader of the youth division of the SFC, was not from Sumaura community originally. As a new inhabitant arriving to become a fisher, he sees that reproducing locality with intra- and inter-generational socioecological heritage is what they should do as fishers living with the resources here:

> Our leader [*fisher A] always says to us, we owe our assets to the former generations, from the present generations who give us the lead in governance of this beach and sea, and from the future fishers and residents who rely on us for what they will have. These assets include the negative ones as well as positive ones, apparently. Historically, the beach was a communal asset, and gradually I understand what our leader says, that we physically occupy this local livelihood space. [. . .] I would like to express how the fishers can consider the locality itself and would like others to know how we are trying to sustain it as something common in this area.[8] (*author added)

What does it mean for fishers to occupy local livelihood spaces that co-produce and reproduce cultural and social values? The fishers recognize themselves as producers of local cultural and social values and sensibilities that offer residents important connections with the sea. Furthermore, we can say that the fishers produce public values and goods in this broader context. If they were to quit being fishers, the local community would lose an essential context and pathway to communicate and be in relationship with the sea, which has produced rich sociocultural assets, today and in the future. Sumaura fishers believe that for their own business, it would more effective to localize themselves and take responsibility for being fishers. In this context, to localize means to continue offering local tastes with the Seto Inland Sea fish and *nori* seaweed as well as offering good sociocultural spaces for leisure and related amenities.

Above all, Sumaura fishers place the most priority on cultivating and sharing these moral and ethical perspectives on, practices for, and aspirations of how to live from/with the sea among fishers and also among residents. Both communities need an abundance of nonhumans in the sea, and they need the abundant and resilient ecological power of the sea in order to sustainably ensure sufficient fish and *nori* seaweed. As for the fishers themselves, they have developed appropriate training systems for youth and new members who are not originally from the district, so that these newcomers may adopt their ethically and morally infused practices and aspirations. As we have already seen, these senses of how to live from/with the sea recognize the historical trajectories of social–ecological relations, their qualities and particularities, and how human livelihoods can be resilient within such ecological assemblages. In this context, Sumaura fishers are eager to have educational leisure events for residents and consumers. Beach seining with experts from local aquariums, the *wakame* seaweed ownership in which visiting local residents can experience the whole process of farming *wakame* seaweed, the local festival management to empower locality, and class tours for school education—all these help

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[8]2015, January 8, fisher C, a leader of young SFC members in his 30s, in the seaweed processing factory.

visiting local residents to share and to further cultivate virtuous senses of how to live from/with Sumaura's local Seto Inland Sea. The fishers see how these community events have become local business promotions and how they cultivate markets for future generations. Moreover, they believe that for effective and enduring environmental governance, these activities and relations constitute the most direct path– to nurture ongoing life from/with the sea in ways that foster care for both humans and non-human—even as they might seem to be long, roundabout, and time-intensive.

7.4 Ecological Reflexivity Embodies Ethical Practices and Ethical Outcomes Toward Effective Multispecies Environmental Governance

7.4.1 Further Reflections on Fishers' Resilient Livelihoods from and with the Sea

While Sumaura fishers explore their abundant vision of the sea for resilient livelihoods, the political regime of marine environmental governance in the Seto Inland Sea has changed since 2010. Beginning in the 1990s, under the international influence of the concept of biodiversity that sustains the cultural diversity of human society, the Japanese concept of *satoyama* started to embody a desirable vision of socioecological mosaics of mixed terrestrial landscapes in Japan. This vision of resilient livelihoods also provides collective and individual imaginaries for senses of home and place, becoming nationalistic nostalgia, intimately associated with governmental agencies and field sciences such as conservation ecology and green planning (Takeuchi et al. 2001).

In response to that movement, in 1997, *satoumi* was coined as *satoyama*'s analogy in coastal marine areas by the marine engineer Tetsuo Yanagi, who has contributed significant scholarship in service to the Seto Inland Sea (Yanagi 2005, 2007). With his long history of staying with local fishers who had fought against pollution and for the sea's rehabilitation, Yanagi's coining of the word had a clear aim to design the concept that underpins and provides the practical framework and methods for the regeneration of cultural and biological abundance and resilience for local fishers and their communities. The combination of *sato* (villages) and *umi* (sea) represents a mosaic set of socioecological seascapes whose places and ecological conditions have formed under relations of coevolution and interactions among human and nonhuman communities and which contain beaches and shallow waters for walking (*se*), tidelands (*higata*), rock reefs (*iwaba*), and seaweed beds (*moba*) amid them. In other words, *satoumi* conceptualized the embodiment and lived experience of temporal–spatial maritime and coastal socioecological relations among humans and nonhumans.

In the same period, the problems of reduced fish catches and poorer *nori* seaweed production expanded, affecting large numbers of fishers in the Seto Inland Sea. Fisheries science experts in both academia and in prefectural agencies started to criticize the already-weaker ecosystem capacities and potentials of productivity in

the Seto Inland Sea, and they asked the political regime to shift their attention and efforts from pollution control or environmental protection to the regeneration of ecological productive power. GMAC, the political-administrative alliance of prefectures and cities circumscribing the Seto Inland Sea, turned to *satoumi* as the core concept for their shared new political regime for collaborative spatial environmental governance in order to regenerate inclusive productivities, including marine and terrestrial productivity, for harvesters, and for ensuring the productivity of cultural identities and shared values for residents. In response to such movements, the Ministry of the Environment started to hold public meetings and empanel expert committees in 2010 to explore the possibility of shifting the primary management goal, "from a clean sea to regeneration of an abundant sea."[9] In 2015, the Seto Conservation Act was revised with these arguments, expressing the regime shift from a clean sea to an abundant sea. Besides promotion of the restoration and rehabilitation of wetlands and seaweed beds, efforts also began to improve nutrition control (particularly TN and TP) in order to increase productivity, targeting *nori* seaweed production. This proactive nutrition control has led to the partial loosening of the regulations that had been in place since the 1970s for controlling pollution. Hyogo prefecture, to which Sumaura belongs, started to manage the nutrient flows from land in order to increase watershed nutrient flow and thus exert a positive control on an essential ecosystem variable.

As one of the representatives of Fishing Cooperatives, Sumaura fishers supported the activities to revise the Seto Conservation Act in order to prioritize nutrition management for regenerating the sea's productivity. They have been quite active among other fishers in the Kobe Fishing Cooperative, and furthermore, beginning in 2017, they have enhanced and expanded the shoals of local beaches based on stories from the old-timers as well as from the insights of coastal engineering experts. The restoration plan of the shoals had arisen in their minds from their exploration of the historical trajectories of their social–ecological relations that came from the stories of old-timers and their own experiences as residents and fishers. In the explanation of the event, we can see the fishers positioning *nori* seaweed farming and old-timers' stories about the beaches as an ecological (and thus a social) reference—a kind of *SES indicator*—and then linking it to the desired status of their sea, situating it as a keystone from which others can also cultivate new senses of how to live from/with the sea that further enhance its abundance and resilience:

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[9]The word 'abundant' appeared in the final report of the expert hearings for the future of the water environment in the Seto Inland Sea, which was held 5 times during from September 3, 2010 to March 7, 2011. It was used as a symbolic word indicative of a new direction, opposed to that of the previous regime of a 'clean sea.' The official documents including conference notes and delivered documents in each conference can be downloaded from the following site: https://www.env.go.jp/water/heisa/seto_comm.html (last viewed March 29, 2020).

> What is a healthy sea? We fishers have and share certain images, because of our experiences, but it is difficult to verbalize for other people to understand it. I do not have any confidence I can explain mine to others by language, no. Well, so, abundant – oh, that's it! I know it! Such a 'nodding' understanding never comes from a wordy explanation. [. . .] So, what do you think, if you were to eat a such a great-tasting seaweed that you have never had before in your life? Or, for ordinary life with such a good-tasting *nori* to be normal for you, but extraordinary for others, and they say, wow! Isn't it special? If you step on a flounder when you pause briefly while swimming? That tells you everything about abundance, right? And so, too, I have come to understand how to sense what we should have for our beaches.[10]

Sumaura fishers do not use the word *satoumi*, but instead want to share a deeper social learning process with their urban residents that goes beyond merely acknowledging the concept. They want the urban residents, including potential consumers, to cultivate their own sense of how to live from/with the sea (*umi to seikatsu suru kankaku*) so that they can recognize what resilient living can mean for those who live from and with the sea of Sumaura. Even those who are not fishers can share the sea of Sumaura as a space and a time in their lives and have their paths to communicate with the sea and Sumaura as a member of this local community. The transformation of the physical environment is a direct response for nonhumans to regenerate their habitats. Furthermore, this aims to enhance the senses of how to live from/with the sea and—for residents and consumers—to enable them to better recognize the social–ecological assemblages and relations that sustain their everyday lives.

7.4.2 Co-Creating Senses of How to Better Live *From/With the Sea* As Contextualized References for Ecological Reflexivity

Nurturing and maintaining ethical senses of how to live from/with the sea (*umi to seikatsu suru kankaku*) mean orienting one's cognitive and conscious abilities to perceive the nonhuman assemblages surrounding them—to notice, for example, what habitat and conditions a certain species requires and prefers, and how fishers can earn their incomes from and through these ecological abundances and relations. Moreover, when we focus on the word "to live (*seikatsu suru*)" in its historical context in Japan, we can recognize why the fishers use this word as the reference point for their evolving senses of ecological reflexivity.

The word "to live a life (*seikatsu suru*)" started to be used often in the early twentieth century when rapid, Western modernization drastically changed people's lifestyles and livelihoods in Japan. The word started to be used frequently in Japan as notions of quality of life and its meaningfulness became a question of how to live a life, adding to the meaning of the reproduction of life and subsistence activities for living (Iwamoto 2019). It in part reflected ideas translated from the English and German terms "life" and "Leben" (Iwamoto 2011). In turn, early works of ethnology

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[10] 2014, December 12 fisher A, the leader of the SFC in his 50s, in the SFC office.

and sociology focused on *"seikatsu suru"* and phenomena related with it, in particular arguing the epistemological and practical breaks and connectivity between what was suddenly modern and what was rapidly defined as pre-modern (and quickly becoming erased) in Japanese society. These works illustrated how people were adopting and adapting to these external life changes, such as new kinds of transportation, technological equipment, and economic and government institutions, by implementing internal changes through the creation and reconstitution of customs, subsistence activities, and collective and individual mores, values, and virtues (Ariga 1969; Yanagida 1993; Iwamoto 2009). These studies showed that, among Japanese people, to "live a life (*seikatsu suru*)" had meant to exercise the abilities of people to transform themselves and their environment to adapt to such rapid, drastic, and ongoing changes in their surroundings and situations in an effort to realize the betterment of their lives.

Sumaura fishers found such meaning in the capacity and creative ability to explore, adapt, and transform their senses of "how to live" in relation to the term *seikatsu*. Therefore, their senses of how to live *from/with the sea* came to include efforts to transform and adapt themselves in order to negotiate with other nonhumans, all in service to maintaining their resilient lives and livelihoods from/with the sea. Exploring the historical trajectories of making their livelihoods *from/with* the sea as they experienced the reduction of their gill net and *nori* seaweed production in the early 2000s enabled the fishers to recognize how they had adapted to the external changes of the environment and led them to rethink what they have held as core values for their livelihood sufficiency: ensuring their abilities to make their resilient livelihoods *from/with the sea* and maintaining the quality of their lives with their sociocultural inheritance in their manifold relations with the sea. Particularly, amid the adaptive transformations of their fishing and aquafarming, not only did *nori* seaweed farming become an avenue for the fishers' main income-earning, but also *nori* seaweed became a kind of socioecological signifier, an *SES indicator species*, to monitor and recognize the historical and current situation of their SESs, and served as a reference for their work toward a desired ecological condition for the sea. By rethinking their own marine governance through these essential ethical practices in service to more virtuous outcomes, and by cultivating essential and enduring senses of how to live from/with the sea that also support the sea, both fishers and local community members came to recognize this core virtue: the need to persist in working for a sea of abundance, one that ensures continued potential abundance for future generations. As such, for Sumaura fishers, ecological reflexivity has come to be acquired through recurring contextualized explorations of, references to, and their own evolving sense of how to live from/with the sea.

Positioning *nori* seaweed farming in the fishers' lives updated their local ecological knowledge (LEK) production and the scope of their LEK. It certainly aided fishers in making more expansive observations in the field, which they then combined with scientific knowledge, specifically about watershed nutrient flows and tidal current systems of the sea, as well as the connected freshwater flows and their nutrient loads. To listen to the voices of the seaweed-as an SES indicator species- is to respond to the voices of the non-human assemblages that surround both human

and nori seaweed. The fishers' rapidly evolving practices in *nori* farming led them to have stronger sensibilities of growing and cultivating life than they had before through only boat fishing, so that the new regime of "an abundant sea (*yutaka na umi*)" based in part on cultivation and nurturing, not just harvesting, could arise and be accepted as an effective socioecological resource regime for expressing the desired status of the sea.

While it can seem quite ambiguous as a normative expression, 'an abundant sea' nevertheless matters in fostering the ability to recognize and to act in response to both the historical and current status of the sea as an SES, to rethink a desired status of the sea in the light of these evolving practices and aspirations at the core of their resilient livelihoods, and to adaptively transform and negotiate with oneself, with one's colleagues, with the larger society, and with nonhuman assemblages, all in service to mitigating uncertainty and changes surrounding them.

In this light, fishers' evolving senses of how to live from/with the sea are both a conceptual and a pragmatic contextualized reference for ecological reflexivity to give voice to those abilities and to act on them. In other words, how stakeholders in environmental governance cultivate, hold, and exercise such abilities is at the core of ecological reflexivity, and the contextualized reference to express it is critical for achieving the ethics not only of ecological reflexivity in environmental governance but also of enduring abundance and resilience in local socioecological systems.

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Part II

Adaptive Environmental Governance as Facing Continuous Difficulties

Complex Ties: Nuclear Governance and Governance for Supporting Evacuees

8

Makoto Nishikido

Abstract

Many people were forced to evacuate as a result of the Great East Japan Earthquake that struck on March 11, 2011, and the ensuing Fukushima Dai-ichi Nuclear Power Plant (NPP) accident. In this chapter, I analyze the process by which governance related to the institutional responses, including support for evacuees of the NPP accident in Saitama Prefecture, has developed, taking into consideration the framework and discussion points in research on the sociology of disasters and in the theory of adaptive governance. I did not only carry out interview and questionnaire surveys of governmental entities, support organizations, and evacuee groups, but also carried out the participant observation and action research.

First, analysis of governmental institutional responses in terms of evacuee support yielded the similar results as the conventional discussion of institutional responses in disaster sociology. That said that adaptive governance was found to be possible in cases in which mayors of local governments were able to exercise their leadership, cases in which local governments adopted counterpart aid schemes, or cases in which general affair-type sections within local governments having wide-ranging authority carried out the support activities. In contrast, nongovernmental support organizations were able to engage in more flexible support activities than their governmental entities. The analysis revealed that, by sharing information on problematic aspects of evacuee support, learning from each other, and applying know-how accumulated prior to the disaster, nongovernmental support organizations were able to provide "spontaneous" support and, as contracted parties, to deliver support services tailored to the evacuees' circumstances.

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Second, the analysis revealed the difficulties of implementing adaptive governance for evacuee support in Saitama Prefecture. This is due to the fact that Saitama Prefecture, despite being the local government hosting evacuees from disaster-affected areas, was not involved in the governance of evacuee support, and the fact that nongovernmental support organizations, which took the lead in directing evacuee support in Saitama Prefecture, were unable to play the role of "mediators" and facilitators responsible for managing logistics, protocols and procedures, and goals, which are central to effective adaptive governance. Although adaptive governance theory recognizes important factors for the management of adaptive governance, it does not discuss the capacities required of agents to exercise such factors or the social structures needed to bring forth such agents. Comparison of evacuee support governance in different regions is needed to identify the structural conditions required for the establishment of adaptive governance of evacuee support.

8.1 Characterization of and My Interest in the Problem

8.1.1 Current Status of NPP Evacuees and Purpose of this Chapter

The Great East Japan Earthquake that struck on March 11, 2011, and the ensuing Fukushima Dai-ichi Nuclear Power Plant (NPP) accident created a large number and demographically diverse mix of evacuees. The number of evacuees from Iwate and Miyagi Prefectures affected by the tsunami was estimated to be 170,000 (as of November 2011), while the number of evacuees from the NPP accident was estimated to be 150,000 (as of September 2011). The number of evacuees in Iwate, Miyagi, and Fukushima as of March 2012—a year after the earthquake and accident—was approximately 270,000, while the number of evacuees in all other prefectures combined was approximately 76,000 (Harada 2019a: 12–21). As of April 2019, an estimated 48,000 evacuees still existed around the country.

Following the Fukushima Dai-ichi NPP accident, the Japanese government has engaged in the "remediation" of regions contaminated by radiation, reconstruction, and infrastructure improvement, and the rehabilitation of daily life through payment of damage compensation by the Tokyo Electric Power Company (TEPCO). It has also implemented a "Return Policy" involving the reorganization of evacuation zones within Fukushima to encourage evacuees to return to Fukushima. The Japanese government has equated the "return of evacuees to their homes" with "recovery" and has tied the "restoration of communities" in evacuation zones to "prompt cancellation of evacuation orders" (Yamashita et al. 2013). This policy is driven by the Japanese government's desire to complete restoration before the start of the 2020

Table 8.1 The rate of residence in the former areas to which evacuation orders (April 2019)

	The period of rearranged the areas to which evacuation orders	Number of residents of areas to be evacuated	Number of residents	Rate of residents (%)
Tamura City, Miyakoji District East area	April 2014	273	222	81.3
Kawauchi Village, East area	October 2014 & June 2016	287	87	30.3
Naraha Town	September 2015	6946	3657	52.6
Katsurao Village	June 2016	1301	375	28.8
Minami Soma City, Odaka District etc.	July 2016	8677	3665	42.2
Namie Town	March 2017	14,535	910	6.2
Iidate Village	March 2017	5415	905	16.7
Kawamata Town, Yamakoya District	March 2017	843	334	39.6
Tomioka Town	Apirl 2017	9269	877	9.4
Total		47,546	11,032	23.2

Tokyo Olympics and the fact that restoration of the resident population, by calling back evacuees, is critical for political rehabilitation of the Fukushima prefectural government and municipalities near the Fukushima Dai-ichi NPP.

Despite such efforts, the actual return of evacuees has not progressed as hoped. Table 8.1 shows the resident populations of former evacuation zones as of April 2019 (Kahoku Shimpo April 12, 2019). While residency rate (return rate) is higher for towns whose evacuation orders were canceled early, the average residency rate is 23.2%. The residency rate for towns located near the Fukushima Dai-ichi NPP that were severely affected by radiation remains very low at 6.2% for Namie Town, 9.4% for Tomioka Town, and 16.7% for Iitate Village.

Why, then, have those who evacuated outside of Fukushima Prefecture not tried to return? There is a wide range of reasons. For example, since there were areas where radioactive contamination increased again even after decontamination, some evacuees are concerned that the radioactive contamination in their hometowns is still high. Despite assurances by the Japanese government that the "nuclear accident has been resolved," there is latent fear of Dai-ichi NPP. Others explain the fact that, even if they were to return home, everyday life would be inconvenient because the infrastructure necessary for daily life has not yet been re-established. Furthermore, due to the prolonged evacuation period, a fair number of individuals have already taken up residence in their evacuation destinations. In some cases, evacuees with

school-aged children refuse to return to their hometowns because their children have become accustomed to life in their evacuation destinations.[1] However, it is not the case that these individuals are thinking, "We don't want to return to Fukushima." The current state of mind of many of the evacuees is that "Eventually, we want to go back to Fukushima. But, at the moment, even if we wanted to go back, we couldn't." Even in the abovementioned cases where families have set down roots in their evacuation destinations, it is not as if the individuals have been willing to choose to settle there. They had no choice but to do so.

The evacuees' financial circumstances have greatly influenced their lives as evacuees. Evacuees who had assets to begin with or who were able to receive compensation from TEPCO have not struggled to get by. That said, many elderly evacuees lament that they feel isolated and lonely living in a place where they have no acquaintances or friends. Meanwhile, other evacuees have struggled financially and found themselves in circumstances that are both mentally and physically taxing. In terms of their current state, evacuees can be broadly categorized into those who feel lonely (former group discussed above) and those who find themselves struggling emotionally and physically as well as financially (latter group). Japan is now facing the challenge of how to support those evacuees scattered around the country who "want to return but can't."

The objective of this chapter was to examine the institutional response with respect to evacuee support and the formation of support-related governance by analyzing how evacuee support schemes have changed over time in Saitama Prefecture, which is located 200 km from Fukushima, from the standpoint of local governance theory and adaptive governance theory, as well as an analytical framework from disaster sociology. Saitama Prefecture, which is located just north of Tokyo, was the destination for as many as 7000 evacuees at its peak. In particular, the Saitama Super Arena, Japan's largest multiple-purpose arena, became a center of attention immediately following the NPP accident when it became the evacuation site for 1200 evacuees from Futaba Town in Fukushima Prefecture. Because Saitama Prefecture had not suffered many large-scale disasters in the past, the prefectural government had not anticipated having to take in evacuees and had little accumulated institutional experience with how to support evacuees. Therefore, the purpose of this chapter was to elucidate the evacuee support governance logistics and practices that were ultimately developed and to identify the challenges encountered in these dimensions of governance by clarifying how the prefectural government, local municipalities, and their residents responded to such unanticipated circumstances and the processes by which evacuee support solutions were developed over time.

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[1] However, there are many children who have been unable to adjust to evacuee life and are unable to attend school or who are bullied because they are evacuees (Harada, 2019c).

8.1.2   Evacuation Process Following the Great East Japan Earthquake and Fukushima Dai-ichi NPP Accident[2]

Following the earthquake and tsunami that occurred on March 11, 2011, many people in disaster-affected areas evacuated to schools and other emergency shelters or to the homes of friends and relatives. After the subsequent NPP accident, evacuation and shelter-in-place orders were issued for people living within 3 and 10-kilometer radius of the NPP, respectively. On March 12, as the severity of the accident began to become clear, the Japanese government expanded the scope of the evacuation order to a 10-kilometer radius and then to a 20-kilometer radius. On March 15, a shelter-in-place order was issued for people living between 20 and 30 kilometers from the NPP. On March 15, a request was disseminated through the National Governors' Association for prefectures around the country to host evacuees from Fukushima. As a result, municipalities throughout Japan opened up gymnasiums, community centers, and other facilities as emergency shelters. Saitama Prefecture opened the Saitama Super Arena as an emergency shelter.

Construction of emergency temporary housing (prefab and wooden temporary housing) under the Disaster Relief Act began in April 2011. A temporary (rental) housing program was established wherein the prefectures secured private rental housing and the national government paid for rents, security deposits, key money, and handling commissions. Permission was granted across the board for evacuees from the three disaster-affected prefectures to move into this temporary housing, marking the start of evacuation life in public and private rental housing throughout the country. By the summer of 2011, the vast majority of evacuees had moved into temporary housing, and all but a few emergency shelters were closed.

However, the situation for evacuees from Fukushima Prefecture remained in flux as a result of radioactive contamination from the NPP accident and the national government's changing evacuation orders. With each new revelation of the scale of the contamination, the government was forced to expand the scope of its evacuation order. On April 22, the Japanese government designated the area within a 20-kilometer radius of the accident site as a restricted area and prohibited entry into the area. In addition, the government designated a deliberate evacuation area whose residents were directed to evacuate within a month and an evacuation-prepared area in case of emergency whose residents were instructed to prepare to evacuate. Under these evacuation orders, Namie Town, Futaba Town, Okuma Town, Tomioka Town, Naraha Town, Hirono Town, Katsurao Village, Kawauchi Village, and Iitate Village were subject to complete evacuation. Accordingly, all residents of these municipalities, including their entire governments, evacuated en masse. Parts of Tamura City, Minami Soma City, and Kawamata Town also became subject to evacuation. As of September 2011, there were approximately 100,000 evacuees from designated evacuation zones who were considered to be "enforced evacuees" (Fig. 8.1).

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[2]This section was prepared based on Harada (2019a).
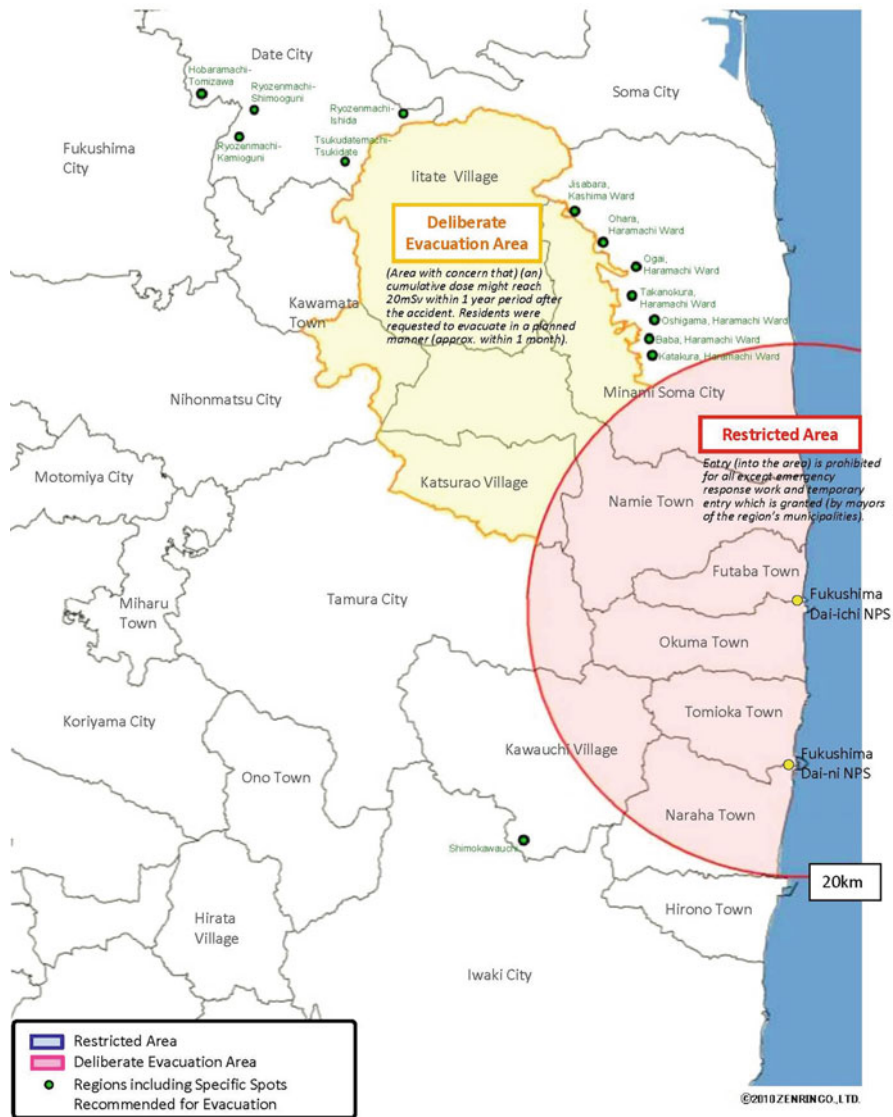
Fig. 8.1 Restricted area, deliberate evacuation area, and regions including specific spots recommended for evacuations (as of November 25, 2011)
Source: https://www.meti.go.jp/english/earthquake/nuclear/roadmap/pdf/evacuation_map_111125.pdf

The areas affected by radioactive contamination were not limited to the evacuation zones, and a number of "hot spots" with high contamination occurred throughout the region. On June 16, the government designated Specific Spots Recommended for Evacuations outside of the evacuation zones; however, these

図   Pattern of Evacuees

	Evacuation Zone	Fukushima Prefecture outside Evacuation Zone	Tohoku area and Kanto area	Western Japan and Hokkaido
（1）Enforced Evacuees	→→→→	→→→→	→→→→	
（2）Voluntary Evacuees living in Fukushima Prefecture		→→ →→→→ →→→→		
（3）Voluntary Evacuees living in other area			→→→→→	
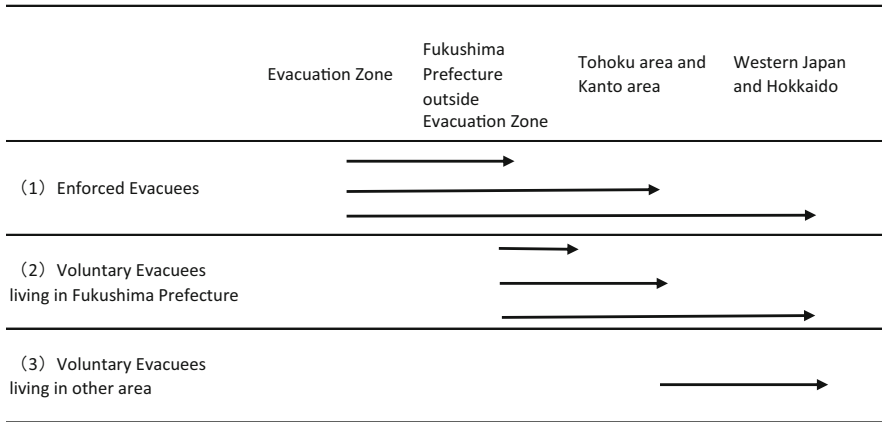
Source: Harada（2019: 17）

Fig. 8.2 Pattern of Evacuees

areas affected only 282 households. This caused many residents outside of the designated evacuation areas, especially those with young children, to worry about their health due to potential radioactive contamination and led some to relocate, if only temporarily, to low-radiation areas for the sake of "health preservation." A subset of these individuals ended up living as evacuees for an extended period. Such evacuees from areas that were not designated as evacuation zones were considered to be "voluntary evacuees."

Hotspots were discovered not only in Fukushima Prefecture but also in the Tohoku and Kanto regions. Some residents of such hotspots, primarily those from the greater Tokyo area, evacuated voluntarily to the western part of Japan and to Okinawa and Hokkaido. Figure 8.2 shows the pattern of evacuation from the NPP accident. It is in the manner described above that the Great East Japan Earthquake and the Fukushima Dai-ichi NPP accident caused the dispersal of evacuees to all parts of the Japan (Fig. 8.3).

Half a year after the NPP accident, the Japanese government began preparations to rescind the evacuation order in Fukushima Prefecture. First, the order designating the Evacuation-Prepared Area in Case of Emergency was lifted on September 30, 2011. On December 16, 2011, Prime Minister Yoshihiko Noda declared that the NPP had reached a "cold shutdown" and that the accident was over. Soon thereafter, on December 26, the Japanese government announced that the Restricted Area and Deliberate Evacuation Area would be reorganized into the three following zones: a zone in preparation for the lifting of the evacuation order (annual radiation dose of less than 20 mSv) whose residents would be allowed to return in the near future (Area 1), a restricted residence area (20–50 mSv) whose residents would be allowed to return after several years (Area 2), and a difficult-to-return zone (50 mSv or higher) whose residents would not be able to return for five or more years (Area

Hokkaido, 1,835

Aomori, 591

Osaka, 814
Kyouto, 728
Niigata, 6,372
Akita, 1,002
Hyougo, 602
Shiga, 235
Nagano, 1,000
Iwate, 544
Yamagata, 12,025
Okayama, 318
Fukui, 327
Toyama, 257
Gunma, 1,807
Hiroshima, 236
Tottori, 131
Gifu, 287
Shimane, 116
Ishikawa, 367
Miyagi, 2,481
Fukuoka, 360
Yamaguchi, 86
Saga, 137
Tochigi, 2,736
Nagasaki, 94
Ibaragi, 3,824
Saitama, 4,223
Kumamoto, 100
Oita, 183
Kochi, 67
Tokushima, 39
Aichi, 809
Tokyo, 7,781
Chiba, 3,212
Miyazaki, 131
Kagawa, 43
Wakayama, 59
Mie, 205
Yamanashi, 734
Kanagawa, 2,666
Okinawa, 694
Ehime, 109
Nara, 104
Shizuoka, 878
Kagoshima, 149

Fig. 8.3 The number of evacuees from Fukushima Prefecture to other prefectures as of July 5, 2012
(Source: http://fukushimaontheglobe.com/wp-content/uploads/fukushima_hinansya_en.pdf)

3). The reorganization of zones began in March 2012 and was completed in August 2013 (Fig. 8.4).

The Japanese national government subsequently began making preparations to rescind the two areas (Area 1 and Area 2). Evacuation orders were lifted for Tamura City in April 2014, Kawauchi Village in October 2014, Naraha Town in September 2015, Katsurao and Kawauchi Villages in June 2016, and Minami Soma City in July 2016. This was followed by the lifting of evacuation orders for Kawamata Town, Namie Town, Iitate Village, and Tomioka Town in March and April 2017. The main justification given for lifting these evacuation orders was the lowering of radiation levels through decontamination. Evacuation orders were thus lifted for 70% of the area designated as evacuation zones following the Fukushima Dai-ichi NPP accident. Those who continued to live as evacuees after the lifting of these evacuation orders were no longer considered "forced evacuees" but rather "voluntary evacuees."

In March 2017, the Japanese government ended the temporary housing program that had been providing housing for voluntary evacuees. In other words, evacuees were forced to make a decision to either settle permanently in their evacuation destinations or return to Fukushima. As discussed in Sect. 8.1, the majority of evacuees, while struggling with the decision of continuing to live as evacuees or returning home, have, in the end, chosen to continue living as evacuees.
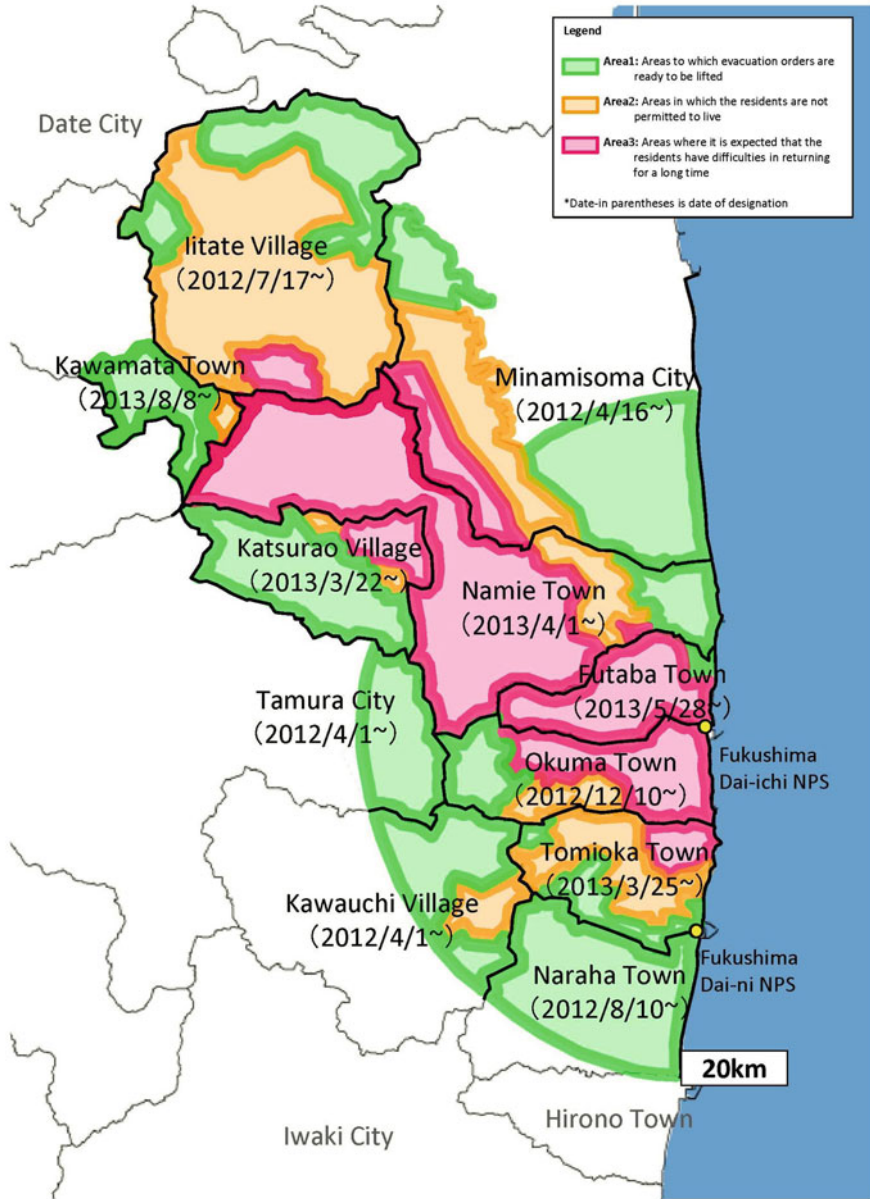
Fig. 8.4 Areas to which evacuation orders have been issued (August 7, 2013)
Source: https://www.meti.go.jp/english/earthquake/nuclear/roadmap/pdf/20130807_01.pdf

8.1.3 Characteristics of the Evacuees in Saitama Prefecture

Next, let us examine the change over time in evacuee numbers in Saitama Prefecture, which is the focus of this chapter. Figure 8.5 shows the change over time in evacuee numbers for six prefectures besides the three disaster-affected prefectures (Iwate, Miyagi, and Fukushima) that hosted the greatest number of evacuees. One year after the disaster, the three prefectures with the highest numbers of evacuees in order from highest to lowest were Yamagata, Tokyo, and Niigata. Both Yamagata and Niigata prefectures share borders with Fukushima Prefecture and, thus, were readily accessible to evacuees. More than 90% of evacuees in Yamagata and Niigata prefectures were from Fukushima Prefecture. A large portion of evacuees in Yamagata were voluntary evacuees, particularly mothers and children, from areas other than the officially designated evacuation zones who lived "dual lives," moving back and forth between their evacuation destinations and their hometowns. This is likely due to the proximity of Yamagata and Fukushima prefectures, which made travel between the two easy. The evacuees in Niigata Prefecture represented a mix of evacuees from designated evacuation zones and voluntary evacuees (Harada 2019a: 21–24).

Five years after the earthquake, Tokyo, Ibaraki, and Saitama were among the top five prefectures hosting evacuees. This may have had something to do with the fact that these prefectures are located a little farther away from Fukushima Prefecture and a certain number of evacuees decided, at least for a little while, to stay in their evacuation destinations. The number of evacuees in Saitama apparently increased between 2013 and 2014. This increase was due to the discovery in 2013 that the method used by Saitama Prefecture to count evacuees only included those living in housing created through the Disaster Relief Act and not those who had procured private rental housing on their own and those were living with friends and relatives,

Transition of the number of Refugees by Prefecture(March 2012-Sep.2019)
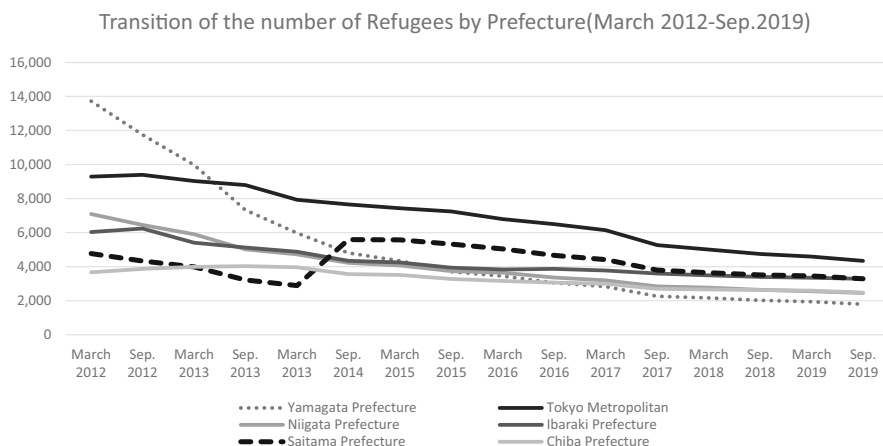
（Source）Reconstruction Agency Web site （http://www.reconstruction.go.jp/topics/main-cat2/sub-cat2-1/hinanshasuu.html）

Fig. 8.5 Change over time in number of evacuees hosted by prefectures (March 2012–September 2019)

which led to a revision of the counting method in 2014 (Harada 2019b: 167–169). Accordingly, considering the situation in Tokyo and the downward trend of evacuee numbers over time, it can be estimated that there were 7000–8000 evacuees in Saitama Prefecture immediately after the earthquake. That is to say, Saitama Prefecture, which is the focus of this chapter, hosted high numbers of evacuees.

8.1.4 The Research Question and Structure of This Chapter

Up to this point, we have presented a historical context and examined trends related to evacuees generated by the Great East Japan Earthquake and the Fukushima Dai-ichi NPP accident. It is clear from this historical framing that even eight years after the earthquake disaster, many evacuees still exist. Such evacuees are frequently compared to refugees who have been forced to flee from their home countries. One commonality between refugees and evacuees is the fact that their fates tend to be decided based on the reasoning of the hosts rather than on the thoughts and wishes of the refugees and evacuees themselves. In the case of refugees, there are generally said to be three durable solutions. Among these, the most desirable is voluntary repatriation. The second is local integration. The third is resettlement, in cases where refugees are unable to receive long-term protection in the initial host country and are resettled in a third country (Watado et al. 2016: 9–10). However, such solutions are not applicable to evacuees from the NPP accident. This is because, although the NPP evacuees are being encouraged by the national government and Fukushima Prefecture to return home, circumstances are such that not all of the evacuees can return even if they want to; as such, "repatriation" is not a viable solution. Furthermore, integration into evacuation destinations is not really what most evacuees want. The question is how can support be provided to evacuees who find themselves struggling with the hard choice of returning home or resettling in their evacuation destinations. This is the practical reason for analyzing the support solutions available in evacuation destinations to evacuees and the evolution thereof.

Therefore, the objective of this chapter was to elucidate what kinds of support schemes were established in Saitama Prefecture, which was the host to a large number of evacuees. In Sect. 8.2, I examine frameworks for analyzing social processes related to disasters that are being discussed in disaster sociology. Next, I examine relevant connections among disaster sociology, local governance theory, and adaptable governance theory, and present this study's research question. In Sect. 8.3, I analyze the responses of disaster relief organizations and the evolution of support schemes targeting evacuees in Saitama Prefecture. In Sect. 8.4, I identify the current state of evacuee support governance provided by Saitama Prefecture and the challenges therein.

8.2   Theory and Methods

8.2.1   Vantage Point (1) for Analyzing Social Processes Related to Disasters: Time Periodization

Time periodization and the selection of social units have been discussed in the field of disaster sociology as important considerations when describing social processes related to disasters. This is because disaster sociology, as a scholarly discipline, has sought to elucidate the response mechanisms of communities affected by disaster—i.e., investigated what kinds of problems occur over time and how different social units have responded to these problems (Yoshikawa 2007).

First, let us examine the disaster process along the time axis. Barton (1969) suggested a periodization of disasters comprising the following five stages: (1) the pre-disaster period, (2) the period of detection and communication of threat, (3) the period of relatively unorganized response, (4) the organized response period, and (4) long-run, post-disaster equilibrium. Building on research in disaster sociology conducted in the USA, Yoshikawa (2007) pointed out that disaster processes follow a cycle consisting of the following stages: disaster (contributing causes), acute stage (direct damage, extended damage, firefighting, lifesaving, etc.), emergency stage (evacuation, securing of temporary housing, debris cleanup, etc.), recovery and restoration (re-establishment of daily life, community (cities), industry, etc.), and prevention (creation of disaster-resistant communities, disaster risk reduction planning, etc.).

The following are examples of actual disaster processes in Japan examined along the time axis. The social processes following the Great Hanshin Earthquake that occurred in 1995 unfolded as follows: emergency first response period (less than 1 week post-disaster), evacuation and relief period (ranging from a 1-week to a 2-month period, post-disaster), and restoration of daily life period (starting 3 months post-disaster). The majority of evacuation shelters established during the evacuation and relief period were closed during the restoration of daily life period as the disaster survivors moved to temporary housing and began rebuilding their lives (Yamashita and Suga 2002: 7–11). In contrast, survivors of the Great East Japan Earthquake and Fukushima Dai-ichi NPP accident have experienced a much more prolonged evacuation period under circumstances that have made the rebuilding of lives difficult. Furthermore, efforts to rebuild evacuees' lives do not always match with the goals of community recovery and restoration; as such, recovery cannot simply be equated with the return of evacuees to their cities/towns of origin. Thus, to understand the disaster processes of this earthquake, we need to use a different time periodization from that of the typical disaster.

As discussed in Sect. 8.1.2, the factors determining the disaster responses related to the Great East Japan Earthquake and the Fukushima Dai-ichi NPP accident include the evacuation orders issued by the Japanese government and the timing

of the lifting of these orders, as well as policies related to housing provided to evacuees. In this chapter, I employ the following 4-stage periodization for analyzing the movement of evacuees and evacuee support in Saitama Prefecture.

1. Emergency evacuation period (March 11–31, 2011): Immediately after the Great East Japan Earthquake and Fukushima Dai-ichi NPP accident, the Saitama Super Arena along with gymnasiums and other facilities was opened up by different municipalities to take in evacuees. The main challenge during this period included the identification of appropriate facilities and types of support needed to ensure the survival of evacuees.
2. Early period of evacuee life (April 2011–March 2012): In April 2011, officials established designated zones including restricted areas near the NPP; in Saitama Prefecture, evacuees began moving from evacuation shelters to public and other temporary housing. The temporary (rental) housing program was officially launched in August, marking the start of the extended period of evacuee life. The residents of Futaba Town who evacuated en masse to the Saitama Super Arena were moved to the former Kisai High School (which was not being used at the time) in Kazo City in northern Saitama, where some evacuees remained living until December of 2013. The main challenge during this period was how to provide support for daily life and to ensure continued interaction between evacuees after they each found places to live (see Fig. 8.8).
3. Extended evacuation period (April 2012–March 2017): April 2012 saw the reorganization of evacuation zones and the extension of the temporary (rental) housing program; as it became clearer that the evacuation period would be prolonged, a number of groups began support activities. Some supporters, for example, began providing relevant information to evacuees, while others and the evacuees themselves began hosting gatherings for evacuees to interact. In Saitama, meetings (Fukutama Meetings) were convened to bring together support organizations and evacuee groups in Saitama Prefecture. In addition, the local governments of evacuees' hometowns in Fukushima began working with support organizations to create groups whose goal was to prevent the isolation of evacuees by conducting home visits and related support work.
4. Period of exploration of evacuee support through public–private cooperation (April 2017 onward): While in the fifth year after the disaster the temporary housing program ended for voluntary evacuees and evacuees of the tsunami as well as a curtailing of evacuee support by host municipalities, the Reconstruction Agency and Fukushima Prefecture began working with support organizations to explore ways to continue providing evacuee support through, for example, the establishment of support hubs to help evacuees rebuild their lives. In parallel with efforts by the Reconstruction Agency and Fukushima Prefecture to implement new support programs designed by experts for targeted evacuation destinations, new forms of support governance based on public–private cooperation are being explored.

8.2.2 Vantage Point (2) for Analyzing Social Processes Related to Disasters: Social Units

The second critical viewpoint when analyzing social processes related to disasters has to do with which social units to use. For example, Barton (1969) proposed a segmentation of four social units consisting of (1) individuals, (2) small groups (families and neighborhood organizations), (3) formal organizations, and (4) states/regions/nation. He then constructed a matrix with these four social units against five time periods to comprehensively analyze the social process underlying disasters. Dynes and Quarantelli (1968) presented a classification of four organizational types based on whether the structure and function (task) of the organizations changed before and after the disaster (Table 8.2). Noda (1977) reviewed the knowledge assembled by the Ohio State University Disaster Research Center (currently the University of Delaware Disaster Research Center), which was the central hub of disaster sociology in the United States, including research by Dynes and Quarantelli.

Using the Great Hanshin Earthquake of 1995 as a case study, Noda proposed the following classification of organizational responses to the changing task environment that can be described as one of increasing uncertainty, urgency, and interdependency (Noda 1997: 33–64). Type I organizations are established organizations, which are organizations whose structure, mission, and tasks do not change substantially during the emergency period from normal operations. In other words, during the disaster, such organizations continued to perform the roles that are expected of them during normal times. The police, firefighters, hospitals, local governments, utility companies, and other lifeline organizations fall into this category. This type of organization has a bureaucratic structure with a clearly defined organizational mission, power structure, and chain of command. As uncertainty increases during a disaster, established organizations seek to maximize efforts within the scope of their original activities by collecting information and shifting administrative staff to operations departments and other relevant positions. That said, because their tasks involve a certain level of expertise, such organizations tend to exclude outsiders and to limit efforts to what they are currently able to handle. Because normal decision-making processes are too slow to respond to the increased urgency that arises during a disaster, in some cases, decision-making functions in established organizations are delegated to entities that are in the affected area. However, there are many cases in which decision-making is delayed because it is not clear which department/section should take initiative and because the organizations are not equipped to coordinate efforts with other organizations. Furthermore, although the interdependence of these many kinds of organizations increases during a disaster, established organizations

Table 8.2 Four types of organizational response

		Task	
		Regular	Non-regular
Structure	Old	Type IEstablished	Type III Extending
	New	Type II Expanding	Type IV Emergent

Source: Dynes and Quarantelli (1968)

are hesitant to take on activities that are not directly related to their core tasks, especially after the emergency phase has passed. They thus try to maintain their organizational boundaries even when doing so goes against the wishes of other institutions and organizations.

Type II organizations, expanding organizations, are those that develop plans for how the organization will act *ex ante* and carry out those action plans when a disaster occurs. In addition, while such organizations have only a few staff members during normal times who are involved in management, they recruit large numbers of volunteers during disasters and carry out specific tasks while restructuring and expanding their organizations. The Red Cross is a perfect example of such an organization.

Expanding organizations are more subject to increasing uncertainty during disasters than established organizations (type I). This is not only because the routes for information collection are not as firmly fixed as in the case of established organizations but also because expanding organizations grow in size as they take on volunteers, which makes the control of information difficult. Furthermore, because the knowledge and skill level of disaster support volunteers varies and because the tasks expected of volunteers are not clear, in many cases, the volunteers are unsure of what to do. That said, under such circumstances, cooperation between organizations sometimes emerges as a consequence of the overlap of different organizations' boundaries. For example, the "Nishinomiya-style"[3] of coordination between the local government and volunteers that emerged after the Great Hanshin Earthquake of 1995 has subsequently served as a lesson on the importance of coordinating volunteers during a disaster.

It has also been pointed out that, in such organizations, problems related to decision-making responsibility and authority can occur in the context of increasing urgency. Specifically, individuals who do not have organizational responsibility are often called on to make decisions, despite not having the necessary information or without understanding normal decision-making patterns, resulting in a scattering of decision-making processes that complicates subsequent coordination efforts. In addition, even if new organizations with appropriate authority and functions may be needed during a disaster, in the context of increasing urgency, existing organizations sometimes slide in to fill those voids using their social status before the disaster as a basis for their authority.

Type III organizations, extending organizations, are those that do not have action plans for disasters but whose tasks change during a disaster, although their structure does not change. This category includes existing organizations and groups that carry out their usual functions to fulfill tasks that are needed during a disaster. This describes the role of construction companies during reconstruction and the role of department stores that provide shelter and food immediately after a disaster.

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[3] The human resources department of the Nishinomiya City government was tasked with keeping track of the number of volunteers needed by each section and for communicating with volunteer organizations about where volunteers should be deployed.

According to Noda (1977: 38–39), in previous research on disaster-related organizations, extending organizations were considered to be outside the scope of research because they did not clearly fall into any of the other organizational categories and because the activities of individuals belonging to extending organizations (e.g., the deployment of Boy Scouts as messengers), while undeniably important during a disaster, did not represent activities carried out by organizations, and therefore were not the target of research.

Extending organizations have nothing to do with disasters during normal times. In the context of increasing uncertainty during a disaster, such organizations often suspend their normal operations and activities. However, depending on the level of urgency during a disaster, the members of an extending organization may, in some cases, be driven by a concern for others to provide disaster support. In other cases, extending organizations may carry out activities at the request of established organizations (type I).

Type IV organizations, emergent organizations, are those that are established after a disaster occurs and carry out support and supplemental activities in areas affected by the disaster. These organizations do not exist before a disaster, and many are temporary organizations that disband after the emergency phase has passed. However, such organizations have a substantial impact on the circumstances of a disaster and are important. Examples of emergent organizations include search and rescue teams that work in disaster-affected areas and committee-type organizations comprising the representatives of the main support organizations that are formed in the early stages of a disaster to conduct coordination, etc. Evacuee support organizations and neighborhood councils formed by evacuees also fall into this category.

Such emergent organizations tend to appear when there is insufficient coordination between organizations after a disaster, when the power structures of existing organizations do not allow them to function effectively, or when existing social systems do not work for responding to the disaster. As discussed above, the main responders to disasters, established organizations (type I), seek to maintain their ability to carry out their own activities with self-consistency; they avoid taking on responsibilities that are beyond their existing capabilities, and they avoid the risk of taking on too much responsibility. In other words, emergent organizations play a supplementary role to established organizations.

The majority of emergent organizations disappear after the state of emergency has passed. This is because, by that time, existing organizations have become able to carry out disaster response and many of the members of such emergent organizations have returned to their original workplaces. However, some emergent organizations continue to exist even after the initial disaster; this happens in cases where there is an ongoing need for the work carried out by the emergent organization and in cases where the organization is able to secure personnel and other necessary resources, is recognized for carrying out suitable activities, and is able to establish a pattern of mutually beneficial interaction with other organizations.

I will use the four organizational types described above as social units in the case studies of disaster processes presented in this chapter.

8.2.3 New Developments in Disaster Sociology and Adaptive Governance Theory

According to a review of research trends in the USA from the 1960s to 2018 by Daimon and Atsumi (2019), new developments in disaster sociology emerged from research on the disaster responses to the coordinated terrorist attacks on the World Trade Center that occurred on September 11, 2001, and Hurricane Katrina in 2005. In this section, I will describe these new developments and their relevance to this chapter.

First, research on the disaster response to Hurricane Katrina led to an expansion of focus from just the period immediately after a disaster to the mid- and long-term issues arising from the disaster. More than 70,000 people were forced to evacuate as a result of Hurricane Katrina. As many of the individuals who lost their homes were from the lowest economic classes, relevant socioeconomic issues related to the "resettlement" of evacuees have been discussed. On this point, there is much overlap with the issues facing evacuees from the NPP accident. I would like to point out here that, although there is a tendency for disaster research to focus on the period just before and just after a disaster, efforts to find concrete solutions to issues related to recovery from a medium- to long-term perspectives represent a new theoretical and empirical tide in disaster sociology and that the present study is a part of that tide.

Next, one of the central points of discussion related to the coordinated terrorist attacks[4] is the role of improvisation in disaster response. It is suggested that disaster response should not be carried out according to a playbook created before the fact but, rather, should be viewed as an "art" in the broad sense of the word in which emphasis should be placed on the senses and skills of those on the ground. It has been proposed that different types of improvisation exist: These include "reproductive improvisation," wherein responses are reproduced based on existing visions and action policies of organizations but using different methods, "creative improvisation," wherein responses are related to but not exactly the same as existing responses, and "adaptive improvisation," which lies somewhere between "reproductive" and "creative" improvisation (Wachtendorf and Kendra 2012).

Table 8.3 represents organizational models for disaster response based on improvisation (Daimon and Atsumi 2019: 31). Daimon and Atsumi point out that the organizational theory based on the "improvisational-autonomous model" has been highlighted in disaster sociology in the USA and represents the ideal form of disaster response.

Organizational theory based on the improvisational–autonomous model should address questions such as an "under what circumstances" and "by which

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[4]One more point that has received much attention in discussions on the disaster response to the coordinated terrorist attacks is the relationship between communities and organizational resilience after the attacks. For example, it has been demonstrated that even though organizations involved in disaster response were devastated by the attacks, the ability to respond to crises remained intact thanks to the cooperation between communities and organizations that had been cultivated up to that point.

Table 8.3 Organizational models for disaster response

	A: Management-control model	B: Improvisational-autonomous model
Predicted behavior	Disorder and chaos	Cooperation and coordination
Chain of command	Management and control	Improvisation and autonomy
Organizations that should respond	New response organizations	Enhancement and coordination of existing organizations
Organizational structure	Authoritarian or military-style/tree-style	Decentralized, autonomous decision-making/rhizome-type
Policy during emergencies	Avoidance of chaos	Problem resolution
Organizational creation	According to manual	Issue-dependent
Organizational transformation	Change to achieve fixed state	Change dynamically

Source: Daimon and Atsumi (2019: 31)

organizations" improvisational and autonomous disaster response has been carried out. The circumstances of evacuees from the Great East Japan Earthquake and the Fukushima Dai-ichi NPP accident who are scattered across the country, which is the subject of this research, are such that the response has required repeated reconfiguration of support solutions through trial and error and the creation of adaptive support mechanisms. It has been necessary to provide a wide range of types of evacuee support and to respond adaptively to all evacuees, who differ in terms of place of origin, gender, generation, occupation, economic power, family structure, and social relations while also keeping pace with changes over time in the evacuees' circumstances and evacuee support policies.

In this next, I attempt to analyze the social processes related to disaster, focusing on processes regarding evacuee support by examining the relationships among the four types of organizations involved in disaster response as social units in each of the time periods discussed above from the perspectives of local governance and adaptive governance.

First, let us define local governance as "the aggregate of the diverse and interconnected systems, institutions, practices, missions, ties and relations implemented by local governments, business entities, NGOs, and NPOs for socially relevant strategic purposes—i.e., the multitiered composite of schemes comprising conflict, compromise, and coordination" (Yoshihara 2002: 96). Society is becoming increasingly complex, and people's needs for governmental administration are becoming increasingly diverse and sophisticated. At the same time, governments are finding it increasingly difficult to provide administrative services at the levels required due to deteriorating fiscal circumstances. In this context, political scientists and sociologists have pointed out the importance of "governance" wherein diverse stakeholders play appropriate roles in governing as opposed to "government" wherein the administrative state alone is responsible. It is especially important to understand forms of governance involving diverse stakeholders in the case of

support for evacuees from the Fukushima Dai-ichi NPP accident because the national government, in the form of the Reconstruction Agency, and Fukushima Prefecture have implemented relevant support initiatives in collaboration with non-governmental support organizations. I attempt to analyze how diverse stakeholders (disaster response organizations) have provided support to evacuees from the NPP accident while cooperating, clashing, negotiating, and compromising. In terms of organizational theory based on the improvisational–autonomous model, what I am endeavoring to do is to analyze the process by which rhizome-type organizational structures—grassroots, contextual, and situationally spontaneous structures that meet demand in appropriate stages of the disaster—are formed and issue-based organizations are created through the enhancement and coordination of existing organizations. That said, it has been pointed out that governance involving diverse stakeholders ends up complementing existing power structures and can create ambiguity in terms of the respective boundaries and responsibilities of public and private sectors (Yoshihara 2002: 102). When discussing local governance of evacuee support, such dilemmas are also included in analysis.

Furthermore, because the evacuees come from all sociological walks of life, it is necessary to adjust the content and methods of evacuee support through trial and error and to take an adaptive approach to evacuee support governance. In this regard, the discourse on adaptive governance, which is an approach that has been taken in environmental protection whereby methods are flexibly adjusted through a process of trial and error while respecting the pluralistic values of local communities, has proven informative. Miyauchi (2013) identified three conditions for ensuring adaptive governance: (1) guarantee of trial and error and dynamism, (2) setting of pluralistic values and multiple goals, and (3) recontextualization in local communities through investigative activities and learning by a wide range of local residents. Furthermore, Miyauchi (2017) explained that the three following points were important for "adaptive process management," which entails ensuring that processes remain adaptive in the face of uncertainty and continue to move. The first is to guarantee "multiplicity" in terms of setting multiple "common goals" that the parties involved can agree on as they come up, utilizing multiple methods in parallel, and creating multiple schemes. When doing so, it is also important to allow some wiggle room—some adaptiveness—to deviate from plans (Miyauchi 2017: 20–22). The second is "evaluation," which is needed to "continuously monitor what impacts one's activities and projects are having and what one has achieved in order to assess whether process is generally on track or not and to determine where efforts should be concentrated next" (Miyauchi 2017: 23–24). The third is "learning." According to Miyauchi (2017: 24–25), "Learning generates various social values. Because learning is usually carried out in groups, it promotes mutual understanding and trust among participants. It also facilitates the building of consensus within communities. Learning also promotes connections with outsiders (experts, local governments, other organizations, other communities, etc.) and encourages the creation of networks, which, in turn, facilitate the occurrence of "chain reactions" among communities and stakeholders."

That said that it is not expected that adaptive process management in terms of the setting of common goals, evaluation, and learning can be carried out by a single organization. In a context where the composition of stakeholders, methods used, and the values driving activities are context-sensitive and changing in real time, the process cannot be managed by a single organization with fixed methods and goals. Instead, what is important in the context of rapidly changing sets of stakeholders, social units, methods, and values is the role of connecting these core social components. In other words, some entity is needed to connect stakeholders, methods, and evaluations. A "mediator" is needed to, for example, connect values with other values, people with other people, to mutually translate external and internal values, and to pick up the diverse views of different stakeholders (Miyauchi 2017: 26).

The mediator in adaptive governance theory could be likened to the conductor of an orchestra.[5] The role of a conductor is to coordinate the members of a professional orchestra and to direct the music in an appropriate direction while taking into consideration the audience's reaction and each section of the orchestra—each stakeholder group. The conductor, after presenting his or her vision of the "ideal performance," leads the orchestra in an effort to jointly create the "ideal performance" while at times being criticized by orchestra members, with the goal of receiving applause from the audience for a good performance. If we apply this metaphor to the adaptive governance in the context of evacuee support, the orchestra members are the nongovernmental support organizations. The audience is the evacuees. The conductor might be a governmental entity in some instances or a nongovernmental organization in others. The role of the conductor is to envision an "ideal support system" while taking the state of evacuee support at the time into consideration and to lead the effort to implement that vision.

If we consider the discussion of adaptive governance, above, in conjunction with that related to disaster-focused organizations in conventional disaster sociology, the challenge of this chapter is to examine learning and knowledge accumulation by disaster-related organizations and evacuee support organizations regarding evacuees and methods for supporting them, how this knowledge has impacted adaptive support activities, and what entities have carried out adaptive process management related to evacuee support.

8.2.4 Methodology

In addition to conducting interviews and written questionnaire surveys of governmental entities, support organizations, and evacuee groups, I have also carried out collaborative research that combines participant observation and action research. My use of various research methods is the result of changing relationships between myself, research subjects, and the field.

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[5]The idea for an orchestra as a metaphor for organizational theory was inspired by Hirata (2010).

After the Great East Japan Earthquake and the Fukushima Dai-ichi NPP accident, I began conducting interviews of evacuees in Saitama Prefecture, support organizations, and local governments in Saitama. Later, in March 2013, I became involved with the editing and publishing of an information magazine known as *Fukutama Tayori* for evacuees living in Saitama Prefecture. While conducting questionnaire surveys of evacuees and local governments and publishing the results of these surveys in *Fukutama Tayori*, I also engaged in participant observation while helping to manage Fukutama Meetings that brought together evacuee groups and support organizations. Further, in March 2016, I set up an NPO called the Saitama Wide-area Evacuee Support Center and began developing proposals for submission to the national government, Fukushima Prefecture, and Saitama Prefecture while being contracted by the Recovery Agency and Fukushima Prefecture to provide evacuee support. My efforts, outlined above, are what Yamori (2010) terms action research, which he defines as "collaborative social practice carried out by researchers and subjects of research who share a vision for society" and pointed out the importance of researchers "intervening" in their "field sites" to promote changes aimed at the realization of a more ideal society (Yamori 2010: 11). By this definition, the evacuee support research that I am currently engaged in is action research.

In sociological research, it is often said that researchers need to maintain a certain distance from their subjects to avoid the problem of "over-rapport," referring to the difficulty in obtaining objective data when one becomes too close to one's subjects. However, I chose to engage in action research for this study because I made the judgment that, if I want to understand the state of support for evacuees on a deeper level, I need to be on the frontlines of evacuee support. In addition, although many studies related to evacuees and support for evacuees have been conducted for scholarly purposes, on numerous occasions, I have heard evacuees and supporters criticize such studies as "not serving any practical purpose." Putting it the other way around, I chose to proactively engage in support activities because I asked myself "what can I do as a sociologist?" Since then, I have been searching for ways of conducting research that will contribute to the evacuees and support activities. It is through this process that I came to ask how support schemes for evacuees generated by the Fukushima Dai-ichi NPP accident have evolved over time in Saitama Prefecture, which did not have experience with major disasters or with the governance of support based on public–private cooperation, and what the challenges of such collaborations and efforts are.

In the sections that follow, I divide the time since the occurrence of the Great East Japan Earthquake and the Fukushima Dai-ichi NPP accident into four periods and analyze the relationships between disaster-related organizations (the national government, Fukushima Prefecture and municipalities within Fukushima, Saitama Prefecture and municipalities within Saitama, support organizations, evacuee groups) and the types of evacuee support they have provided during each period.

8.3   Case Studies—Evolution of Governance Related to Evacuee Support in Saitama Prefecture[6]

8.3.1   Emergency Evacuation Period (March 11–31, 2011)

8.3.1.1 Evacuee Response by Municipalities in Saitama Prefecture

On March 15, 2011, four days after the Great East Japan Earthquake, Fukushima Prefecture put out a request to all prefectural governments asking them to take in evacuees. Saitama Prefecture instructed municipalities under its jurisdiction to take in evacuees, resulting in the establishment of evacuation shelters around the prefecture. Coordination of local residents who gathered at such evacuation shelters to volunteer was carried out by the Saitama Prefecture Social Welfare Council, which is an expanding organization (type II). However, the majority of municipalities in Saitama had not considered the possibility of taking in evacuees from prefectures other than Saitama. That said, after the NPP accident, a number of municipalities in Saitama were able to provide comprehensive and detailed support to evacuees who arrived with nothing but the clothes on their backs. What enabled government entities, which are the epitome of established organizations (type I), to respond to these unanticipated circumstances?

First, it can be said that mutual-aid interventions had been agreed on between some municipalities in Fukushima Prefecture and municipalities in Saitama Prefecture. Mutual aid is an approach to disaster support that was utilized after the Great Sichuan Earthquake of 2008 wherein municipalities that have established sister-city agreements or friendly relations as a result of some connection agree to support each other's administrative functions if one of the municipalities suffers a disaster. For example, Sugito Town in Saitama and Tomioka Town in Fukushima began sports exchanges of elementary students in 1996 and entered into a friendship-city agreement in 2010. Although there was no official mutual-aid agreement between the towns, it was understood that, if one of the towns experienced a disaster, the other would provide assistance. Misato City in Saitama and Hirono Town in Fukushima had entered into a mutual-aid agreement in the event of a disaster in 2008. That said, as revealed by city workers of Misato City who explained, "although we thought that there might be a chance that Misato residents would evacuate to Hirono, we didn't imagine the opposite occurring," Misato City had not considered the possibility of taking in evacuees from Hirono Town.

Such mutual-aid arrangements made it possible for relief supplies to be sent to Fukushima immediately after the NPP accident and for Fukushima residents to evacuate *en masse* to Saitama Prefecture. At the evacuation shelters, immediate and comprehensive support related to food, clothing, shelter, and health care was able to be provided thanks to cooperation between the public employees of the host municipalities and local volunteers. Little by little, evacuation shelters began to close in April 2011 as the evacuees moved into rental housing. Sugito Town and Misato

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[6]This section was based on Chaps. 2–5 in Nishikido and Harada (2019).

City continued to operate evacuation shelters for a relatively long period until all of the evacuees had found alternative housing and did not take any steps to forcibly move evacuees out of the shelters. Even after the evacuees left the shelters, these municipalities continued to provide livelihood support, employment support, and to check in on evacuees.

However, there is a problem with such mutual aid: namely, that although aid is likely to reach residents in municipalities having such agreements, there is a possibility that aid will not reach residents of municipalities that do not have such agreements. For example, while the satisfaction of Tomioka Town evacuees who were able to receive counterpart aid is extremely high, Misato City prioritized the intake of evacuees from Tomioka Town and, in some cases, refused to take in evacuees from other regions. As explained by a Sugito City employee who dealt with evacuees firsthand, "They are all evacuees. I don't understand why they should be treated differently. I had to make extremely tough decisions." A widespread, large-scale disaster, especially if it is a composite disaster, may generate an unexpectedly large number of evacuees. Given the uneven geographic distribution of aid, it is necessary to reexamine the appropriateness of mutual-aid relationships as an administrative response mechanism in times of emergency.

Second, the initiative of the mayors of municipalities that took in evacuees enabled aid to be provided flexibly during the emergency period. For example, in addition to the abovementioned Sugito Town and Misato City, the mayor of Sayama City announced that the city would take in 100 evacuee households and adopted a policy whereby Sayama City assumed payment of 50,000 JPY worth of monthly rent for six months and the security deposit and key money.

Third, the smoothness with which evacuee aid was provided during this period depend on the administrative department within the local government that was responsible for carrying out the aid. The main role of disaster response departments in local governments is crisis management. As such, dealing with evacuees from other places falls outside their responsibility. For example, when nongovernmental support groups asked disaster response departments—whose duty is crisis management—to hand out flyers announcing events or aid for evacuees, the fliers often never made into the hands of the evacuees. This is a problem of compartmentalized administration, the narrow specialization of disaster response departments not being useful in terms of providing aid to evacuees from other places. This problem has also been pointed out in discussions on institutional responses in the field of disaster sociology.

To begin with, not all local governments have designated departments responsible for evacuee support. As such, in the case of a disaster, it is necessary to assign a department or section to manage the implementation of aid or to respond via supplemental or alternate mechanisms outside of normal operations. In the case of the municipalities in Saitama that I investigated, departments were able to provide evacuee support flexibly if they were able to coordinate the activities of multiple departments within the government, either because they were already engaged in general affair-type work or were under the direct control of the mayor.

For example, in Koshigaya City, the crisis management department dealt with evacuees immediately after the earthquake. However, the lodging of numerous demands and complaints by citizens' groups regarding aid led the Mayor's Office and the Public Information Section to take over, which made it possible for the government to implement measures that cut across different sections. In another example, although crisis management departments tend to be separated from departments responsible for human services, in Misato City crisis management is dealt by the Security Promotion Section, which is an office in the Planning and Administration Division in the Resident Services Department. This enabled the government to develop an overall plan for evacuee aid and to implement flexible support that was not compartmentalized within a disaster management section.

In addition, the ability of governments to identify what they can and cannot do and to then establish schemes for cooperating with nongovernmental entities was the key to being able to implement flexible support for evacuees. When municipal governments were responsible for providing relevant support services related to the hosting of evacuees, flexible support was observed when the department providing the support was not one that is normally engaged in planning and management but, rather, one that is responsible for human services or one that has similar capacities and experience. This facilitated the taking up of disaster survivors' and supporters' views and cooperation with nongovernment volunteers. In April 2011, Sugito Town changed the section responsible for evacuee support from the Policy Section to the Resident Participation Promotion Section. By putting the Mayor's Office and the Public Information Section in charge, Koshigaya City was able to hear the voices of the supporters and evacuees and to provide comprehensive aid. In Higashimatsuyama City, the Community Development Section in the Community Life Department, which serves as a contact point for nongovernmental organizations, divvied up tasks with the Social Welfare Council and other entities and implemented public–private joint evacuee support. In other words, a condition for administrative departments to be able to create innovative and adaptive support schemes is that they have already established relations with diverse stakeholders including citizens' groups as a part of everyday operations.

8.3.1.2 Activities by Nongovernmental Support Organizations for Evacuees Who Evacuated *En Masse*

Upon receiving the request from the Fukushima prefectural government to host evacuees, the Saitama prefectural government found itself having to respond to the residents of Futaba Town, Fukushima, who had evacuated to the Saitama Super Arena along with the town's government. The Saitama Super Arena was opened as an evacuation shelter for 16 days from March 16 to 31, 2011, at its peak hosting approximately 2500 individuals including the entire population of Futaba Town and its government. Thanks in part to its easy accessibility, and the Saitama Super Arena was swamped by crowds, which on some days exceeded 1000 individuals, offering to volunteer.

Next, let us examine what kinds of support activities were carried out by expanding organizations (type II) and extending organizations (type III), and how

emergent organizations (type IV) formed. In addition, using specific examples, I will discuss what kinds of relationships these organizations had with Saitama Prefecture, which is an established organization (type I).

At the point that it opened up the evacuation shelter on March 16, Saitama Prefecture's policy was limited to providing shelter and blankets to evacuees and the prefecture was hesitant about providing food and recruiting volunteers. What breathed new life into this policy was the volunteers. On March 17, members of the Antipoverty Network Saitama, a group that provides support to individuals who have lost their jobs and homes as a result of being laid off, visited the Saitama Super Arena and set up the Shinsei Shein [Earthquake Disaster Support] Network Saitama (SSN) together with a lawyers' committee, a judicial clerks committee, a suicide prevention hotline called Inochi No Denwa, and an NPO called Hot Pot, which provides livelihood assistance to those living in poverty. The SSN was an emergent organization (type IV) whose members included a wide range of extending organizations (type III).

On March 18, discussions between SSN members, various volunteer groups, and the Saitama Social Welfare Council, an expanding organization (type II), which had been asked by Saitama Prefecture to provide assistance, resulted in the establishment of the Volunteer Station that consisted of individuals with experience running disaster volunteer centers. The division of roles related to evacuee support was also discussed, which resulted in the formation of the following subgroups. The "meal preparation group" included the Junior Chamber Saitama, Chamber of Commerce, and consumer cooperatives; the "goods and allocation group" included the Saitama Social Welfare Council and the Saitama Worker's Welfare Council; the "information group" included Hands On! Saitama, an NPO that carries out community development and intermediate support activities in Saitama Prefecture, along with the high school and university students who assembled in support of this NPO; the "childcare group" included the Sainoko Children's Network, an NPO that supports childrearing and their volunteer members; and the "consultation group," which included the SNN, lawyers, judicial clerks, and a range of professionals such as licensed social workers and clinical psychologists. General volunteers who did not belong to a specific group carried out support activities including the delivery of relief supplies. The Saitama Social Welfare Council was responsible for organizing the volunteers.

Problems related to evacuee support and solutions were discussed on a daily basis by the Volunteer Station, and groups with new roles were formed as needed. For example, with the arrival of the residents of Futaba Town on March 19, it soon became evident that care for the elderly was needed. A new "welfare group" was formed that included members with care-providing qualification from the "childcare group." In another example, on March 19, after receiving notice that the residents of Futaba Town would be evacuating *en masse*, Saitama Prefecture announced that it would provide meals to the evacuees and asked for volunteers. In this process, the Volunteer Station was joined by the Johokankyo, a general incorporated association that carried out activities that differed from those of other organizations associated with the Volunteer Station. This organization carried out support tasks that included

handing out information to evacuees from Iwaki City taken from the Iwaki City Disaster Response Headquarters website and, at the request of the Futaba Town government, creating a list of evacuees from Futaba Town. In other words, this group carried out activities using the Internet that supplemented the efforts of the Futaba Town government, which had evacuated to the Saitama Super Arena, and the Iwaki City government, which had remained in Fukushima Prefecture. On March 21, the Minna No Gakko [School for Everyone] aimed at providing educational instruction and recreational activities for K-12 students was set up under the leadership of an NPO group, the Supporting Union for Practical Use of Educational Resources. Many retired teachers, university students, and high school students participated in the program as volunteers.

As can be seen from the above, support activities at the Saitama Super Arena were carried out by groups that differed in terms of their normal activities and organizational characteristics. The groups discussed the problems related to evacuee support and ways to solve these problems on a daily basis and used their respective know-how accumulated through past activities in order to provide "improvisational" support. The organization of the meal preparation group had a network for procuring foodstuffs and restaurants to use these ingredients to begin providing meals immediately. The SNN, which provided a wide range of support as part of the consultation group, was able to adapt support activities carried out by the Antipoverty Network Saitama before the disaster that targeted low-income individuals who had lost their jobs and homes. The SNN utilized its existing network of lawyers and clinical psychologists to provide support to evacuees. These support activities can be classified as "reproductive improvisation" in which activities that are generally in line with the original missions and action policies of the organization are carried out in a different manner. In contrast, the support activities of groups such as Hands On! Saitama in the information group and Johokankyo were completely new and could be classified as "creative improvisation." They provided information services to address a support need that is unique to evacuee shelters by adapting the organization's normal community development activities, mobilizing large numbers of student volunteers, and providing/sharing information with evacuees. With the help of volunteers with experience caring for the elderly, the Sainoko Children's Network, which played a central role in the childcare and welfare groups, engaged in nursing care activities with which they had no previous experience. This is an example of adaptive improvisation, which lies somewhere between reproductive and creative improvisation. It is in the manner described above that wide-ranging and rapid support activities came to be provided by nongovernmental support organizations.

Meanwhile, what was the relationship between the support provided primarily by nongovernmental support organizations associated with Volunteer Station and the support activities carried out by Saitama Prefecture on March 19 and subsequently? The two provided support independently, and this duplication of efforts remained until the end. For example, individuals responsible for evacuee support from the Saitama prefectural government did not participate in meetings of the Volunteer Station groups, and organizations associated with the Volunteer Station were not

permitted to participate in meetings of the Saitama Disaster Response Headquarters despite requesting to do so. As such, the two entities were unable to share information, which led to redundancies in food and relief supplies, confusion regarding information, and inadequate management of the many volunteers who came to Saitama Super Arena to help. Harada (Harada 2019a, b, c: 86) points out that this occurred because Saitama Prefecture approached support activities at the Saitama Super Arena as an extension of its normal duties. The sections within the Saitama prefectural government that was put in charge of support activities at the Saitama Super Arena were not sections related to disaster prevention and disaster management but, rather, the urban development section, which managed the Saitama Super Arena, and the social welfare section. These two sections responded as best they could while trying to figure out what to do. As pointed out by Dynes and Quarantelli (1968), decision-making is delayed in situations where it is not clear which section of governmental entities is supposed to take initiative. In the case of the Saitama Super Arena, although the Saitama prefectural government tacitly consented to Volunteer Station's support activities, nongovernmental organizations were not allowed to participate in decision-making related to evacuee support. This was a consequence of the sections in question of the Saitama Prefecture acting as an established organization (type I) and attempting to maintain the boundaries of their own organizations and was one of the main factors that prevented resolution of the duplication of efforts.

With the closing of the evacuation shelter on March 31, the Volunteer Station and the Saitama Prefecture Disaster Response Headquarters were dissolved and evacuee support in Saitama Prefecture was left for a short time without a headquarters. Support activities were subsequently continued by organizations that had been involved in the Saitama Super Arena.

8.3.2 Early Period of Evacuee Life (April 2011 to March 2012)

8.3.2.1 Uneven Distribution of Governmental Evacuee Support

As evidenced by the closing of the evacuee shelter set up in the Saitama Super Arena on March 31, shelters set up to house evacuees from the Great East Japan Earthquake and the Fukushima Dai-ichi NPP accident tended to be short-lived. This is because of the experience after the Great Hanshin Earthquake of 1995 where public facilities could not be used for a prolonged period due to their continued use as evacuee shelters. That said, in Saitama Prefecture, the municipalities that had mutual-aid arrangements discussed in Sect. 8.1 (Sugito Town, Misato City) operated evacuee shelters for a relatively long time. The 1200 residents of Futaba Town who had evacuated to the Saitama Super Arena were relocated *en masse* to a former high school building in Kazo City located in the north of Saitama Prefecture. This evacuation shelter was operated continuously until December 2013. Kazo City provided mutual aid to Futaba Town.

The Japanese government took steps to partially or completely exempt the medical and educational expenses of evacuees, while the Japanese Red Cross

Society provided six types of household appliances: washing machines, refrigerators, televisions, rice cookers, microwave ovens, and electric water boilers. Local governments provided housing and basic livelihood support in accordance with the Disaster Relief Act. However, more detailed support was needed to be able to carry out everyday tasks, in some cases, differences could be seen in the support provided by different municipalities. For example, Saitama Prefecture is warmer than Fukushima Prefecture, and air conditioners are essential in the summer. However, air conditioners were not included in the six appliances provided by the Japanese Red Cross Society. In addition, voluntary evacuees who were staying with relatives were not eligible to receive appliances from the Red Cross Society. That said that local governments were prohibited from directly providing household appliances such as air conditioners to individual evacuees because doing so would constitute the government contributing to a private individual's assets. As such, some municipal governments reached out to local social welfare councils, asking them to provide support to help evacuees obtain air conditioners or to collect donations from city residents to purchase air conditioners and deliver them to the evacuees (e.g., Koshigaya City). This is an example of the local government (type I organization) supplementing the work of the Red Cross Society, which is an expanding organization (type II) through a third expanding organization (type II).

As another example of public support provided to evacuees, some host municipalities adopted policies to exempt evacuees from having to pay water and sewage fees. In Tokyo, for a certain period, exemption from paying water and sewage fees was implemented across the board, in all special wards and municipalities. However, in Saitama Prefecture, some municipalities implemented similar exemptions, while others did not. Similarly, other types of livelihood support, including the distribution of donated money and everyday supplies or the provision of help in finding employment, were provided by some municipalities but not others. In other words, the types of livelihood support an evacuee could receive depended on the municipality to which they had been evacuated.

Furthermore, there was a concern that if the evacuees leaving the evacuee shelter all moved in together in temporary (rental) housing, and the evacuees would find themselves isolated if they had fewer opportunities to interact both with other evacuees and the local residents. Along with Sugito Town, Misato City, and Kazo City, which had counterpart aid arrangements, Fujimino City and Koshigaya City carried out home visits to individual evacuees in order to confirm that they were okay. In particular, Koshigaya City established a system in which the evacuees themselves would keep an eye on evacuees. The system was set up because the city had received requests from evacuee groups and questionnaire surveys to create employment for evacuees. As discussed in Sect. 8.3.1.1, this example illustrates how municipalities with mechanisms in place to hear the requests of evacuees were able to provide adaptive support.

8.3.2.2 Remobilization of Nongovernmental Support Organizations and Establishment of Evacuee Groups

The nongovernmental support groups that had provided support at the Saitama Super Arena held meetings to try to continue providing support cooperatively after the evacuees from Futaba Town had relocated to the former high school building in Kazo City. In the end, however, each group ended up making separate arrangements with the Futaba Town government to provide support. That is, the consultation group ended up providing legal and livelihood consultations, while the welfare group provided volunteers to listen to the evacuees, the information group created an evacuee information database, the meal preparation group provided one meal a week, and the supplies group provided supplies, all based on their experience at the Saitama Super Arena.

The SSN, which had been responsible for providing consultations at the Saitama Super Arena, presented recommendations to the Governor of Saitama Prefecture on April 4, 2011, regarding mechanisms for evacuee support that should be put into place. The recommendations consisted of the establishment of a public–private joint task force and the creation of a prefecture-wide public–private joint consultation system to enable continuous response to the evacuees' diverse needs. In response to the proposal, Saitama Prefecture called to establish Disaster Response Coordination Council. The SNN, together with the Saitama Bar Association, assumed the task of assembling such a council. Members of the Disaster Response Coordination Council included Saitama Prefecture along with eight municipalities in Saitama; 11 nongovernmental support organizations, many of which had provided support at the Saitama Super Arena; and nine professional associations including the Saitama Bar Association, the Saitama Judicial Scrivener Society, the Saitama Society of Certified Clinical Psychologists, and the Saitama Society of Certified Social Workers. This council, which was convened 13 times between July 2011 and June 2013, enabled governments, nongovernmental organizations, and professional associations to share information on the current state of evacuee support. Although the (1) establishment of a clearinghouse for information on the support available to individual evacuees, (2) creation of a comprehensive consultation system to enable response to requests for consultation in all areas, and (3) the regular convening of a public–private joint task force were proposed as a framework for the provision of support, no such platform for coordination with practical ability was ever created.

At the same time, numerous evacuee organizations have formed throughout Saitama Prefecture. These evacuee organizations can be divided into six types depending on whether their members live together in a single housing complex or are dispersed and whether the organization was formed under the guidance of the government, support volunteers, or the evacuees themselves (Harada 2019a, b, c). Eleven evacuee organizations existed in Saitama Prefecture during the period from March 2011 to March 2012 (Table 8.4, Fig. 8.6).

It can be seen that, in regions where evacuees lived together in clusters, although some evacuee organizations were formed by governments (A1), many were formed by the evacuees themselves (E1 to E4). In all of the evacuee organizations, an

Table 8.4 Types of evacuee organizations formed between March 2011 and March 2012

	Government-led	Volunteer-led	Evacuee-led
Clustered residence	A1(Est. in July 2011)		E1(Est. in May 2011) E2(Est. in Mar. 2012) E3(Est. in May 2011) E4(Est. in May 2011)
Scattered residence	B1(Est. in May 2011) B2(Est. in Oct. 2011)	D1(Est. in Oct. 2011) D2(Est. in Mar. 2011) D3(Est. in Sept. 2011)	F1(Est. in Dec. 2011)
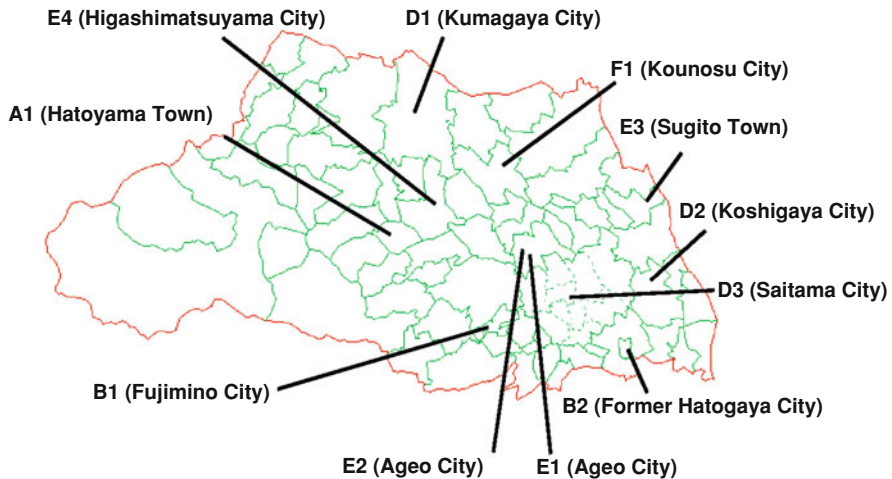
Source: Harada (2019:105) partially revised

Fig. 8.6 Distribution of evacuee organizations formed between March 2011 and March 2012

evacuee leader played a central role in directing the organization's activities while neighborhood councils and NPOs provided support.

Meanwhile, as many of the evacuees moved into emergency temporary housing and government-sponsored rental housing after leaving the evacuations shelters, the formation of evacuee networks was important to prevent evacuees from becoming isolated. There are few examples of evacuee gatherings (A1, B1, B2) organized by local governments, which were established organizations (type I) with no know-how regarding the intake of evacuees. Government-led evacuee gatherings did not last and were replaced by those led by social welfare corporations (type II expanding organizations) and volunteer organizations (type IV emergent organizations). In the case of dispersed evacuees, it was nongovernmental supporters in the evacuation destinations who organized evacuee gatherings (D1–D3). There were also cases in which the evacuees themselves organized networks of evacuees living scattered apart (F1).

Given the vulnerability of evacuees to becoming isolated, it was important in this period for local governments hosting the evacuees to keep track of where the evacuees were living in order to help create evacuee networks. That said, in reality, it was the nongovernmental support groups and the evacuees themselves that carried out the role that local governments should have performed. It should also be noted that some organizations (A1, D2, and E3), which made requests to local governments to improve living conditions for evacuees, also played a role as advocates.

8.3.3   Extended Evacuation Period (April 2012 to March 2017)

8.3.3.1 Decline of Governmental Livelihood Support with Prolongation of Evacuation Life

After the earthquake disaster, local governments in Saitama Prefecture provided a wide range of livelihood support. However, this livelihood support declined with the protraction of the evacuation period. Figure 8.7 shows the change over time in livelihood support provided by local governments in Saitama to evacuees from 2014 up to 2018. It can be seen that, although local governments continued to provide livelihood support for five years after the earthquake, the number of such support programs has declined since 2016.

Municipalities in Saitama were struggling with the question of "how long and what types of special treatment should be given to evacuees?" Whether or not to provide special support to evacuees is left up to the discretion of each municipality. For example, in 2016, the Saitama prefectural government implemented a policy that gave preferential treatment to voluntary evacuees applying to live in housing under prefectural management. That said, Saitama Prefecture's governance of evacuee support overall has been unclear, and the question of what kind of support municipalities should provide to evacuees has been completely delegated to local governments. Under such circumstances, nongovernmental organizations gradually assumed a central role in providing evacuee support in Saitama Prefecture.

8.3.3.2 Expansion of Nongovernmental Support Organizations and Evacuee Groups

The support organizations that continued to carry out support activities even as the evacuation became protracted were the various organizations that provided support at the Saitama Super Arena. For example, the SSN, which was part of the consultation group at Saitama Super Arena, continued to provide phone consultations and professional referrals. The Saitama Council of Workers' Welfare, which was a part of the goods and allocation group, continued to distribute goods received from companies and other donors to the evacuees and to host events and social gatherings for evacuees. The Saitama Coop, which was a part of the meal preparation group, hosted cookouts and gatherings for evacuees. In addition, amid the prolonging evacuation period, these organizations supported the activities of the various evacuee groups that formed in Saitama Prefecture.

Distribution of public relations
Distribution of information magazines and event information
Health Checkups and Vaccinations
Exemption from water charges
Exemption from sewerage charges
Individual visits and telephone calls
Distribution of free tickets and discount tickets for buses
Financial support for kindergartens and nursery schools
Distribution of gift certificates, rice vouchers, free citizen pool tickets, etc.
Holding of exchange meetings
Distribution of donations and household goods

0   5   10   15   20   25   30   35

■ Jan 2014 ■ Jan 2015 ■ Jan 2016 ■ Jan 2017 ■ Jan 2018 ■ Jan 2019

Fig. 8.7 Changes in life support by local governments in Saitama Prefecture

Since April 2012, 18 evacuee groups have formed in Saitama Prefecture (Table 8.5, Fig. 8.8). This is because, during the protracting of the evacuation period, activities to prevent the isolation of evacuees, particularly those living apart from other evacuees, were carried out separately under the leadership of governments, support volunteers, and the evacuees themselves. For example, some evacuee groups were formed in several locations (C1, D5, D6, F5, etc.) after being inspired by an evacuee gathering hosted by a nongovernmental organization; in other cases, evacuees who were active in evacuee gatherings formed new evacuee groups after moving to a different location (F7, F8). Some groups formed whose members consisted of individuals from the same hometown who ended up in different evacuation destinations throughout Saitama Prefecture (F4, F9, F10), while other evacuee groups that were formed by volunteers in the early evacuation period have continued to carry out activities while the leadership has been taken over by the evacuees themselves (D1 → F2, D2 → F3). Finally, there is an example of an organization, which began as a volunteer cookout group, which has become an NPO that rents facilities to provide meals to evacuees (D7). If we included organizations that were formed prior to April 2012, at its peak, there were approximately 30 evacuee groups carrying out activities in Saitama Prefecture. Although the majority of these were emergent organizations (type IV), with growing expectations of a protracted evacuation period, some support organizations have emerged that are pursuing longer-term organizational management.

As can be seen from the above, a diverse set of support organizations and evacuee groups existed in Saitama Prefecture; that said, there were evacuees who were unable to participate in evacuee gatherings for a range of reasons including the fact that, because the evacuees were scattered across Saitama Prefecture, evacuee groups or support organizations did not necessarily exist near everyone's evacuation destination. This resulted in the publication of *Fukutama Tayori*, an information newsletter targeted at evacuees who were at risk of becoming isolated. In addition to

Table 8.5 Types of evacuee organizations that formed in April 2012 and later

	Government-led	Volunteer-led	Evacuee-led
Clustered Residence		C1 （Est. in July 2012）	E5 （Est. Oct. 2012）
Scattered Residence	B3 （Est. in May 2012） B4 （Est. in May 2013） B5 （Est. in June 2014）	D1 ⟶ D2 ⟶ D4 （Est. in Apr. 2012） D5 （Est. in June 2012） D6 （Est. in Sept. 2012） D7 （Est. in July 2012）	F2 （Est. in June 2016） F3 （Est. in Oct. 2014） F4 （Est. in May 2012） F5 （Est. in Mar. 2013） F6 （Est. in Feb. 2014） F7 （Est. in Aug. 2014） F8 （Est. in Nov. 2015） F9 （Est. in Feb. 2014） F10 （Est. in June 2014）

*F4, F9, F10 (The activity are is the whole area of Saitama Prefecture)
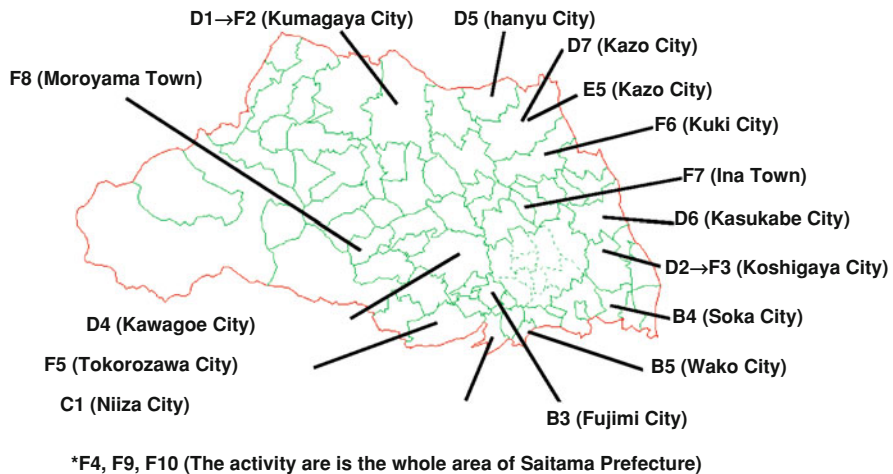
Source: Harada (2019:138) partially revised

Fig. 8.8 Distribution of evacuee organizations formed in April 2012 or later

announcements of gatherings and events for evacuees, *Fukutama Tayori* contained information related to childrearing, health, employment, information about Saitama Prefecture, information about thyroid examinations and reparations, and articles on evacuation life. The results of ongoing surveys on numbers of evacuees and support

provided by local governments in Saitama Prefecture were also published in the newsletter.

The editorial staff of *Fukutama Tayori* centered on members who carried out support activities at the Saitama Super Arena; distribution of the newsletter and management of the readership list were carried out by Saitama Council of Workers' Welfare, which was a part of the goods and allocation group at Saitama Super Arena. The Saitama Council of Workers' Welfare is an extending organization (type III) that normally promotes the welfare activities of workers and carries out activities to improve the stability, security, and social status of workers in Saitama Prefecture. Because the Saitama Council of Workers' Welfare had a relatively strong organizational foundation and greater financial resilience compared to other nongovernmental support organizations, it was able to monitor the circumstances of evacuees and to respond rapidly and flexibly to the changing needs of evacuees from the very start of carrying out support activities. As evacuation life entered the protracted period, the Saitama Council of Workers' Welfare became a central figure in evacuee support in Saitama Prefecture. In the following section, let us examine the specific activities of this organization.

8.3.3.3 New Developments in Nongovernmental Support (1): Outsourcing of Support Activities by Governments

In July 2012, the Japanese government implemented a recovery supporter system for dispatching individuals from inside and outside disaster-affected areas based on recovery plans or general plans based on recovery plans established by local governments in disaster-affected areas with the goal of "rebuilding communities through 'recovery-related cooperative local activities' that included home visits and care of survivors and support of community revitalization efforts." Saitama Prefecture was the only local government to which recovery supporters were dispatched from Fukushima Prefecture as well as Namie Town, Tomioka Town, Futaba Town, and Okuma Town, which were designated as part of the evacuation zone following the Fukushima Dai-ichi NPP accident.[7]

Recovery supporter initiatives were overseen by local governments and carried out by organizations contracted by the local government in question. In the case of Saitama Prefecture, the organization contracted to carry out recovery supporter initiatives for Namie Town, Tomioka Town, and Fukushima Prefecture was the Saitama Council of Workers' Welfare, which had continued to carry out evacuee support in Saitama Prefecture. Meanwhile, RCF, a general incorporated association that had carried out recovery activities in Iwate Prefecture and other areas affected by the tsunami, was contracted to carry out recovery supporter initiatives for Futaba Town and Okuma Town.

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[7]Recovery supporter initiatives targeting evacuees in Saitama Prefecture were carried out from 2013 to 2018 for Namie Town, from 2014 to March of 2018 for Futaba Town, and from 2014 to March 2015 for Okuma Town. As of the publication of this study, initiatives launched in January 2015 for Tomioka Town and in 2014 for Fukushima Prefecture are still ongoing.

The recovery supporter initiative undertaken by the Saitama Council of Workers' Welfare involved home visits to individuals who had evacuated outside of Fukushima Prefecture. The Saitama Council of Workers' Welfare, which had had many interactions with evacuees from Fukushima Prefecture through its evacuee support activities, determined that personnel capable of speaking the Fukushima dialect would be essential when visiting evacuees. This is because the organization had learned through its experience with evacuee support that, if an evacuee who is feeling isolated is suddenly visited by a stranger, even if the visitor is an expert, the evacuee will, in many cases, not feel comfortable speaking openly and will shut down. In fact, upon being visited by someone who could speak the Fukushima dialect, many evacuees expressed relief, saying things like "that was the first time I've spoken Fukushima dialect since evacuating," and ended up speaking with the recovery supporter for many hours. By having recovery supporters from Fukushima Prefecture carry out home visits, the Saitama Council of Workers' Welfare was able to not only provide employment to evacuees but, also, to get a handle on the material and well-being needs of evacuees. This was in contrast to other regions where evacuee home visits were not very successful because they were carried out by nonlocal social workers. In addition, the Saitama Council of Workers' Welfare hosted regular gatherings for evacuees and created opportunities for evacuees who were unable to attend such gatherings to meet on an individual basis. In some cases, the home visits led to the discovery of evacuees needing emergency assistance. It can be said that the Saitama Council of Workers' Welfare adaptively changed the type of support provided based on its experience with evacuee support in the manner described above.

However, there were substantial problems associated with the home visits of evacuees carried out by evacuees. For example, although the recovery supporters from Fukushima who had no particular expertise were able to listen to the evacuees, they were not able to offer any further professional support. The opposite situation also occurred in some cases where evacuees were unable to speak freely because they were too close to the recovery supporter performing the home visit. In addition, because the recovery supporter initiatives were conducted at the request of the local governments of the evacuees' hometowns, the evacuees sometimes equated recovery supporters with officers from their hometown governments. As such, the recovery supporters, despite being evacuees themselves, became targets of criticism directed at local governments. Thus, a number of challenges remain in terms of evacuee home visits, including how to best conduct home visits and provide professional/expert support to evacuees and how to maintain appropriate distance between the evacuees receiving these visits and the recovery supporters, who are themselves evacuees.

Meanwhile, the goal of the recovery supporter initiative carried out by RCF was to create networks for evacuees from Futaba Town and Okuma Town in their evacuation destinations. Specifically, RCF supported the work of Futaba Town residents' association in Kazo City and helped create evacuee groups for evacuees from Okuma Town. However, the creation of evacuee groups, particularly for individuals who were scattered, proved to be extremely difficult. The recovery

supporter initiative carried out by RCF relied on community development know-how acquired in communities affected by the tsunami disaster. Because community development activities in tsunami-affected areas are primarily carried out by residents who continue to live in the area, supporting group formation is easy. However, in the case of evacuees from the NPP accident who are scattered, it is not clear how long the evacuees will actually live in the area, and individuals able to serve as leaders for evacuee groups are difficult to identify. It is clear that, although the initiative did involve the formation of disaster survivor groups, understanding of the particular circumstances of NPP accident evacuees was indispensable.

8.3.3.4 New Developments in Nongovernmental Support (2): Development of Nongovernmental Organization Networks and the Challenges thereof

As discussed in Sect. 8.3.2.2, the Disaster Response Coordination Council was established by the Saitama Bar Association as an organ for coordinating evacuee support in Saitama Prefecture. However, this council largely served to coordinate existing governmental and professional organizations, and it was difficult for newly established evacuee groups to participate. Meanwhile, after the launch of *Fukutama Tayori*, evacuee groups began to voice their wish to exchange information, which resulted in the start of Fukutama Meetings organized by the Saitama Council of Worker's Welfare in July 2012. Fukutama Meetings were held once every two months until 2015 and a total of 29 times up to December 2019.

Fukutama Meeting participants included not only evacuees in Saitama Prefecture and leaders of support organizations but also staff from the Fukushima Prefecture Evacuee Support Section, recovery supporters involved in evacuee support, and staff from TEPCO. At Fukutama Meetings, participating organizations presented reports on the status of their respective activities; to the support organizations, the meetings were a valuable opportunity to hear the voices of evacuee groups and individual evacuees and to understand "what kind of support is needed." For example, requests from evacuees for gatherings based not only on evacuation destination but also on town of origin and age group led to the hosting of events for women and children evacuees and educational consultation events in evacuation destinations.

However, staff of the Saitama Prefecture Crisis Management and Disaster Prevention Section did not participate in the Fukutama Meetings; as such, coordination between nongovernmental support organizations and Saitama Prefecture, as host to the evacuees, also did not occur in this forum. As the number of organizations participating in the Fukutama Meetings gradually increased, reports from organizations began to take up more and more of the meeting time, making it increasingly difficult to implement activities (such as constructing disaster recovery public housing in Saitama Prefecture) aimed at resolving specific issues brought up by the evacuees. Nongovernmental organizations were able to obtain a variety of information but did not have the time and resources to carry out new activities beyond what they were already doing.

In addition, the lack of a political channel for nongovernmental support organizations that participated in Fukutama Meetings to communicate with the

local governments of evacuee host cities once again emerged as a problem. The requests submitted each year by the Saitama Council of Workers' Welfare to Saitama Prefecture were not effective; the fact that the Saitama Council of Workers' Welfare was affiliated with labor unions and the former Democratic Party of Japan limited the scope of its political activities. Under these circumstances, the members of the *Fukutama Tayori* editorial staff took the lead in establishing the Fukutama Support Center (NPO) in April of 2016.

8.3.4 Period of Exploration of Evacuee Support through Public–Private Cooperation (April 2017 Onward)

8.3.4.1 Establishment of Resettlement Support Centers and Support from Professionals

Five years after, the Great East Japan Earthquake and the NPP accident saw the ending of programs that provided housing to volunteer evacuees and tsunami evacuees and a reduction in the number of evacuee support measures by municipalities hosting evacuees. At the same time, efforts by the national government and Fukushima Prefecture to work with support organizations and professionals in evacuation destinations to provide public–private joint support began to emerge. First among these efforts was the establishment starting in 2016 of resettlement support centers by the national government (Reconstruction Agency) and the Fukushima Prefecture Evacuee Support Section to provide information and consultations to volunteer evacuees (as of 2019, there are 26 such centers around the country). The main task of resettlement support centers is to provide phone consultations to evacuees. Organizations that operate resettlement support centers can broadly be grouped into support organizations and evacuee groups that began activities after the earthquake disaster (type IV), intermediate support organizations such as regional NPOs (type III), and organizations that were involved in disaster response prior to the Great East Japan Earthquake (type II). This is the first time that implementation of a public–private joint initiative has been attempted at the national scale in Japan. In Saitama Prefecture, a resettlement support center was established in 2015. Although it was initially operated by the Saitama Council of Workers' Welfare, this duty was taken over by the Fukutama Support Center starting in 2017.

The second initiative to be launched involved home visits to evacuees with mental disorders, which was outsourced to the Japanese Psychiatric Nurses Association by the Fukushima Prefecture's Disability Welfare Section. The third initiative, implemented independently by Fukushima Prefecture, involved the provision of housing transition support in eight regions with the highest numbers of evacuees by the Fukushima Prefecture Residential Section to evacuees who had not yet secured housing after the close of the emergency temporary housing program. In Saitama Prefecture, the Saitama Association of Certified Social Workers, public interest incorporated association, has been contracted to provide this support.

Furthermore, as discussed in Sect. 8.3.3.3, the Saitama Council of Workers' Welfare was contracted by the Fukushima Prefecture Evacuee Support Section to

Table 8.6 Overview of public–private joint evacuee support initiatives

Support initiative name	Fukushima prefecture recovery supporters	Consultation, interaction, and explanatory meetings for evacuees outside Fukushima	Home visits to provide mental care to evacuees outside Fukushima	Housing transition support for evacuees
Initiative objective	Evacuee home visits	Phone consultations for evacuees	Home visits to evacuees experiencing mental and physical distress	Support for evacuees when switching residences
Contracted organization	Saitama Council of Workers' Welfare (general incorporated association)	Fukutama Support Center (NPO)	Japanese Psychiatric Nurses Association (general incorporated association)	Saitama Association of Certified Social Workers (public interest incorporated association)
Section of Fukushima prefectural government in charge	Evacuee Support Section	Evacuee Support Section	Disability Welfare Section	Livelihood Assistance Section
Governmental ministry in charge	Ministry of Internal Affairs and Communications	Reconstruction Agency	Ministry of Health, Labour and Welfare	NA
Launch year	2014	2016	2018	2018

conduct home visits as part of a recovery supporter initiative. As of 2019, there are four public–private joint evacuee support initiatives running in parallel (Table 8.6).

8.3.4.2 Current State and Challenges of Public–Private Joint Governance in Saitama Prefecture

These four public–private joint support programs are important support initiatives that target "evacuees who find themselves in economically, mentally, and/or physically distressing circumstances." However, in Saitama Prefecture, the arrangements for coordinating these four programs are inadequate. For example, although both phone consultations by the resettlement support center and home visits by recovery supporters were overseen by the Fukushima Prefecture Evacuee Support Section, coordination between the two programs was not envisioned at first because they were overseen by different ministries of the national government. Similarly, coordination between the other public–private joint initiatives implemented by Fukushima Prefecture was not initially envisioned owing to the fact that different sections within the Fukushima Prefectural government were responsible for each initiative. In other words, the question of evacuee support governance and which organizations should

be responsible for process management was left wholly to those on the ground because of compartmentalized administration within the government.

In light of these structural problems, after repeatedly appealing to Fukushima Prefecture, the Fukutama Support Center, which I represented, finally succeeded in 2019 in getting the government to hold regular coordination meetings attended by the support organizations responsible for implementation and the sections of Fukushima Prefecture responsible for overseeing these four public–private joint initiatives. As a result of these meetings, support organizations have begun to share information and to provide actual support to evacuees who are finding themselves in circumstances that are economically, mentally, and/or physically distressing. At present, staff from the Saitama prefectural government still do not participate in the coordination meetings held by the Fukushima Prefecture Evacuee Support Section. The results contrast starkly with other cases where there is coordination between the municipalities hosting evacuees, Fukushima Prefecture, and support organizations.

8.4   Discussion and Future Challenges

In this chapter, I have analyzed the processes by which the response by organizations to evacuees from the NPP accident and evacuee support governance in Saitama Prefecture have developed over time using an analytical framework and concepts from disaster sociology, while also considering relevant elements from adaptive governance theory. In this final section, I will review the main findings of this analysis and identify future areas of research.

First, in this chapter, I have demonstrated that a large number of evacuees needing a range of types of support still exist despite the fact that nine years have passed since the Great East Japan Earthquake and the Fukushima Dai-ichi NPP accident, as well as the fact that the roles and performances of organizations providing support and of governmental entities have changed over time. These facts indicate that there is a need in disaster sociology to not only discuss recovery processes immediately following a disaster but also conduct research with a medium- and long-term view. In this sense, this research is nothing more than an interim report.

Second, I was able to observe, in a case study of evacuee support in Saitama Prefecture, trends in the organizational response of governmental entities representing established organizations (type I), which are the most frequently discussed organization type in disaster sociology, that are largely consistent with those reported previously in the disaster–sociology literature. For example, faced with the unanticipated situation in which governmental entities had to take in evacuees from the NPP accident, the response was delayed in cases where it was unclear which section or department was responsible for taking initiative. In addition, based on the treatment of nongovernmental organizations by the Saitama Prefecture's departments and sections related to disaster prevention and disaster management, I was able to confirm the tendency for governmental departments to maintain their organizational boundaries and thus not coordinate well with other

organizations. In contrast, support was rapidly deployed in situations where the head of the local government exercised leadership with regard to evacuee support and in municipalities where mutual-aid types of support arrangements already existed. Furthermore, there were cases in which evacuee support was carried out by departments or sections within local governments responsible for general affairs, which allowed cross-sectional responses that, in turn, enabled the provision of adaptive support.

In contrast, the response to evacuees of nongovernmental organizations, which largely represent extending organizations (type III) and emergent organizations (type IV), has been more adaptive than those of governmental organizations and were often able to compensate for the deficiencies of governmental responses. For example, creative improvisation and adaptive improvisation were observed in the support provided by nongovernmental organizations at the Saitama Super Arena. That is to say, by sharing and discussing information regarding problematic aspects of evacuee support and ways to resolve these problems and by learning about the actual circumstances of evacuees, support organizations were able to formulate improvisational support by applying know-how acquired through their previous activities. The quality of support provided and the speed of response by nongovernmental support organizations were superior to the support activities developed through the internal trial-and-error efforts of governmental organizations. These support groups that carried on improvisational support activities continue to provide evacuee support in Saitama Prefecture.

In addition, the Saitama Council of Workers' Welfare learned about evacuees' circumstances while continuing to carry out support activities. The organization's home visits conducted as part of the recovery supporters initiative went smoothly due to the utilization of evacuees as recovery supporters. These are two examples of "learning" that led to adaptive support. However, as illustrated by the struggles faced by RCF, which had previously supported the community development efforts of tsunami survivors, previous support experience was not always directly applicable to supporting the community development of NPP accident evacuees. To provide support that matches the diverse and changing needs of evacuees, it is necessary to understand the evacuees' circumstances in real time and to have mechanisms to accumulate new knowledge. Conversely, the immobilization of knowledge reduces the flexibility of support activities, which has a detrimental impact on evacuees.

Third, it can be said that evacuee support governance, which is needed to ensure that the diverse needs of evacuees can be met, which still has not been adequately developed in Saitama Prefecture. One reason for this has to do with the fact that governmental organizations (Saitama Prefecture), which is an established organization (type I) that ideally should play a central role in disaster response, have hardly been involved in the overall governance of evacuee support. In disaster sociology, governmental organizations are discussed as being central players in disaster response. This is because their authority and responsibilities are clearer than that of nongovernmental organization, which should make it easier to direct support organizations. If we consider examples of other local governments in Japan that have assumed responsibility for carrying out a portion of support activities for the

evacuees they are hosting (such as Niigata Prefecture), it is highly problematic that the Saitama prefectural government is not playing a leadership role in evacuee support governance.

That said, because support for NPP accident evacuees is needed in the medium and long terms and requires support based on the expertise of essential actors, it is not the responsibility of governmental organizations alone. As discussed above, the development of adaptive governance is essential to being able to meet immediate- and longer-term needs of evacuees. Furthermore, a mediator is needed to undertake process management of evacuee support—i.e., to coordinate the activities of diverse supporters and organizations with diverse experience and expertise and to ensure that adaptive support for evacuees is continuously provided. That is to say, the bigger problem has to do with the fact that, among the various evacuee support organizations in Saitama Prefecture, there is currently no organization that serves as a mediator in process management that can determine the role and function of the missions of multiple support organizations and thus coordinate these in order to meet the shared goal of supporting evacuees.

Recognizing that evacuee support initiatives implemented by Fukushima Prefecture were being planned without consideration for coordination with other support programs owing to compartmentalized administration within government, the Fukutama Support Center mounted efforts that led to the convening of coordination meetings for public–private joint support initiatives. This is one example of successful adaptive process management. The Fukutama Support Center was able to analyze the circumstances of evacuee support from a broad perspective, to identify systemic problems and, thereupon, formulate a proposal to convene a coordination meeting. In this sense, the Fukutama Support Center can be said to be a mediator/conductor in the adaptive governance of evacuee support.

However, while some support organizations contracted by governments are looking at the problems of support schemes while carrying out support activities, others do not feel a need to or believe that they are unable to carry out activities that are beyond the scope of what they have been contracted to do. For example, the reason why the Saitama Council of Worker's Welfare, which conducts evacuee home visits as part of a recovery supporters initiative, does not seek to carry out more targeted evacuee support by coordinating home visits with phone consultations conducted by the Fukutama Support Center has to do with the social welfare orientation of Saitama Council of Workers' Welfare activities, weak motivation toward working with other organizations, and its positioning of contracted support activities as an extension of its everyday activities. Of course, there is nothing wrong with the Saitama Council of Workers' Welfare's policy from the standpoint of work the organizations are contracted to perform. However, such organizations can easily become obstacles to adaptive process management.

Looking at another example, the fact that the Fukutama Meetings, whose participants included numerous support organizations and evacuee groups, were unable to initiate new activities to address the needs of evacuees at the time was not due to the capacities of the organizations alone. Each support organization carries out support activities autonomously; thus, it is difficult for other

organizations to "evaluate" such autonomous actions and to direct an organization to act in a certain way based on these "evaluations." This is because evaluations and the directing of actions based on evaluations create a hierarchical relationship among the parties involved. It is for this reason that nongovernmental support organizations tend to carry out activities that are self-contained and do not often come to the fore as organizations capable of assuming responsibility for managing the processes of support governance. Accordingly, it is difficult for a "mediator" capable of carrying out adaptive governance of support activities and, in particular, adjusting the activities of individual organizations, to emerge from among nongovernmental organizations.

While adaptive governance theory identifies factors that are important for management of adaptive governance (shared goals, evaluation, and learning), it does not discuss the qualities that enable actors to possess these factors or the social structures that give rise to actors with these qualities. In this chapter, I examined changes over time in the characteristics of organizations providing evacuee support and the governance of these organizations in Saitama Prefecture, a region that experiences few natural disasters and has a relatively weak disaster culture. What has become clear is the difficulty of developing adaptive governance of support activities. If we look at areas in Japan where systems for providing public-private joint support have been established, there are examples of regions where governmental organizations, building on their experiences with past major disasters, have taken the lead in establishing sections or departments to provide evacuee support (e.g., Niigata Prefecture) and examples of regions where NPOs and other organizations that, based on the experiences of disaster volunteers, have placed their focus on disaster preparation during normal times and have stepped up to fill the role of mediators in evacuee support governance (e.g., Aichi Prefecture). One of the goals of future research will be to clarify how adaptive governance with respect to support can be developed by comparing a variety of factors, including the governance-related histories of actors engaged in evacuee support, the resources that they do or do not possess, and the state of social resources related to evacuee support.

As of January 2020, a large number of evacuees from the NPP accident remain. There are many issues that need to be considered. For example, how can we best continue to provide support to evacuees who find themselves struggling with options to choose between returning to Fukushima and settling permanently in their evacuation destinations? As nongovernmental support organizations continue to carry out support activities in Saitama Prefecture, how can they develop into actors that can contribute to adaptive governance of support? And, how should governmental organizations and nongovernmental support organizations provide support to disaster survivors and evacuees when the next disaster occurs? For a sociologist, taking part in evacuee support means presenting their vision of evacuee support, which is equivalent to becoming a mediator for adaptive governance of evacuee support. I am planning to continue conducting action research and engaging in support activities through my involvement in the Fukutama Support Center.

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Resilience and Invisible Damage: The 2011 Nuclear Accident and Natural Resources Management

9

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Abstract

In the Fukushima Daiichi Nuclear Power Station accident, radioactive materials were released into the atmosphere and contaminated natural resources, including a vast area of forests, agricultural lands, rivers, lakes, and the nearby Pacific Ocean. This has had serious impacts on rural areas used for their agriculture, forestry and forest products, and fisheries. Those industries have achieved a certain measure of recovery with governmental aids and TEPCO (Tokyo Electric Power Company Holdings) compensation; on the other hand, the damages on micro-businesses and local subsidiary subsistence activities such as forest recreation, foraging and hunting, or small scale mushroom production have been marginalized from the policies and negotiation for compensation. Despite the fact such micro industries and subsidiary subsistence activities had sustained local livelihoods and bio-cultural assets for resilience, such damages even have been left invisible from society. This paper firstly illustrates the efforts of a forestry park for recreation and environmental education to recover its business, including the negotiation with TEPCO for compensation. The depiction reveals the reality that only the damages that can be calculated in monetary terms and previously expected can only be the subjects of negotiations. The paper explores the detailed invisible damages in the use of local natural resources, which are not in the expected risk and damages lists of TEPCO negotiations and difficult to calculate in monetary terms. Such visualization helps to understand the whole picture of the different types of damage to production and living in rural areas, which was caused by the widespread diffusion of radioactive materials. It also

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clarifies that we need to describe each type of damage while seeing things from the perspective of the people who are living there.

9.1   Introduction

The Great East Japan Earthquake that struck on March 11, 2011 was an unprecedented catastrophe leaving more than 20,000 people dead or missing. Furthermore, the Fukushima Daiichi Nuclear Power Station accident immediately following the earthquake worsened conditions in the region because radioactive materials, such as radioactive cesium, were emitted into the ocean and atmosphere over a broad area of eastern Japan.

Fortunately, thanks to the avoidance of serious damage to the reactors' pressure vessels, the impact of radioactive materials was low enough to allow residents to return to live in the affected areas except for those nearest the nuclear power station (1). Although there remain substantial problems (for example, tens of thousands of people are still unable to return to their homes), the designation of mandatory evacuation zones has been since lifted, and the damages because of the impacts of the nuclear accident are being paid. Recovery from the disaster thus seems to be proceeding. However, many challenging problems still remain; for example, there are many people who voluntarily continue to live outside the evacuation zone even after the lifting of the mandatory evacuation order and those who have voluntarily evacuated from areas outside of the mandatory evacuation zones.

During the nuclear accident, large amounts of radioactive materials were released into the atmosphere and contaminated a vast area of forests, agricultural land, rivers, lakes, and ocean. This has had a serious impact on rural areas used for agriculture, forest resources, and fisheries, which rely on such natural resources as regional resources. The ecosystem products and services provided from such industries are consumed in urban areas, and people living in urban areas considered the impact of radioactive fallout as a personal health issue. As a result, the nuclear accident has attracted nationwide attention.

On the one hand, rural residents who were directly affected by radioactive fallout were providers of these products and services; on the other, urban residents were consumers of the products and services. Although both were victims of the accident, a conflict of interest was created, resulting in a long-lasting division between both parties until today.

Rural areas have a strong organic connection with regional resources contaminated with radioactive materials. Not all of the impacts that radioactive materials have had on the production and life of the people living there have been compensated for or recovered from.

This chapter will illustrate how such rural industries were affected by the Fukushima accident, particularly focus on micro-businesses and subsidiary subsistence activities, such as recreational use and mushroom production. Due to its difficulty to be calculated in monetary terms and less evaluation as livelihood practices, such business and activities have been marginalized from the politics and negotiations for compensation and have been left invisible from society. While the efforts with the governmental financial aids and TEPCO compensation led the major regional industries to recovery, such micro-business and subsidiary subsistence activities seem to increase their vulnerability with its invisibility.

9.2   Recovery of an Outdoor Recreation Facility After the Nuclear Accident and its Resilience

9.2.1   The State of Recovery of Agriculture, Forest Resources, and Fisheries as Primary Industries and Their Resilience

Before entering the main subject, we would like to outline the damage to the agriculture, forest resources, and fisheries industries, i.e., the major primary industries that use natural resources, and their recovery from the nuclear accident.

Regarding the impact on fisheries, radioactive materials released into the ocean were diluted by the enormous amount of seawater, which resulted in the reduction of the impact of radioactive materials. Therefore, fisheries have achieved some recovery. For example, test fishing for a limited number of fish species has been conducted in sea areas other than those closest to the Fukushima Daiichi Nuclear Power Station.

In the case of the forestry and timber production, most of the radioactive fallout was found to adhere to the surface of the bark with minimal transfer into the xylem. As a result, timber production was allowed to resume under the condition that the bark was peeled off except in the off-limits areas.

With respect to agriculture, it was confirmed that most of the dispersed radioactive materials was radioactive cesium, and its absorption into the soil and plants was extremely similar to that of potassium, a plant nutrient. To prevent radioactive materials from moving into commercial farm products, the following technological measures were taken: plowing to replace surface soil with subsoil to bury radioactive materials deep in the soil; soil plowing to make radioactive materials adsorb to the voids in the soil; spraying potassium on farmland to prevent radioactive cesium from moving into the plants; and peeling off the bark of fruit trees with radioactive materials on their surface. As a result, the concentration of radioactive materials in foodstuffs was successfully reduced to below reference values, and crop production was eventually resumed in all areas except those that are most severely contaminated with radioactive materials.

Thus, production of natural resources is gradually resuming after the nuclear accident in all affected areas, except in the mandatory evacuation zones. Some compensation is also being paid for the cessation of production and for contaminated

production materials. Although there are still various problems to be solved, reasonable measures have been taken (Hamada et al. 2015).

In regard to major primary industries, clear issues to be solved have enabled technological measures to be taken. Accounting documents in corporate management have also made it easier to economically quantify the damage; some compensation for losses has thus been paid.

However, industries other than the agriculture, forest resources, and fisheries also use natural resources. Their use for recreation and mushroom production are examples of relatively minor but impacted uses of natural resources. Here, we would like to discuss the impact of the nuclear disaster on such uses of natural resources and their recovery from the disaster.

In 2012, after the great earthquake and subsequent nuclear accident of 2011, Kousaka published a book (Kousaka 2012) that focused on the following questions: (1) How did local residents, government, and scientists face the memory of the disaster? (2) How flexibly were regional communities and groups able to systematically cope with and adapt to the accident? and (3) How do they intend to improve their situation? The book addressed the concept of resilience, which is defined as the ability to maintain one's own function and structure by responding systematically to fluctuations and changes imposed from outside and by absorbing shocks. Although resilience was originally a morphological concept, the term has become widely used across many academic disciplines, including research on post-disaster recovery. The notions of how human societies cope with and respond to a shock and what to remember as lessons after the shock are also included in the concept of resilience. Imai and Kanagawa (2011) focused on community governance during the recovery processes after disasters in Yogyakarta (Indonesia), Gujarat (India), and Kobe City (Japan). They clarified that, in these cases, resilience was expressed and shaped through community governance practices created within a framework of mutual cooperation. Abe and Yamamoto (2013) pointed out the significance of cooperation and networking among people for building resilience, and more specifically, that human networks played an important role in developing resilience during the recovery process of a forest owner's association in norther Japan after the earthquake and subsequent nuclear accident.

From this perspective, we would like to discuss how resilience was fostered during the recovery of the minor use of natural resources after the nuclear accident.

9.2.2 The Impact of the Nuclear Disaster on an Outdoor Recreation Facility and Its Subsequent Recovery

9.2.2.1 Overview of the Fukushima Prefectural Forest Park Adatara

The Fukushima Prefectural Forest Park Adatara (hereafter referred to as the Forest Park) is a forest park established in 1972 by Fukushima Prefecture. It was created with the aim of providing the residents of Fukushima Prefecture with a place to learn the importance of nature through interaction with forests and to promote an understanding of harmonious coexistence between humans and nature. The Forest Park is

within the jurisdiction of the Forest Conservation Division of Fukushima Prefecture's Department of Agriculture, Forestry, and Fisheries. It was initially managed by the prefectural government. However, the Forest Ecological Life Foundation (hereafter referred to as the Foundation) has acted as a trustee since FY1998, and it has operated the Forest Park as a designated administrator since FY2006. The services provided by the Foundation were highly valued; for example, the Forest Park received five stars in the comprehensive evaluation of the Japan Auto Camping Federation in FY2001. However, the number of visitors dropped drastically after the nuclear accident in 2011 and the operation of the Forest Park fell into a critical situation. Despite such a serious situation, the great efforts of the operators made it possible to restore the number of visitors to the level of that before the nuclear accident within about three years. The Forest Park is located about 63 km in a straight-line distance from the Fukushima Daiichi Nuclear Power Station, and as such it was not designated as part of an evacuation zone.

The Forest Park consists of a forest learning zone (52.1 ha) and an auto-camping zone (39.4 ha). The forest learning zone was established at the creation of the Forest Park. It has educational facilities, such as a forest learning center and walking trails, which are available for use free of charge. The facilities in this zone are managed by the commission fee from the prefectural government to the Foundation.

The auto-camping zone was created in 1998 when the Foundation was entrusted with the management of the Forest Park. This zone has a visitor center with an exhibition space for nature information, an auditorium, bathing facilities, and a shop; cozy cottages each equipped with a wood-burning stove; and tent sites. Therefore, visitors can enjoy forests and nature while staying there. Because of such highly sophisticated facilities, the Foundation with its expertise was entrusted the management of the Forest Park by the prefectural government.

Visitors to the auto-camping zone pay the fee stipulated by the regulations of Fukushima Prefecture, which goes directly to the Foundation as income. In other words, the quality of operation by the Foundation as a designated administrator determines the number of visitors, and contributes directly to the income of the Foundation. Therefore, its competence in operation is tested. In Japan, corporations that manage public facilities tend to be created as places for former civil servants of the prefecture to gain re-employment, and thus they often lack expertise in management. In contrast, this case goes against such a trend, with most staff members hired as experts in these activities through open recruitment, enabling operation of a highly professional facility.

9.2.2.2 Overview of the Damage to the Forest Park, and Its Subsequent Recovery

On the day of the Great East Japan Earthquake in 2011, the earthquake shook the Forest Park with an upper 5 intensity on the Japan Meteorological Agency seismic intensity scale, resulting in the collapse of some buildings, partial land subsidence, and a reduction in the volume of water in stored water resources.

In terms of impact from the nuclear accident, as of July 28, 2011, the open-air dose rate of radiation in front of the visitor center was 0.48 μSv/h. The open-air dose

Fig. 9.1 Revenues from
Auto Campsites (unit: 1000
Japanese yen)
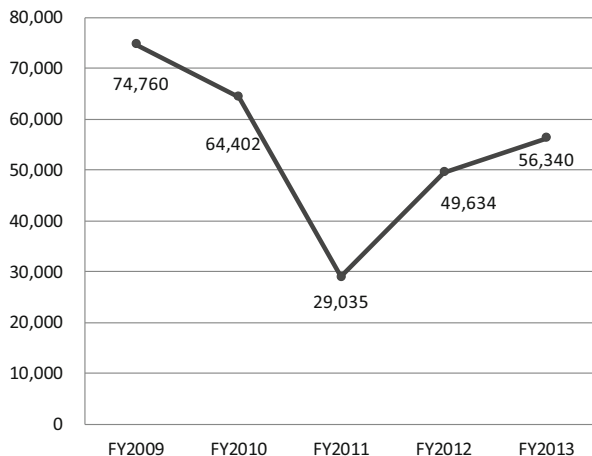
rates during the same period in several locations in Fukushima Prefecture were: 0.96 μSv/h in Koriyama City in the Kenchu (middle of the prefecture) region (about 58 km away from the Fukushima Daiichi Nuclear Power Station), 0.47 μSv/h in Shirakawa City in the Kennan (southern part of the prefecture) region (about 81 km), 0.15 μSv/h in Aizuwakamatsu City in Aizu region (about 98 km), and 0.19 μSv/h in Iwaki City in the Iwaki region (about 43 km). These data indicate that the Forest Park was heavily contaminated with radiation (2).

Next, let us describe the damage situation regarding the income of the auto-camping zone. The compensation for the Foundation by the Tokyo Electric Power Company, Inc. (TEPCO) was determined based on the sales in FY2009; a comparison between before and after the nuclear accident was thus made based on the values in FY2009. The number of visitors to the auto-camping zone in FY2011 was about 60% fewer than that in FY2009. Cottages in the Forest Park were used as shelters for victims between March and July 2011. Although the Forest Park made an income of 38,832,000 Japanese yen from the use of the cottages as shelters, this income is excluded from the gross income in Fig. 9.1. The sharp drop in the number of visitors and the income in FY2011 may have been attributed to the use of cottages for shelters. However, the income in FY2012 also decreased by about 30% from that in FY2009, suggesting that a large impact of the nuclear accident remained even in this period, during which the effect of the earthquake was fading. At the same time, the whole graph in Fig. 9.1 tells us that the number of visitors is gradually increasing again.

Next, we will describe the damage situation with respect to the number of overnight guests and visitors. Figure 9.2 shows the changes in the number of guests in the auto-camping zone for three categories: adults, children, and infants, where, a child is defined as an elementary school student or a junior high school student, and an infant is defined as a child of preschool age or younger. Although the total number of overnight guests in FY2011 decreased to about 40% of that in FY2009, the number in FY2013 had recovered to about 75%. The number of overnight guests
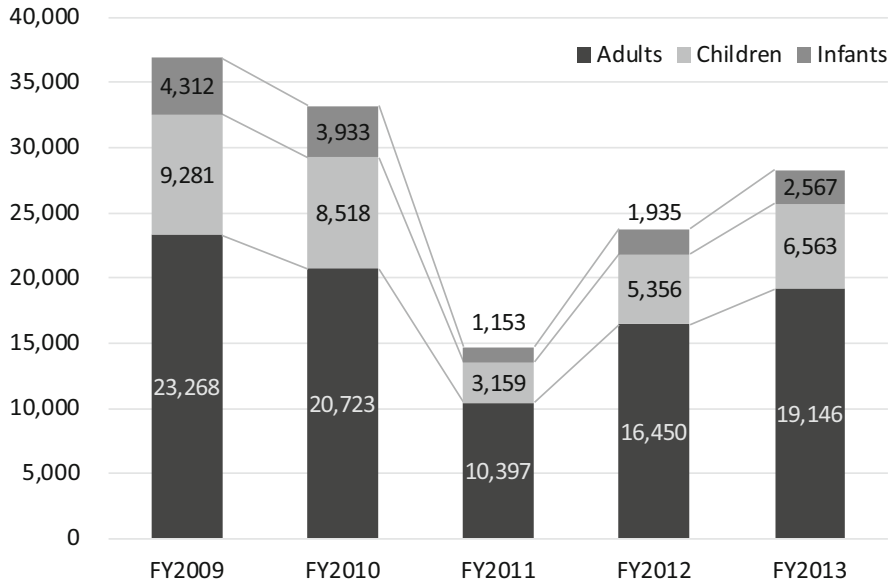
Fig. 9.2 Changes in the number of overnight guests in the auto-camping zone

is slowly increasing in all age groups. Our interview survey revealed that before the earthquake and subsequent nuclear accident, visitors from the Tokyo area outnumbered those from within Fukushima Prefecture. However, after that, the numbers in both groups were similar; this was due to a significant decrease in the number of visitors from outside of Fukushima Prefecture. The Foundation attributes this to the much stronger aversion to radiation contamination held by visitors from outside of Fukushima Prefecture than by those from within Fukushima Prefecture.

Figure 9.3 shows changes in the number of visitors to the forest learning zone. The total number of visitors to the forest learning zone in FY2011 decreased by about 60% as compared with that in FY2009. Although the number of child visitors accounted for more than 60% of that of overall visitors before the earthquake and subsequent nuclear accident, the percentage decreased to less than 40% in FY2011. However, a comparison between FY2011 and FY2013 shows the most significant recovery was in child visitors. Our interview survey revealed that use of the forest learning zone by kindergartens, elementary schools, and junior high schools for outdoor activities increased during the winter because open-air dose rates decreased during the winter snow season due to shielding by snow. The number of visitors in the winter season peaked in January and February, both before and after the nuclear accident. A comparison of the number of visitors in January and February between FY2009 and FY2013 shows that the number of adult visitors decreased by about 10%, but in contrast, the number of child visitors increased by 2% and that of infant visitors increased by 114%.
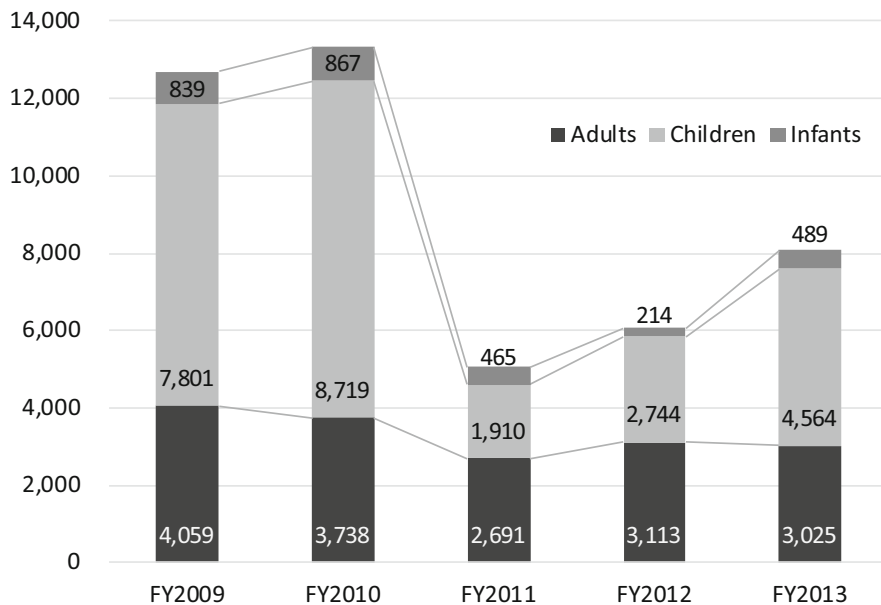
Fig. 9.3 Changes in the number of visitors to the forest learning zone

9.2.3 Responses to and Compensation for the Radiation Contamination

Operators of the Forest Park, under the initiative of the Foundation, have undertaken several responses against the damage from the nuclear disaster described above, in both tangible and intangible ways. At the same time, they have claimed compensation from TEPCO. These are outlined below.

9.2.3.1 Tangible Responses to Radiation Contamination to Restore the Use of the Forest Park

The Foundation began measuring open-air dose rates in the Forest Park and then published the results.

After the nuclear accident, the real world and the Internet space was awash with both positive and negative information on the radiation contamination. In such a chaotic situation, the Foundation measured open-air dose rates in the Forest Park and published the results with the aim of restoring the trust of users by publishing true and accurate values. In July 2011, the Foundation voluntarily purchased measuring devices for 20 measurement sites and measured open-air dose rates once a week to publish the results on their website. In the tent sites, visitors sleep on the ground in sleeping bags and, therefore, the open-air dose rate was measured at 1 cm above the ground. Open-air dose rates at other measurement sites were measured at 50 cm above the ground, which was lower than the standard height, because most visitors were elementary and junior high school students.

Following the measurement of open-air dose rates, the Foundation decontaminated the auto-camping zone. The Foundation considered that the open-air dose rates needed to be reduced as much as possible to provide visitors with a safe auto-camping site. Therefore, on its own initiative, the Foundation temporarily decontaminated a number of tent sites in the auto-camping zone. Specifically, the gravel in the gravel tent sites was replaced with new gravel and the lawn and surface soil in the grassed tent sites was removed and the sites were graveled. Only the decontaminated tent sites were provided to visitors from August 1, 2011 onwards. This was based on the Foundation's philosophy that an operator must not provide a campsite unless safety is ensured.

The Foundation made its efforts independently up to the summer of 2012; however, since that point, decontamination in the Forest Park has been carried out following a plan made by the Forest Conservation Division of Fukushima Prefecture's Department of Agriculture, Forestry, and Fisheries. Frequently used places, including not only tent sites but also the forests around the walking trails, were preferentially decontaminated to meet the use characteristics of the Forest Park. Because of the limited budget, the Foundation and the Fukushima prefectural government talked with each other to prioritize sites to be decontaminated. As a result, decontamination was performed in keeping with the strong intention of the Forest Park that knew every detail of the use trends of visitors.

9.2.3.2 Intangible Responses to Restore the Use of the Auto-Camping Zone

Here we focus on intangible responses made to restore the use of the auto-camping zone.

The Foundation started by significantly reducing the admission fee to the auto-camping zone. Between September 2011 and March 2012, residents of Fukushima Prefecture were given a 50% discount, visitors from outside of Fukushima Prefecture were given a 20% discount, and rehabilitation volunteers were given a 40% discount. This method of discount was subsequently changed and scaled down; only discounts for groups and school educational use are now provided.

The admission fee discount was initiated due to the following two motivations: (1) the Foundation wanted the residents of Fukushima Prefecture, or victims of the disaster, to visit the forests to ease their minds precisely because they were facing the difficulties of the earthquake and subsequent nuclear accident; and (2) although an increasing number of residents outside of Fukushima Prefecture, such as those from the Tokyo area, tended to avoid visiting Fukushima Prefecture after the nuclear accident, the Foundation wanted as many of them as possible to visit the prefecture to revitalize the economy of the whole Fukushima Prefecture.

However, the Foundation was told through consultations with the Fukushima prefectural government that in order to change the admission fee the approval of the prefectural assembly was required because the Forest Park fell within the jurisdiction of the Fukushima prefectural government and the admission fee had been determined by the prefectural regulations. The chaotic situation immediately after the disaster prevented both parties from reaching any conclusion; however, a subsequent

thorough review of documents related to the contracts and regulations revealed that under exceptional circumstances the admission fees were allowed to be changed if given clearance by the Foundation's director. The Foundation thus decided to reduce the admission fee. Under the designated administration system as described above, although this decision was known to reduce the income of the Foundation itself, it was the Foundation's own decision as an involved party that made it possible to reduce the admission fee.

Second, the Foundation enticed visitors from societal segments different from those before the nuclear accident. The Foundation made efforts to attract visitors who had low aversion to radiation and to develop new intangible projects based on the context of the earthquake and subsequent nuclear accident itself.

The former effort was participation in the invitation of motorcyclists as part of a campaign for reconstruction after the earthquake disaster, run by the Fukushima Tourism and Products Association. Sites where local information was available for motorcyclists were posted on the website, Rider's Pit, and the campaign and the Forest Park was registered as a rider's pit. Although families with children were the main segment of visitors to the Forest Park before the earthquake disaster, the number of visitors in this segment subsequently declined because they wanted to avoid exposure to radiation. This strategy was thus implemented in response to the decrease in this segment. In terms of marketing, the majority of motorcyclists in Japan are 50 to 60 years of age, who tend to be rather tolerant of radiation effects. New sales efforts, such as tie-ups with motorcycle magazines, were needed to cultivate new customers.

The latter effort was a disaster education camp project conducted in collaboration with the incorporated non-profit organization Global Network Fukushima and travel agencies.

Global Network Fukushima provides education to help people learn from disasters and disseminates lessons to hand down to the future. The Foundation collaborated with Global Network Fukushima to propose a new disaster education camp to travel agencies, based on the responses to natural disasters and the nuclear disaster that the Foundation had conducted. They eventually succeeded in commercialization.

These efforts have enabled the gradual restoration of the number of visitors to the auto-camping zone.

9.2.3.3 Intangible Responses Made to Restore the Use of the Forest Learning Zone

Before the nuclear accident, visitors to the forest learning zone were primarily children from nurseries, kindergartens, elementary schools, and junior high schools in Fukushima Prefecture. The Forest Guide Association (including volunteer forest guides and nature guides) played a major role in restoring the numbers of these visitors.

Many residents of Fukushima Prefecture have learned from forest guides about the roles and significance of forests while participating together in activities such as nature observation tours, outdoor activities, and forest creation. Forest guides are

qualified volunteer outdoor education instructors confirmed by the Fukushima prefectural government. Forest guides are required to complete a training course accredited by the Fukushima prefectural government. The training course has been offered by the Foundation since FY1999, when the Foundation was entrusted with the operation of the course by the Fukushima prefectural government. Qualified forest guides lead nature observation tours and lessons in the craft of woodworking upon request from elementary and junior high schools and various organizations. Before the earthquake and subsequent nuclear accident, when elementary and junior high school students visited the Forest Park, they usually participated in natural observation tours and woodworking craft instructed by forest guides.

After the earthquake and subsequent nuclear accident, there was little request for nature observation instructors, although the Forest Guide Association was willing to continue their activities. In 2012, however, opportunities to exchange opinions about children's activities in forests gradually increased between forest guides and school officials. Then in 2013, reports on markedly reduced physical strength and obesity trends in children in Fukushima Prefecture influenced the forest guides who remembered children having fun in forests. The forest guides recognized the need for children to resume activities in the forests; therefore, they began to encourage elementary and junior high schools in Fukushima Prefecture to resume the use of the Forest Park. The Forest Park was a safer and more-preferable alternative than other forests because walking trails and surrounding forests in the Forest Park had already been decontaminated.

When visiting schools to promote outdoor education activities in the Forest Park, forest guides explained that the Forest Park had been decontaminated and they presented the data values of open-air dose rates measured in the Forest Park. They also cited the reports on the increasing number of children with reduced physical strength and a trend toward obesity to support the need for outdoor activities. In addition, they explained that the forest environmental tax (1000 Japanese yen per inhabitant of Fukushima Prefecture is collected to be used for matters related to forest conservation) is a local tax levied independently by the Fukushima prefectural government and was thus allowed to be used for necessary expenses for school education using forests. They eventually succeeded in promoting the attraction of children's outdoor activities in the relatively safe Forest Park. As a result, the number of elementary and junior high school children visiting the forest learning zone has been increasing to a level close to that before the nuclear accident. Additionally, our interview survey on usage revealed that requests for activities during the winter season in which radiation was blocked by snow were increasing, particularly among the younger age segment as compared with the number of such requests before the nuclear accident. This is an interesting example of changes in users' usage behavior due to concerns about radiation impact.

9.2.3.4 Damage Claims to TEPCO by the Foundation

We have described above that extensive efforts have been made to recover the usage of the Forest Park. We next analyze the compensation from TEPCO.
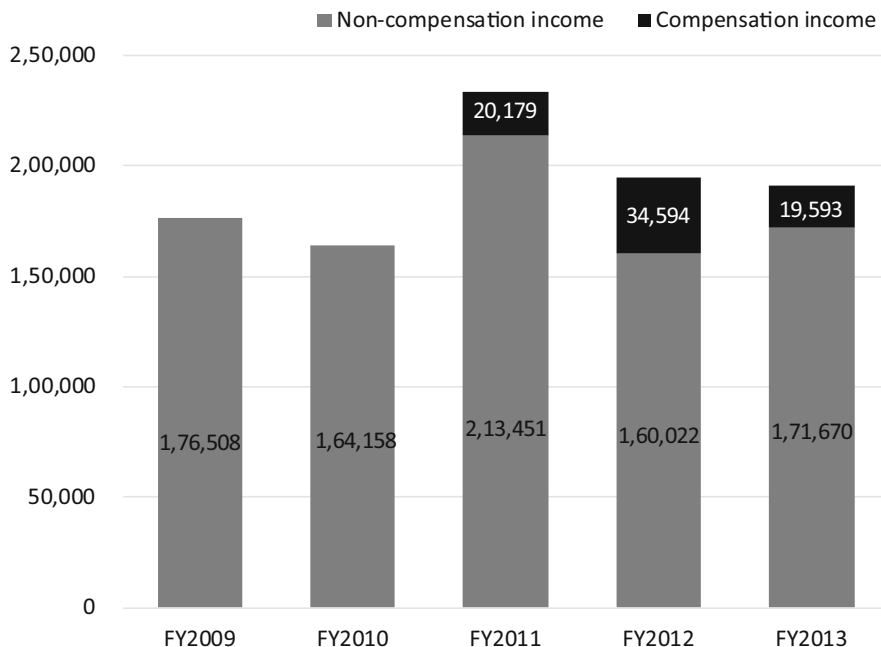
Fig. 9.4 Breakdown between the compensation and non-compensation incomes (unit: 1000 Japanese yen)

In February 2012, the Foundation lodged a claim against TEPCO for the cost of measuring open-air dose rates in the Forest Park; for the lost profits due to the nuclear accident; and for related and additional costs of responding to the nuclear accident. The additional costs included the cost of devices purchased for individual and voluntary measurement of open-air dose rates, the cost of optimizing the website for publishing the measurement results, and the cost of decontamination performed by the Foundation. Figure 9.4 shows the breakdown between the compensation and non-compensation incomes.

Compensation for the costs of open-air dose rate measurements was totally awarded. Compensation for lost profits and additional costs was only partly awarded.

Compensation for lost profits was claimed based on the sales in FY2009. This was because TEPCO considered the income and expenditure of the Foundation in FY2009 as mean income and expenditure before the nuclear accident. Therefore, the lost profit was calculated by subtracting sales in the target fiscal year from those in FY2009 and then multiplying the resulting decrease in value by 0.86, where 0.86 (i.e., 86%) is the contribution margin ratio, a percentage in which costs are deducted from the decreased value. However, not all damages calculated based on this formula were paid. Immediately after the nuclear accident, for example, the amount of damages was determined after a certain percentage of sales was deducted from the

sales decrease because of TEPCO's story that not only the nuclear accident but also the earthquake and following tsunami might have caused sales to decrease. Between March 11 to August 31, 2011, 20% was to be deducted from the sales decrease; however, this decision was reviewed because of many complaints. Regarding the discount rate for lost profits, the perpetrator had considerable discretion; in contrast, victims were placed under the disadvantageous conditions of negotiations.

With respect to the additional costs, the introduction of the devices for measuring open-air dose rates individually performed by the Foundation after the nuclear accident and the expenses related to the publication of the measured values on the website were fully awarded. In contrast, payment for the expenses related to decontamination of the auto-camping zone conducted by the Foundation has been refused for the reason that a policy for compensation has not been determined; in other words, who, TEPCO or the national government, should be responsible for the payment of compensation has not been determined. Unfortunately, there are no organizations or opportunities to determine which of the parties should pay compensation; therefore, expenses incurred by the Foundation's own decontamination of the auto-camping zone is treated as ineligible for compensation.

Furthermore, there is another matter to consider even after receiving compensation. A large amount of compensation is paid all at once, which imposes a heavy tax burden on the beneficiaries. This way of receiving compensation can itself cause tax problems, unlike with normal income.

9.2.4   Resilience Factors in Recovery of the Use of the Forest Park and Need for Social Support

The use of the Forest Park is on the way to recovery in terms of both income and numbers of visitors. This was supported by the efforts of the people involved in the management of the Forest Park and their determination that the relationship between humans and forests should not be broken by the nuclear accident. What made it possible for them to achieve this successful recovery?

First, we can cite the expertise that the Foundation has cultivated and the decision-making facilitated by this expertise. Measurements and publication of open-air dose rates and decontamination of the facilities were implemented based on the knowledge that they had accumulated about the characteristics of the Forest Park and visitors as well as the usage status of the Forest Park. During the period immediately after the nuclear accident, when the details of compensation had not been determined, the Foundation reduced the admission fee, which could have been disadvantageous or even detrimental for the Foundation. It was a significant decision, focusing on the objectives and the mission of the Forest Park. The expertise of the Foundation also played a major role in the acquisition of customers from new sectors of society.

Second, we can cite collaboration with other organizations. After the earthquake and subsequent nuclear accident, the Foundation collaborated with other organizations that shared the same ambition to reconstruct Fukushima, including

the Fukushima Tourism and Products Association, Global Network Fukushima, and travel agencies, in order to work on new strategies for restoring the number of visitors to the auto-camping zone. Collaboration with the Forest Guide Association, with which the Foundation had established a relationship before the disaster, was also enhanced during efforts to restore the use of the forest learning zone.

Such collaboration with other organizations provided reconstruction activities with resources that the Foundation itself did not possess and created results that were not achievable by the Foundation alone.

Determination for the reconstruction of Fukushima supported by the expertise and collaboration was actually the source of resilience.

In the areas most severely affected by the nuclear accident, it is impossible to maintain or recreate the relationships between humans and forests as they were before the nuclear accident. Nevertheless, maintaining the relationship between humans and forests as well as nature in the affected areas is indispensable to ensure a rich and varied life for people living there. The Foundation considers this period as one in which the Foundation is being tested as to whether it will be able to propose a new way of interaction between humans and forests in affected areas. The Foundation is developing new businesses to assure the persistence of the culture of forests in Fukushima Prefecture. How society can support the restructuring of the relationship between humans and forests in affected areas by the victims themselves is a challenging issue that has not yet been resolved.

9.2.5 Existence of Damage that Can Be Calculated in Monetary Terms and Invisible Damage that Cannot Be Calculated in Monetary Terms, and Compensation Problems

The facts of the damage described earlier show that there exist two types of damage: that which can be calculated in monetary terms and that which cannot, namely, invisible damage. Here, the former includes lost profits due to concerns over health damage by radiation, the cost of measuring open-air dose rates, additional costs, and the sales and marketing costs of new customer acquisition.

TEPCO, however, has not paid compensation for all the damages that can be calculated in monetary terms. Even with respect to the compensation claims of the Foundation against TEPCO, compensation for the costs of decontamination was dismissed. The Foundation has made great efforts to restore visitor confidence and numbers by appealing to visitors from segments different from those before the nuclear accident, who are now turning their backs on the Forest Park. However, such efforts, unnecessary under normal conditions, have not been compensated. Furthermore, the system of compensation for lost profits due to the nuclear accident is determined as a compensation based on decrease in sales. Therefore, the greater the increase in numbers of visitors in new segments, who were acquired by the sales and marketing efforts of the Foundation, the greater the decrease in the amount of compensation by TEPCO. The compensation system is therefore extremely advantageous to the perpetrator.

Compensation was determined at the initiative of TEPCO. Specifically, TEPCO unilaterally imposed the discount rate on the victim side at the time of determining the discount rate for sales decrease, probably caused by factors other than the nuclear accident.

TEPCO's compensation for the nuclear accident is not tailored to the victims' position at all. The facility operator sincerely wishes to recreate the relationship of humans with forests and nature, and makes efforts to ensure the safety of visitors and to recover the use of the facility for outdoor recreational activities. TEPCO seems to use the determination and the efforts of the facility operator to decrease the amount of compensation. This attitude of TEPCO toward compensation is actually a serious problem and needs to be changed.

An example of an invisible damage that cannot be calculated in monetary terms is that it is now impossible to spend time in forests in exactly the same way as before the nuclear accident. The Forest Park carried out decontamination by itself, eventually reducing radiation exposure to levels less than in other forests that had also been contaminated by radiation. This has enabled outdoor activities and resulted in an increase in the number of visitors. However, as compared with before the nuclear accident, requests for children's outdoor activities in the forest learning zone are now increasing particularly in winter, in which radiation is blocked by snow. School officials concerned about radiation contamination now have to select the optimal season for activities in the forest, whereas they did not need to do so under previous normal conditions. The Fukushima nuclear accident has thus deprived them of freedom of selection. Forest guides now need to purchase materials, such as acorns, used in woodworking craft from areas with lower open-air dose rates. They did not need to consider such a thing before the nuclear accident. The Forest Park provides people with the richness of interaction between humans and forests—we feel forests in our bodies, enjoy them, and learn from them—which are qualities that cannot be calculated in monetary terms. Former activities happening in the Forest Park are examples of invisible damages. However, being invisible means that these things are not regarded as targets of compensation, and even their existence is not recognized. There is also a lot of invisible damage related to the use of natural resources in other areas similarly affected by the nuclear accident. Because they cannot be visualized, invisible kinds of damages may be treated as something that does not exist in society. Such a situation is a serious problem.

9.3 Invisible Damages in the Use of Regional Natural Resources in Rural Areas Used for Agriculture, Forest Products, and Fisheries

9.3.1 Invisible Damages: Social Division and the Difficulties in Overcoming Them

This section further discusses the invisible damages described in the previous sections.

A comic book, *Hajimari no haru* [Spring as a start], drawn by Yoko Hano (2013), describes high school students in Fukushima Prefecture after the nuclear accident. The main characters are from dairy farming families and families producing shiitake mushrooms (*Lentinula edode*). The story vividly describes their daily lives and suffering as residents and agricultural producers in rural areas affected by the nuclear accident and how they face radiation contamination. The second volume, *Chainsaw Rhapsody*, describes residents of affected areas and agricultural producers severely criticized on social networking service (SNS), as perpetrators by victims and agricultural consumers in areas far from Fukushima Prefecture. The authors remember that such exchanges using SNS were a commonplace occurrence immediately after the nuclear disaster.

Victims who were agricultural consumers living in urban areas labeled as perpetrators victims who were agricultural producers living in rural areas working in agriculture, forest products, and fisheries and who suffered more severely from the disaster, and the former harshly criticized the latter. Such a structure is similar to that seen in some diseases caused by chemicals: for example, drug-induced subacute myelo-optico-neuropathy (SMON) and environmental pollution-induced Minamata disease were initially falsely recognized as epidemic diseases and, as a result, patients with these diseases were brutally criticized and rejected by a large part of society. In any case, once such a structure of social division is created, in which victims cruelly criticize other victims who are more severely affected, those who caused the accident and those who caused damage are exonerated, making the damage worse.

Igarashi (2012, 2018) has written books describing social division in areas affected by the nuclear accident and the efforts of people living there to solve the problem of social division. He wrote in his 2012 book that in the City of Kashiwa in Chiba Prefecture, which was affected relatively more severely by radioactive fallout than other areas in the Tokyo metropolitan area, a forum was established for discussion among consumers, agricultural producers, and merchants in Kashiwa City to set, through mutual communication, the maximum acceptable limit for the damage. Their efforts eventually led to recovery from the disaster while overcoming divisions between and among producers and consumers. He also described the existence of social divisions and how to solve such a problem in his 2018 book, in which he stated that from the very beginning of the nuclear accident, we strongly felt that we did not want the vegetables produced in our hometown to be caught up in meaningless disputes between consumers and producers on the Internet, and that there must be a way to avoid such a problem arising in Kashiwa City, where the distance between producers and consumers is close both physically and psychologically.

After the nuclear accident in Fukushima in 2011, an official of Co-op Fukushima, a regional consumer cooperative (co-op), said, "Although I'm against nuclear power generation, the people who helped us were all those who were in favor of nuclear energy. They taught us the know-how of measuring radioactive materials and brought us measuring devices, which was of great help in distributing local agricultural products and foods. A co-op is generally an organization of consumers.

However, members of regional co-ops usually include producers as well as consumers. Therefore, we cannot prioritize either consumers or producers. We have to deal with such a difficult situation while working together across the region." (3).

On the basis of such an attitude, Co-op Fukushima set a policy to comply with the national standards for radioactive materials in food, in terms of the maximum acceptable level to avoid conflict between producers and consumers. Unlike some distributors, Co-op Fukushima did not set stricter standards in response to consumers' demands. Products that passed government inspections were allowed to be distributed to avoid imposing any further burden on already exhausted producers. Nonetheless, in response to the demands of consumers who were anxious about the government inspections, Co-op Fukushima conducted *Kagezen* investigations: *Kagezen* is a Japanese custom that a meal is prepared and offered for a family member who has been on a long journey away from home or who has passed away. Co-op Fukushima asked 100–200 families from among its members to prepare one extra meal for three meals a day over two days. A total of six meals, plus snacks and drinks, were preserved and then sent to the inspection center. The meals were homogenized in a blender, and the level of radioactive materials in the mixture was measured. The results showed that levels in foods produced in Fukushima Prefecture were extremely low and extremely unlikely to cause internal radiation exposure. These strategies ameliorated both the exhaustion of agricultural producers within the region (who were exhausted from responding to problems of radioactivity) and the anxiety of consumers to be reduced. Co-op Fukushima tried to protect both producers and consumers—in other words, all citizens living together in the same area.

Co-op Fukushima succeeded in overcoming social division by these strategies because it is an organization that includes both producers and consumers and, in addition, as Igarashi mentioned, because the distance between producers and consumers was close both physically and psychologically. The example of Co-op Fukushima is almost an exception, and only a few cases have succeeded in overcoming social division.

This division between affected rural areas and urban areas as distant consuming areas still persists, as clearly shown in the problem of reputational damage, in which claims of both parties do not mesh with each other, with regard to the safety of food. The nuclear accident has thus left a tremendous problem of social division.

Under such a situation, the statement, "Those who were helpful were people in favor of nuclear power generation" has significant meaning. On social media, we can still find messages expressing the sentiment that the anti-nuclear protest movement did little more than agitate excessively about the risks of radioactive materials, and was not at all helpful for the reconstruction of affected areas and even behaved as an enemy of agricultural producers in affected areas. Immediately after the nuclear accident, people against nuclear energy falsely treated victims in affected rural areas as perpetrators. This may be partly the reason why the anti-nuclear power movement in Japan has not gained significant momentum, even after such a serious nuclear disaster.

Now that a nuclear disaster has occurred, we have to review many things to overcome social division: How should we have accepted the disaster and set the maximum acceptable limit? How should we have built a social framework to support people's diverse ways of living; for example, victims with high interest in the safety of food, those who want to evacuate from the affected area, and those who want to continue to live in the affected area? How should we have communicated with people with different opinions and perceptions about the risks of nuclear power generation?

9.3.2 Invisible Damages: Severance of Organic Connection with Local Natural Resources and Loss of Pride as Producers

To find out the impact of the nuclear accident on the lives and production of people in rural areas who use local natural resources, we present a case example of the impact on one organic farmer in a slightly contaminated area.

The example introduced here is that of an organic farmer (Farmer A) who lives in city X in southern Iwate Prefecture. His main source of income as a farmer was chicken farming. In addition, he did small-scale dry-field farming, rice cultivation, sheep fattening, and beekeeping for subsistence farming. He owns a total of 6 ha of land, of which 2 ha are farmland and pasture and the remaining 4 ha are woodland.

Farmer A carried out organic farming, focusing particularly on the use, circulation, and ecological cycling of local natural resources. Specifically, he used self-mixed feed with local ingredients for chicken farming, and chicken manure was applied to the fields. Most cash earnings came from the sales of chicken eggs; he delivered eggs to households in the local area twice a week and shipped eggs directly to restaurants in Morioka, the capital of Iwate Prefecture. Such a direct delivery system enabled him to develop a close relationship with local customers, which resulted in successful management. In addition, he enjoyed sheep grazing, producing vegetables for self-sufficiency, and using non-industrial and secondary natural resources and regional resources.

After the nuclear accident, he replaced part of the locally obtained chicken feed with feed obtained from western Japan. As a result, radioactive materials were not detected in his chicken eggs. Thanks partly to the direct trust relationship with consumers, his sales did not decline. In contrast, he lost his way of farming based on his beliefs as an organic farmer, i.e., the ecological cycling of local and regional natural resources. This was a matter at the heart of his own identity as a farmer and regionally connected producer. Before the nuclear accident, he used to sell several of his grass-fed sheep each year wholesale for meat to restaurants in Miyagi Prefecture, but after the accident, he had to give it up. He could have removed the surface soil of his pastures for decontamination; however, the area of pasture was too large for him to decontaminate by himself. In addition, although he could have explained the safety measures he had taken to the restaurants, he wondered whether the restaurants would be able to explain the situation to their customers. These are the reasons that he eventually abandoned selling his sheep.

His non-industrial and secondary uses of regional natural resources were also seriously affected by the nuclear accident. He thoroughly plowed the ground to replace the surface soil with subsoil to bury radioactive materials deep into the soil, to a level that was too deep for vegetable roots to reach. As a result, radioactive materials were not detected in his vegetables, enabling him to continue the production of vegetables for private use. In contrast, beekeeping for both private and commercial uses had to be given up because no one knew from where the bees collected honey, which made him too anxious to continue beekeeping for either commercial or private use. Shiitake mushrooms that he grew on logs from his own *satoyama*, or human-modified forest, continued to be tested for radioactive materials, but unfortunately, radioactive materials were still detected even four years after the nuclear accident. This fact mentally devastated him so severely that he had to stop the production of shiitake. Furthermore, relatively high levels of radioactive materials were detected in the ash of firewood that he collected from the mountain behind his house in 2012. He therefore stopped using the contaminated firewood, and now needs to purchase safe uncontaminated firewood.

The example here may be a matter of his mental damage rather than that of radioactive materials themselves. Nevertheless, Farmer A did farming, focusing on the ecological circulation and cycling of regional resources, with the aim of providing safe and secure food for both customers and himself. The entry of radioactive materials into the circulation of regional resources forced him into a situation where he had to produce products that compromised his core values and thus his pride. This has transformed his joy of production into agony. Moreover, he also lost the non-industrial and secondary uses of natural resources that have been symbols of living in a rural area and his rich *satoyama* relations with the nature surrounding him. Such a situation may be common among organic farmers who have made efforts to provide safe and secure foods. Radioactive materials have undoubtedly had an impact on rural living and on the fruitful interactions with nature for all people living in rural areas.

However, as described above, the non-industrial and secondary uses of natural resources, such as beekeeping and the use of firewood as well as the small-scale production of meat from grass-fed sheep, was given up only voluntarily even though Farmer A farms in a lightly contaminated area. Therefore, they cannot be included in the scope of compensation by the perpetrator. If the sales of farmer A's eggs had decreased, the decrease in sales might have been visualized and quantified to be included in the scope of compensation. The feeling of grief and painful resignation that the organic farmer has felt because he had no choice but to replace the local-made feed with that produced in western Japan was completely ignored. In other words, under the present conditions, impacts other than those having a numerically clear impact on the agricultural management for profit are ignored.

9.3.3 Invisible Damages: Severance of Organic Connections with Local Natural Resources and Damage to Social Capital

Although timber production is always focused on with respect to the impact of the nuclear accident on forestry and forest resources, here we describe shiitake production on logs as an example of another important local subsistence and commercial use of forest resources.

The Fukushima Nuclear Power Plant accident caused widespread radiation contamination, most importantly with radioactive cesium. Because mushrooms tend to easily absorb radioactive cesium, the nuclear accident had serious impacts on the cultivation of shiitake mushrooms in the region. Shiitake mushrooms are grown largely in two ways: production on substrates and production on logs. In the former method, the substrates are media made of a mixture of sawdust and nutrients; they are inoculated with spores and placed indoors. In the latter method, the logs are generally about 10 cm in diameter and 1 m long; they are inoculated with spawn and mainly placed outdoors. Each log is generally used for about four years.

Our research focused primarily on shiitake production on logs. This type of production is conducted in a variety of operational systems, ranging from industrial large-scale cultivation that uses several tens of thousands of logs a year to small-scale production using a few tens of logs as a form of minor subsistence that is a subordinate source of income for farmers. The industry is also associated with a relationship between humans and nature in a local setting: mushroom farmers make sustainable use of the roundwood obtained from local broad-leaved forests. We surmised that the widening gap between the actual damage to shiitake production and damage compensation would have a consequential impact on the recovery of production and on producers' permanent residency in rural areas. However, as of this writing, the damage related to shiitake production has not yet been fully studied.

The survey area, Daito-cho, Ichinoseki City, Iwate Prefecture, was one of the leading places of production of shiitake on logs (dried shiitake) in the prefecture and produced over 100 tons of the products during peak periods. The southern part of Iwate Prefecture was relatively heavily contaminated by radioactive fallout; the independent investigation by the Ichinoseki City government in July 2011 immediately after the nuclear accident recorded the highest open-air dose rate of 0.47 μSv/h at 1 m above the ground, although the dose rate was significantly lower than the reference level for evacuation. Radioactive cesium exceeding the maximum legal level was detected in the raw shiitake mushroom on logs (open field cultivation) in April 2012, and as a result, shipment of the products was restricted by the national government. Subsequently, in April 2015, only products that were cultivated and managed in compliance with the cultivation procedure to ensure safety prescribed by the prefectural government were allowed to be shipped again.

The shiitake producer register of Iwate Prefecture in 2012, a list of names of those who produced and sold shiitake for commercial purposes, listed 138 shiitake producers in Daito-cho before the nuclear accident. The investigation by Ichinoseki City government between the time of the accident and 2016 showed that only 29 of them intended to resume production of shiitake by purchasing uncontaminated logs

from other areas. Four producers resumed production immediately after the shipment restriction was lifted in 2015. An additional 11 producers (a total of 15) were allowed to resume shipment in the autumn of that year. As of February 2017, 16 producers, including one additional producer, were allowed to resume shipment. However, the subsequent restarting of production has been very slow; far more than 80% of producers still face restrictions on shipment.

We interviewed six shiitake producers (three had resumed production and the other three had given it up) and part of the results are presented below (4).

Those who were able to resume production were limited to large-scale producers with employees and with over 10,000 logs inoculated annually as of the day before the nuclear accident. To resume production, they were obliged to purchase logs from other areas without contamination. To avoid the impact of radioactive materials, these producers had to change their method of shiitake cultivation from the previous open-field cultivation: from growing shiitake in the woods to growing them inside buildings. In other words, participation in and connection with local *satoyama* forest resources and an organic cultivation relationship were forcibly severed. The necessary aspects of producing shiitake unique to "this" place decreased; producers were required to shift their way of shiitake production to one that was available anywhere.

The cost of purchasing logs was covered by compensation. However, damages were paid only after the logs had been purchased and it was therefore difficult for small-scale management bodies without a financial allowance to do business under the given condition. There was a large gap between small- and large-scale producers with regard to the compensation for the shipment restrictions after the nuclear accident. All producers were required to submit records of the number of logs and those inoculated. However, it was hard for small-scale producers who obtained logs on their own to prepare certification documents such as purchase records. Accordingly, this prevented them from receiving appropriate compensation. In contrast, large-scale producers were able to prepare such documents and ledgers because of their to-scale administrative infrastructure and management, which resulted in receiving sufficient compensation (Yamamoto and Shitara, 2017). In terms of compensation, the relationship with regional resources that was not able to be quantified or documented, unlike purchase and sales records, was treated as something that did not exist.

It is clear that it is difficult for small-scale farmers, who cultivated shiitake for sales as an essential part of their non-industrial and secondary uses of local and regional natural *satoyama* resources before the nuclear accident, to resume cultivation. Even though they can resume management, they are forced to change their management style to a more modern one that has only a tenuous relationship with regional resources.

For example, Shiitake-Producer B was a relatively large-scale producer among those who had given up resuming production. He thought that he actively contributed to the local community through the purchase of local logs and hiring of local residents during busy seasons. However, in contrast to his perceptions, some neighbors said to him, with regard to compensation claims, "How much longer are you going to do such a thing?" and "Are you doing it for the money?" His

relationship with local residents eventually got worse. Furthermore, his children no longer return home with his grandchildren even to help him during the busy season because of the fear of the impact that radiation would have on their children; he has lost opportunities for family get-togethers. At a gathering of shiitake producers in Iwate Prefecture, there was a dispute between shiitake producers in the southern (heavily contaminated) and northern (less contaminated) parts of the prefecture, saying "Because of the furor you created, our shiitake produced in northern Iwate is also criticized as being dangerous." (5) His interview revealed that social capital had been broken within the local community, within the extensive peer network of shiitake producers, and within and across families. In addition, it was shown why victims engage in defensive concealment of damage (Funabashi 1999), whereby they do not talk about their damage to avoid discriminatory treatment.

9.3.4 Invisible Damages: Compulsion for Industrialization and Modernization of Production, and Living in Affected Rural Areas and Defensive Concealment of Damage

In the previous sections, we described kinds and degrees of invisible damage in rural resources-producing areas. We have documented kinds of severance of the relationships between humans and nature, such as the severance between rural areas used for agriculture, forestry and forest resources, and fisheries and their relations with urban areas. We have documented the severance between primary subsistence and commodity producers and their consumers and the difficulty in overcoming these severed ties. We have documented the loss of vital organic connections with local and regional resources in primary-producer industries and rural lifeways using regional resources. And, we have documented damage to the core values and sense of pride in rural producers, and the damage to social capital within families, local communities, and peer networks. One final overlooked damage occurs as rural producers, seeking to restore their production livelihoods and practices, often show a compulsion for modernization of production and life in rural areas and in the production of products.

To resume agriculture in contaminated areas, modern agricultural techniques, such as deep plowing, plowing to replace surface soil with subsoil, and potassium fertilization, are indispensable. With respect to compensation, clear and quantitative damage in modern industrial agricultural management for profit is generally compensated. In contrast, rural life with non-industrial and secondary uses of natural resources, such as beekeeping and firewood utilization as well as small-scale agriculture, such as the production of grass-fed sheep meat, which represents the culturally rich *satoyama* relationship with nature in rural life, are not compensated because the farmers "voluntarily" gave up these activities.

In terms of shiitake production, only producers of large-scale organizational management were able to resume production; however, small-scale producers who failed to adapt had to close their operations.

The Toyoma-machi Forest Owner's Cooperative Association in the northern part of Miyagi Prefecture, was affected by radioactive materials to the same degree as Daito-cho. The Association supported small-scale shiitake producers who obtained logs on their own and did not have purchase records, with respect to the compensation claim against TEPCO. Specifically, the Association presented the number of shiitake spore plugs sold by the Association, and then the number of bed logs was determined based on the average number of spore plugs required for each log. After compensation was settled, a member of the Association said that producers who would not be able to switch to a more corporate management style might have to quit their jobs as shiitake producers. (6).

The nuclear accident was a failure of modern science and technology. To claim compensation for the damage to the living and production in rural areas to aid in recovery from the damage, the affected people have been forced to further modernize their agricultural management methods and farming technologies. Their freedom to enjoy agriculture, which is not always industrial or solely concerned with maximizing production, as well as their rural life, while enjoying their traditional satoyama relationship with rich nature, has been taken away. This may be a type of damage that not only urban residents but also, as Fujikawa (2012) pointed out, victims in rural areas used for agriculture, forestry and forest resources, and fisheries, are not aware of.

Finally, defensive concealment of damage by victims amplifies visible and invisible kinds and degrees of damage to agricultural production and rural life of all the residents in rural areas. Victims are likely to refrain from claiming their damage out of consideration for other residents and people in the same trade. This is because the victims consider that their claims may lead to their local area and products being recognized as being contaminated. Unfortunately, however, this consideration exacerbates the invisibility and latency of these damages. Such damages to the people living in rural areas tend to be invisible as a result of their own actions.

9.4   Conclusion

Investigations in rural areas and the use of natural resources after the Fukushima Daiichi Nuclear Power Station accident revealed that the nuclear accident not only caused health damage but also severed the relationships between humans and nature as well as between and within families and communities.

Efforts to recover from the nuclear accident are being made in affected areas. The expertise of people involved in rehabilitation and efforts based on the cooperation of a range of governmental and non-governmental organizations are promoting resilience in the recovery from the nuclear disaster. Yet, the recovery is only half done; social support for the efforts of victims, including the improvement of the compensation system, needs to be enhanced and continued.

These investigations also revealed the existence of invisible damages, which make ongoing recovery more difficult and, at the same time, it is all too often not recognized as a problem in the first place.

As described in the previous sections, invisible damages in rural areas cannot only be seen, but also appear differently according to the way of living in each region based on the diversity in nature and on the degree of damage. To understand the whole picture of the different types of damage to production and living in rural areas, which was caused by the widespread diffusion of radioactive materials, we need to describe each type of damage while seeing things from the perspective of the people who are living there. Unfortunately, however, there have been only a few reports written from the perspective of the people to describe the kinds and degrees of damage to the people who continue to live in rural areas using natural resources that have been affected by the nuclear disaster.

It is difficult for urban residents, who make up the majority of the Japanese population, to understand the kinds and degrees of invisible damage that have impacted the people who continue to live in rural areas using natural resources that have been affected by the nuclear disaster. This issue has been left unresolved due to the following reasons: the damage is not as obvious as damage due to evacuation; the damage is difficult to calculate in monetary terms; technical solutions seem to be unsuitable; the damage manifests different aspects in each region and each sector of resources use; victim-oriented defensive concealment of damage is likely to occur, which exacerbates the invisibility of the damage; and there are only a few cases described.

There may be discussion about the pros and cons of living in areas contaminated by radioactive materials, even areas of low doses. The authors thus think that the right to evacuate should be supported. On the other hand, there are many victims who chose to stay in rural areas used for agriculture, forestry and forest resources, and fisheries that were affected by the nuclear accident, while daringly accepting the risk of low-dose radiation. Choosing to stay there does not mean that there is no damage. Despite the fact that there are numerous types and degrees of damage, the damage there is treated socially as if it did not exist. This is actually a serious problem and may leave victims in a difficult situation. In addition, underestimating the damage may lead to the acquittal of the perpetrator.

We need to further advance investigations tailored to affected areas before the Fukushima Nuclear Power Station accident is considered simply just another past event. Specifically, descriptions about invisible damages, which are difficult to calculate in monetary terms, should be carefully collected. Then, we need to characterize the problems, inductively using the enhanced data collected, help society to recognize the existence of these kinds and degrees of damage, and make the perpetrator and government pay damages and support for recovery, including preventing nuclear accidents from recurring.

Notes

1. Although there is still discussion about initial iodine exposure due to dispersed radioactive materials and the subsequent impact of low-dose exposure on health, we omit discussion of that point in this article.
2. Fukushima Prefecture "Results of Radiation Monitoring" (accessed on October 29, 2014) http://www.pref.fukushima.lg.jp/sec_file/monitoring/m-0/sokuteichi2011.7.28.pdf.
3. From an interview with official of Co-op Fukushima, November 12, 2013.
4. Full details will be reported separately.
5. From an interview with shiitake producer B in Daito-cho, Ichinoseki City, Iwate Prefecture, December 13, 2016.
6. From an interview with an official of the Toyoma-machi Forest Owner's Corporative Association in Miyagi Prefecture, October 18, 2016.

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The Governance of Renewable Energy Projects and Expanded Distributive Justice

10

Yasushi Maruyama

Abstract

Despite an increase in the quantity of renewable energy deployed in Japan, there have been many cases where consensus building in the hosting community has become an issue. This chapter, having clarified the governance issues, introduces efforts being made for their resolution. In Japan, a phenomenon that could be termed polarization of social acceptance is seen, that is, while there has been an increase in cases where local actors have played an active role in renewable energy projects, a large number of opposition movements also exist. This chapter spotlights distributive justice and procedure as problems in the background to this polarization regarding renewable energy projects and indicates that the vast majority of projects are owned by actors from outside the community. Although some attempts to resolve these problems have been seen, it is pointed out that an expanded form of distributive justice, including spillover effects, is necessary to overcome the limits of distributive justice. Concrete examples include the existence of a wide range of projects that contribute to the community, such as community sustainable development, volunteer activities, as well as nature conservation, exchange meetings, and the development of local products. These efforts act as bridges between the resolution of global issues and local issues, are endeavors for "translation" between global and local discourses. As such it is argued that they are crucial measures for simultaneous realization of the resolution of energy issues and for social well-being.

Keywords

Social acceptance · Co-benefit · Community benefit · Sustainable development · Public engagement.

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10.1   Introduction: Social Issues Arising from Renewable Energy

In this chapter, having indicated the current state of and issues surrounding the governance of renewable energy in Japan, some embryonic efforts contributing to sustainable community development are introduced.

A range of benefits are expected to accrue to society as a whole from the long-term use of renewable energy. At the same time, concerns exist in communities where renewable energy sites are planned, and these concerns may cause social friction or conflict. The purpose of this chapter is to seek methods for resolution of these problems while looking closely at the social structures that give rise to them.

While the use of renewable energy sources such as wind energy has a long history, the harnessing of these energy sources by modern scientific technology for electricity generation began only in the 1970s. At that time, the oil crisis was the trigger, but the use of renewable energy was later promoted as a countermeasure to mitigate climate change, aid in nuclear phase-outs or transition from depleting energy resources. The quantity of deployed renewable energy around the world is increasing year by year, and this trend is accelerating due to the decarbonizing strategy under the 2015 Climate Paris Agreement. Renewable energy is also positioned as a major target of the Sustainable Development Goals (SDGs) adopted by the United Nations. This is a concrete method for ecological modernization that resolves some environmental problems by industrializing them, and is also a method for combining reductions of the environmental impacts of energy infrastructure with economic growth in communities where renewable energy projects are sited.

There are also expectations for renewable energy in Japan, where there are communities in which the deployment of renewable energy is advancing rapidly, as a route towards the energy shift after the Fukushima nuclear accident and community revitalization. Compared with the period prior to the earthquake disaster, the deployment of renewable energy generation in 2018 has risen around 3.3 times (8.9 times in the case of solar energy).

Despite these expectations, stakeholders such as local residents and environmentalist groups have expressed concerns. More or less, some changes to the environment associated with installation of the equipment are unavoidable. The issue is the negative impacts, especially at local scales. Table 10.1 summarizes such impacts and issues, taken mostly from newspaper reports, that have been identified regarding problems in locations where renewable energy has been sited. These can be divided into three main types: impacts to the natural environment such as local ecosystem, plants, and animals; people's daily life in relation to local environments; and social and economic activities. Problems such as noise and impacts on birds from wind power generation and deforestation of mountain areas associated with the installation of solar power panels are frequently cited as problems. Even if there are no environmental impacts, it is sometimes necessary to reconcile impacts with existing social and economic activities. The issue of water use rights in small-scale hydropower projects and relations between geothermal projects and thermal spring use are also known. It is also possible to view the balance between solar or wind energy

Table 10.1   Issues associated with renewable energy deployment[a]

	Natural environment (ecosystem, etc.)	Daily life environment	Possible need for adjustment of interests
Solar energy	Vegetation, etc.	Solar irradiation Scenery Light pollution [Water sources] [Landslides] (steep slopes)	[Farmland]
Small- and medium-scale hydropower	Aquatic organisms	Noise, vibration	Water rights [Fishing rights]
Wind energy	Vegetation, etc. Bird strike	Radio wave disturbance Noise, vibration Scenery	[Farmland] [Fishing rights] (ocean)
Geothermal energy	[Vegetation, etc.]	Scenery Noise, vibration Odor	Thermal spring resources [Natural parks]
Biomass	[Vegetation, etc.] [Forest ecosystem] (wood resources)	Noise, vibration Odor [Thermal discharge]	[Food production] (Fuel crops) [Sustainability] (wood resources)

[a]The table is based, with some alterations, on Maruyama 2014. Brackets – [] – indicate items where, depending on the location, concerns do not exist. Parentheses – () – indicate the concrete examples of concerns

projects and agriculture, or the compatibility of offshore wind energy with fisheries as problems requiring a reconciliation of interests.

The energy density of renewable energy per unit area is low in comparison with conventional energy resources. Thus, relatively larger areas are required and site locations are decentralized. As a result, the absolute numbers of people potentially impacted will increase. In addition, projects tend to be promoted in areas that were not previously the targets of development.

It is no surprise that people behave with alarm toward unknown phenomena and novel experiences associated with such changes. Worldwide, problems related to environmental impacts due to renewable energy began to surface around the year 2000. Opposition movements and complaints against renewable energy projects also exist and have become the main cause of the suspension of wind energy and geothermal projects in Europe. In the UK, for instance, despite 80% of citizens being in favor of wind power generation, as many as three-quarters of planned projects have been suspended (Bell et al. 2005). This situation is still continuing, with consensus building becoming an issue not only in cases of individual projects but in advancing the energy transition itself (Bauwens and Devine-Wright 2018). There are also significant numbers of opposition movements and complaints against

renewable energy projects in Japan. In wind energy, for example, it has been reported that environmental conflicts arose in 59 projects at the planning stage and that in 30 cases objections and complaints occurred after the project began operating (Azechi et al. 2014). According to a survey on solar energy conducted by Japan's Ministry of the Environment, problems have been reported at 69 projects. National meetings opposing wind and solar energy have also been held.

10.2   Tension Between Individual Cases and the Overall Situation in Renewable Energy Use

10.2.1 "Suffering" and Uncertainties as Subjective Awareness

The problems are not limited to this concrete dimension. Uncertainties abound in environmental impacts associated with renewable energy use, this being a typical example of "questions which can be asked of science and yet *which cannot be answered by science*" (Weinberg 1972).[1]

In fact, there exist among the various impacts noted by the table above that depend on the subjectivity of the assessor. Smell and noise are typical examples of sensory pollution, but the correlation between the degree of the physical phenomenon that is the cause and the awareness of "suffering" perceived by people as a result may be weak, and individual differences large. For instance, in the general problem of noise pollution, it is reported that people's discomfort varies from 20% to 70% for different sources of the same sound volume (Miedema and Vos 1998). It is thought that between the perception of a certain sound and "suffering" there exist several factors such as tone.

Regarding sensory pollution due to renewable energy, for example, noise pollution from wind energy is known, but it is reported that there is no significant correlation between distance and suffering (Knopper and Ollson 2011). In contrast, people who receive economic benefits are known to show a significant reduction in the level to which they perceive the noise pollution to be annoying (Pedersen et al. 2009), indicating that there are also social factors that influence "suffering." A nationwide survey conducted by the US National Renewable Energy Laboratory (NREL) reports a similar trend. The results of a large-scale survey on wind farms

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[1]While not taken up in this chapter as part of the main discussion, it should also be pointed out that in addition to uncertainties, there is also the question of "green vs. green" tradeoffs (Yonk et al. 2012). These are tradeoffs that may occur in biodiversity or the daily life environment associated with the introduction of energy technologies with a low environmental load, and are tradeoffs that exist within the category of "the environment." Differing from the conventional questions of tradeoffs, such as those between environmental conservation and economic growth, the issue here is the control of tradeoffs such as those between the global environment and the local natural environment or the daily life environment of site locations. That is, dilemmas have arisen within the framework of environmental conservation.

also indicate no significant correlation between distance from the site and assessment of the project (Rand and Hoen 2017; Haac et al. 2019).

Similar complexities of "suffering" are also seen with regard to landscape. This is also an example from wind energy, and it is reported that the assessment of wind farms with similar external appearances is also influenced by social factors. Comparing projects owned by local residents and projects set up by external profit-making businesses, the positive assessment that the landscape has been improved is given by the vast majority of people in the former. They also positively assent to expansions of projects with nobody opposing. While the latter is also tolerated, they are not awarded the same degree of approval as locally owned projects (Warren and McFadyen 2010). Even in the case of the same physical phenomenon, social factors also influence the way they are perceived, and the reaction to them by different people is not uniform.

This current situation makes it difficult to deal with the environmental impacts of renewable energy through regulation alone. Naturally, it is necessary to formulate regulatory responses to the levels at which suffering is perceived by the majority of people. At the same time, at or below a certain level, the dispersion of the degree of "suffering" increases. The possibility that multiple factors, including social factors, exist as factors contributing to the cause of suffering has been suggested, but no clear threshold exists. When a simple cause and effect relationship exists between the phenomenon thought to be the cause of suffering and the suffering itself, then regulation is likely to function smoothly, but in the case of multiple causes, regulation is unlikely to function well since the impact of each individual factor is limited. The judgment on where to draw the line will depend more on a value judgement than on science. In reality, even when looking at impacts on ecosystems, factors related to value judgments are frequently included, and whether impacts on a species of an organism are assessed at an individual level or at group level is more a matter of value judgement than science.

10.2.2 The Social Structure of "Suffering" and the Possibility of Change

Nevertheless, the fact that "suffering" is composed of social elements indicates that this may change. As in the case of wind energy noted above, subjective "suffering" can be changed provided that an appropriate social context is constructed, and there have been instances of positive acceptance. Even when diverse interests exist, it is not the case that all of them exist in all areas. The causes of the problems and the interests of the people that might be involved will differ depending on the location. While it may be difficult to set conditions that all people will universally agree to, there is still the possibility of reaching a conclusion that the people involved can agree on at a concrete level by constructing a social context based on local characteristics.

One requirement thought to be necessary for this is the structure of interest distribution. Although the benefits from the promotion of renewable energy accrue

to society as a whole and to the project operators, the suffering (or the possibility of it) is concentrated in the area surrounding the site. This has similarities with the citing of so-called unwelcome facilities, where resistance by local residents is viewed as NIMBY (not in my backyard) by those who are emphasizing the stand-point of "public interest." This view, however, was criticized at a relatively early stage (Devine-Wright 2005). NIMBY is not simply local selfishness, and there is also a necessity to include in the discussion the nature of the "public interest" from which it derives.[2] Further, at least with regard to renewable energy, examples of NIMBY resistance are not a universal phenomenon, and there are numerous examples of positive acceptance, which should perhaps be termed PIMBY (please in my back yard) (Jobert et al. 2007). Or rather, there are societies, Germany, for example, where PIMBY predominates, and where local residents take on the major role in promoting renewable energy, local actors being in some way involved in almost all projects. There are also societies, such as Denmark, where ownership by local residents is stipulated by law as the first option.

Based on the above discussion, the conditions that have been cited for acceptance of renewable energy by the community are tied closely to the notions of distributive justice and procedural justice (Wüstenhagen et al. 2007). The former is the view-point that emphasizes the fair distribution of risks and benefits and is pertinent to the phenomenon of the relativization of "suffering," as mentioned above. Whether it be climate change or resource depletion, many of the benefits associated with the introduction of renewable energy become visible when the whole of society is assessed in the long term. While it is not possible to gain a strong sense of these future benefits at the present time, there are often cases where it is possible to imagine the problems people are concerned about in concrete terms. Although avoiding potential losses in the future is beneficial to all, it is not necessarily the case that individual and concrete risks arising from these attempts to seek such benefits are justified. Rather, backlashes sometimes occur when benefits to all are emphasized. On this basis, the viewpoint of distributive justice is crucial as a norm that expresses the notion that there should also be benefits distributed to the people who are actually exposed to the risks.

That said, as the situation in the community and the values of the people are highly diverse, it is not always explicitly clear exactly what are considered to be benefits. In this case, to attain consensus by exploratory means it is vital to ensure procedural fairness. In fact, the reasons for the existence of objections stem not only from the feared impacts. There are cases where the problem lies in inadequate explanation of the existence or degree of concerns, or in the nature of communica-tion, where there has been a lack of or insufficient opportunity to express opinions. From this, therefore, the viewpoint of procedural justice is that it emphasizes the validity of the process that mediates the diverse positions and concerns of diverse groups of people. Furthermore, the entire social process leading to consensus

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[2]The first use of the term NIMBY is said to have been in the context of opposition to nuclear power in North America as an expression ridiculing the opposition movement (Encyclopedia Britannica).

formation should also be examined, including the viewpoint of epistemic justice (Jenkins et al. 2016), which emphasizes not only the adjustment of the distribution of expressed opinions but also the nature of burdens of potentially existing ethical values and interests defined in economic terms.

Based on these principles, the World Wind Energy Association and the German Wind Energy Association have put forward the notion of community power, which places importance on ownership, decision-making, and profit-sharing by local actors. The report of International Energy Agency (IEA) Wind Implementing Agreement (IEA Wind Task28 2013) acts as a general guideline. Factors that have impacts on the people at the site location and which are considered important by Task 28, the research team that studies social acceptance, are a fair distribution of profits, procedural fairness in decision-making, introduction strategy, support for people at the site location, and so on. These guidelines are specifically for wind energy, but they could also be applied to renewable energy overall as guides to the nature of the relationship with the site location.

10.3 Social Acceptance of Renewable Energy in Japan

10.3.1 The Current Situation in Japan: Social Friction Easily Aroused

Let us now turn to the situation in Japan on the basis of the foregoing discussion. Looking at profit-sharing, the current situation is that the vast majority of projects are funded from outside the community. From ownership information given in a list of projects that have received government certification,[3] projects in which the project site and the owner are matched at the prefectural level are 39.9% for solar energy and 55.0% for wind energy. In fact, however, there exist cases in which the implementing company is a subsidiary of a firm based outside the area. When assessed with the inclusion of capital composition, as in Figs. 10.1 and 10.2, it is possible to view local ownership as 17.0% for solar energy and 10.0% for wind energy.[4] As the addresses of stockholders of many of the projects are unknown, exclusion of this information shows local ownership to be 34.7% for solar energy and 7.6% for wind energy. It has already been pointed out previously that the proportion of local ownership is low, and that the vast majority of projects are owned by big-city capital, especially by actors in the Tokyo metropolitan area. Thus,

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[3]Owner's names and project locations were extracted from a list of projects published by the Ministry of Economy, Trade, and Industry (https://www.fit-portal.go.jp/PublicInfo), address details of the project operator being cross-checked with a company database. Projects were judged to be local if both were found to be in the same prefecture.

[4]In cases where the project company was owned by multiple actors, the total output was divided proportionally based on the proportions of capital composition, etc. For example, for a project of total output of 10 MW, if the capital composition was 30% local and 70% non-local, then the total output was divided proportionally as three megawatts local output and seven megawatts non-local output.

Fig. 10.1 Locality of project
owner(solar)

16.99%

31.97%

51.04%

■ Prefecture   ■ Other region   ■ unknown

Fig. 10.2 Locality of project
owner(wind)

4.96%   4.99%

32.73%

57.32%

■ Municipality   ■ Prefecture   ■ Other region   ■ unknown
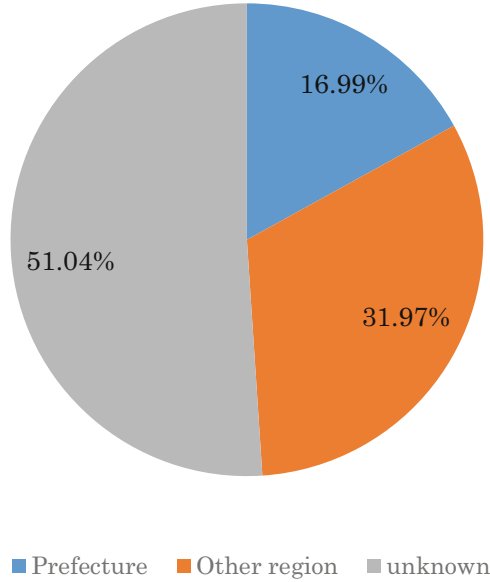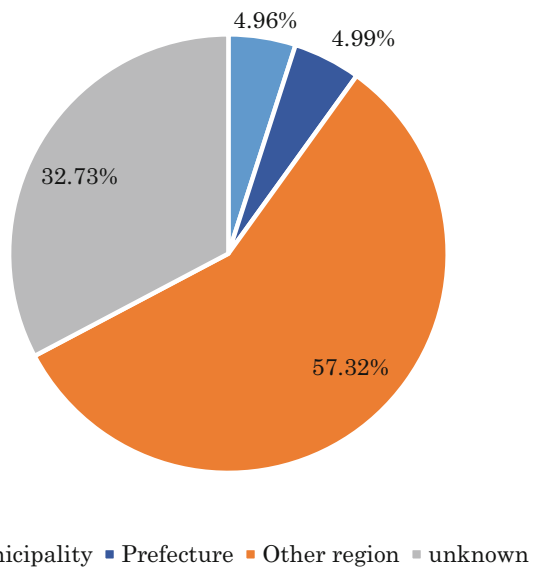
the situation is that the perception that external project operators are stealing local
resources is easily aroused. The problem, rather than being one of ownership itself, is
the distribution of profits from power generated by the project and the structure of
the industry, but the definite economic effect that can be expected by the site location

during the term of operation is the land rent and fixed asset tax, which accounts for nothing more than around 10% of sales.[5] Almost all of the remainder is accounted for by loan repayments and maintenance and management costs, but the economic effect is small when these are not performed in the local area. This has led to projects funded by capital from other areas to be known as "non-native" or "colonial" projects.

There are also issues related to the fairness of procedures. The system governing the approval of installation of electricity-generating plants recommends communication with local residents, but it is not a condition of approval. Solar energy and wind energy plants exceeding a certain scale are subject to the Environmental Impact Assessment Act, which mandates public meetings and information disclosure, but the decision about whether or not to respect local residents' opinions is left to the project operator.

In fact, many project operators hold explanatory meetings voluntarily, but the problem is not whether there are opportunities for explanatory meetings or not so much as their timing and content. Whether mandated by law or voluntary, the explanatory meeting conducted by the project operator is generally held at a stage when the content of the project is to some extent concretely defined. The main topics are also a scientific assessment of the environmental impacts and their countermeasures.

In contrast, stakeholders such as local residents are more interested in what, in the first place, is the significance of the project and its necessity, and the choice of location and its suitability. It would be best if these matters were discussed at a stage before the concrete project plan became clear, but with the exception of a small number of municipalities, opportunities for public hearings and information sharing are limited.

Related to this is the third issue of deployment strategy. Taken in a narrow sense, this refers to the target for the amount of renewable energy to be installed and the roadmap for this, and in relation to the two issues mentioned above, the absence of discussions regarding the significance of renewable energy for the community can be pointed out. Unless this point is understood, it is difficult for the people of the community to make judgments about the pros and cons of individual projects. When determining whether or not to allow a project, or to what degree to allow a project, an assessment should be conducted regarding questions such as where, who, for what purpose, and what risks are involved. However, there are very few cases where, besides the usual questions of climate change and sustainability, these kinds of issues associating the project with the social context of the community are considered concretely.

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[5]Provisional calculation based on expenditure items indicated in the "Manual on Operability Assessment, etc. of Renewable Energy Projects in the Regions" published for financial institutions by the Ministry of the Environment (http://www.env.go.jp/policy/kinyu/manual/).

10.3.2 Social Practices Encouraging Consensus Formation

As we have seen thus far, in the current situation, profit distribution, procedures for consensus formation, and deployment strategy all include potentially difficult issues, but there are also embryonic efforts aimed at resolution of these problems.

One of these is an effort to bring distributive justice to bear on a project. In Japan, beginning from the year 2000, there have been activities involving citizens' wind turbines, renewable energy projects to which citizens make financial contributions, the profits also being returned to the citizens. Following the Fukushima nuclear accident, this movement has further developed. Cases in which community people have made autonomous efforts for renewable energy have increased, bringing the formation of local energy associations and the establishment of citizen/community cooperative power plants. According to the report of the NPO Kiko Network (climate change network), as of 2016, roughly 1000 projects with a total output of around 90 megawatts have been confirmed (Toyota 2016). Even in commercial projects, capital participation by local actors and active efforts to make contributions to the community by project operators are also increasing.

Efforts to secure procedural transparency through zoning are also beginning. The Ministry of the Environment is conducting support aimed at wind energy and the preparation of a manual. The first advantage of zoning is that it enables the community members to make prior judgements independently from moves by individual project operators. Another advantage is that zoning makes it possible to predetermine conditions in accordance with local circumstances, not simply by existing regulations alone. Discussions not only on environmental impacts but also including the significance for the community also become possible. For instance, in sightseeing areas, this makes it possible to conduct preventive delineation for scenic beauty and nature conservation, or conversely, in an area that is striving to make renewable energy a local industry it would be possible to define delineations more loosely. Furthermore, there is also a strong possibility that zoning will also be rational for project operators, who push forward their project planning while complying with laws and regulations, but, nevertheless, need to overcome the problem of consensus formation. Since zoning is a visible delineation of conditions and locations that may be problematic, or of locations where the potential for realization is high, the burden necessary for consensus formation will be reduced.

In the actual task of zoning, agreement over the determination of the conditions to be taken into account and delineation of the go/no-go line sometimes faces difficulties. The participation of stakeholders and information sharing among them is necessary to avoid mistrust during this task. In some cases, methods such as cooperative confirmation of facts is effective. This is performed for the purpose of reaching a common awareness at least of the reliability of the data for people who have differing interests. The survey and analysis methodology can be agreed upon in advance and, in some cases, a survey method that involves joint surveying may be implemented.

There are also attempts by municipalities to attract projects that are favorable for the community. In Japan, municipalities (cities, towns, and villages) are able to wield

very little power with regard to planning permission, and the effectiveness of implementing zoning alone is limited. To get around this, there have been attempts to create legal grounds through local ordinances and so on, or to mandate a locally devised environmental assessment. As compliance with laws and regulations is a prerequisite for certification of renewable energy generation facilities, a certain degree of effectiveness may be anticipated from the enactment of local ordinances.

Separate from this regulatory response, there are also examples of activities to put together conditions that are easy to agree on by obtaining a large effect from the site location. There are also municipalities that consider renewable energy resources to be local resources and thus enact local ordinances that enshrine the general notion that renewable energy will lead to local sustainable development. An example of a policy of combining these principles with a mechanism for selecting the general idea and content of a project is that of geothermal power in Hachijo Town, Tokyo. The town has defined renewable energy projects that contribute to the community through a local ordinance. And because it the duty of the administration to support such projects, the town issues public recruitments for proposals to select the partners, with whom they conclude agreements (Maruyama 2017).

10.4 Issues Concerning Distributive Justice and Their Resolutions

10.4.1 Spillover Effects

While the initiatives described thus far exist, there are issues. One of these, as mentioned above, is that these efforts form only a very small part of the total. Another issue is that the realization of the need to engage through distributive justice is not a simple matter. Whether it be financial contributions or the operation of the plant, those who receive direct benefits are limited in number. There may be people in the community who are unable to make financial contributions due to economic circumstances, but these people also have some kind of involvedness. Further, there is a limit to the direct economic effect and, of course, it is impossible to distribute more than the income of the power-generating project. Even if these problems can be overcome, the effect of profit distribution is not always clear. If, for instance, a contribution of one million yen[6] is made, the distribution from profits will be only a few percent a year. It is not always the case that this is assessed as adequate in terms of "nuisance money." Conversely, there are cases in which the profit distribution has been thought of as a bribe (Walker et al. 2015).

There are two ways of overcoming these constraints, one of which concerns spillover effects. Impacts from renewable energy are not limited to external diseconomies such as environmental impacts, and in fact there are also economic effects other than those deriving from project proceeds. If the assessment is

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[6]Equivalent to approximately 9300 US dollars and 8300 euros.

conducted to include these, the distributive effect may be enlarged. The kinds of things that have been pointed to as spillover effects thus far include increases in the number of tourists or the branding of agricultural products. Communities that have been active from a relatively early stage have been able to confirm these kinds of effects. There are cases such as Kuzumaki Town, Iwate Prefecture, which has become a location for demonstration experiments involving large-scale wind farms and biomass power plants since around the year 2000, where the number of visitors has increased due to the acceptance of study tours. Around 2000–3000 people visit the town annually on study tours, this rising to around 4500 people immediately after the Fukushima nuclear accident in 2011 (Iwate edition of the Mainichi Newspaper, July 3, 2012). Visitor numbers of those coming to participate in workshop programs, including farm stays, total around 500,000 people, forming an important pillar of support for the town's tourism efforts.

Nevertheless, only communities that have special characteristics as an advanced area can count on these kinds of effects. There is also a relative reduction in effect as the number of communities that establish renewable energy projects increases. As the conversion to renewable energy systems is realized across Japan, the equipment itself will no longer be unusual, and the need for study tours will decline. In cases where features such as the diversity of energy use in combination with agriculture, or collaboration with the town administration do not exist as they do in Kuzumaki Town, the motivation for visiting any specific site will be low. It is the same with branding: As renewable energy becomes universal, there will be nothing new about the fact itself that renewable energy is being used. Even granted that it is desirable for society as a whole to deploy large amounts of renewable energy, the significance for the community where projects have been established the relative scarcity value will be reduced. At present, the situation is that ingenuity is required to generate these effects, and there are, for example, ventures that combine a mechanism for fund procurement. Crowd funding is a mechanism for small-sum financial contributions in the region of several thousand yen to several tens of thousands of yen. These are not financial contributions in the strict sense of the term, but rather take the form of donations that are "repaid" with thanks. These thank-you gifts are provided in the form of local products, and there are examples where these have become triggers for external investors to come to know more about the local area. A broader sense of spillover effect is realized by these kinds of activities, and thus these are methods for the realization of a form of distributive justice that qualifies as profits for a more diverse group of people.

10.4.2 Spillover Effects that Realize Community Sustainability

One further method for overcoming the constraints of distributive justice is to realize spillover effects that qualify as benefits for unspecified large numbers of people, including, in a broader sense, future generations. Not limiting benefits from a project simply to distribution among the present generation, it is also possible to expand the receipt of benefits through efforts such as investments for future generations, natural

environment, and social networks. Let us term this *expanded distributive justice*. One typical example is community contribution program, e.g., scholarships, educational programs, and investment in local businesses. However, more diverse subjects and methods would be possible.

In Japan, there are two types of characteristic cases, one of which is where municipalities or NPOs who are originally making efforts for community-building implement renewable energy projects as a source of funds for continuing their independent endeavors. One further case is that of efforts to create new spillover effects through inter-community exchanges and other activities.

An example of an initiative in which the municipality itself is the project organizer is the case of Suttsu Town, Hokkaido. The town has a municipal wind farm of 12 MW with annual sales of around 750 million yen (Suttsu Town PR pamphlet, August 2013). A part of the profits, after subtraction of operating costs, is returned broadly to the townspeople. In addition to all the townspeople being recipients of subsidies, such as for water bills, a total of around 45 million yen is allocated to shopping subsidies for the elderly, gift vouchers that also act as a measure to promote the local shopping street, and so on. An example of community-building by an NPO is the wind farm enterprise in Hasaki City, Ibaraki Prefecture. This project is one of 14 projects known in Japan as citizens' turbines, and it is supported by funding from the general public in each project community. The NPO that is the owner of the project was originally a volunteer activity group engaged in beach cleaning and other efforts, and the general notion of the project is sustainable community-building. In addition to beach cleaning and tree planting, proceeds from the project are donated to neighborhood watch groups for the purchase of vehicles. The NPO is also investing in solar energy, biomass from rapeseed, and others as further energy projects.

While the number of cases is small, there are also projects that attempt to make contributions to nature restoration. The solar energy project on former salt fields in Setouchi City, Okayama Prefecture, is the largest of its kind in Japan at 235 MW (covering 260 ha) and also takes into account disaster prevention and nature conservation. The disaster prevention consists of excavation and enlargement of the abandoned salt field water channels and an increase in the number of drainage pumps, as well as the reinforcement and new construction of embankments. These are provisions against natural disasters occurring to the installation itself, but also serve to alleviate the risk of inundation of adjacent housing and farmland. As efforts toward natural restoration, a nature conservation area has been established to preserve the salt marsh. An environment suitable as a habitat for small animals is being created by introducing changes to the water channels and depth of water while maintaining the waterfront environment of reed beds. This is also aimed at the protection of sea eagles who feed on the small animals. In cases where tradeoffs with nature conservation become a discussion point, the goal tends to focus on maintaining the status quo, but it is also possible to be proactive about coexistence, as in this example.

There are also cases where systems have been established to promote activities contributing to the sustainability of the community. Iida City in Nagano Prefecture

has enacted a local ordinance that has the goal of sustainable community-building through the introduction of renewable energy. The ordinance defines the right to coexist in harmony between the natural environment and the life of the local residents as the right of community environment, and considers it the duty of the administration to provide support for the use of renewable energy resources in order to exercise this right. The city is implementing a "community renewable energy support program" based on the ordinance. This is a mechanism for selecting and supporting projects that contribute to the community while gaining assistance from energy experts, local financial institutes, and so on. If approved, the project-implementing body is able to access interest-free finance to cover surveying and other costs while taking advantage of specialist advice. Since the nature of the project is shared through opportunities for consultations from an early stage, a credibility for the project content and plan are enhanced. As of 2019, 12 projects have been approved.

10.4.3 "Self-sufficiency" Over an Extensive Area

There are also cases that contribute to the site location while creating diverse spillover effects through exchanges between urban and agricultural areas. Here I would like to introduce some of the activities of Seikatsu Club, a consumers' cooperative union. Seikatsu Club was founded in 1968 and, as of 2019, has a membership of around 400,000. The movement began with collective purchase of milk, later expanded its area of activities to daily life infrastructure such as food ingredients and welfare. At present, Seikatsu Club is also active in the energy field.

The first step in this endeavor was a wind energy project that began operation in Nikaho City, Akita Prefecture, in April 2012. The cooperative, which deals with fresh foods, originally had an awareness of the problem of reducing the environmental load caused by the considerable amount of electricity consumed by facilities such as refrigerators. The direct motivation for the project was the 2008 amendment to the Tokyo Metropolitan Government's Environment Security Ordinance, which imposed a mandate to reduce the total amount of carbon dioxide emissions. In 2010, as the ordinance took full force, methods of obtaining a power supply which did not result in carbon dioxide emissions or make use of nuclear power were considered. It was not easy for Seikatsu Club to gain consent from the members to become involved in an energy project due to doubts about the justification for an energy project and the fear of possibly becoming the perpetrator of noise issue and bird strike. The proposal was once turned down at an annual general meeting, but the attitude of members changed after the Fukushima nuclear accident. Continuing communication regarding the noise issue and the impact on birds turned out to be effective and agreement on the project was finally reached.

The overall image of the project is as shown in the Fig. 10.3, and this represents "self-sufficiency" over an extensive area between Akita and Tokyo (about 600 km distance) through Seikatsu Club Energy, which coordinates the power supply. The power supply side includes power plants installed by producers other than power
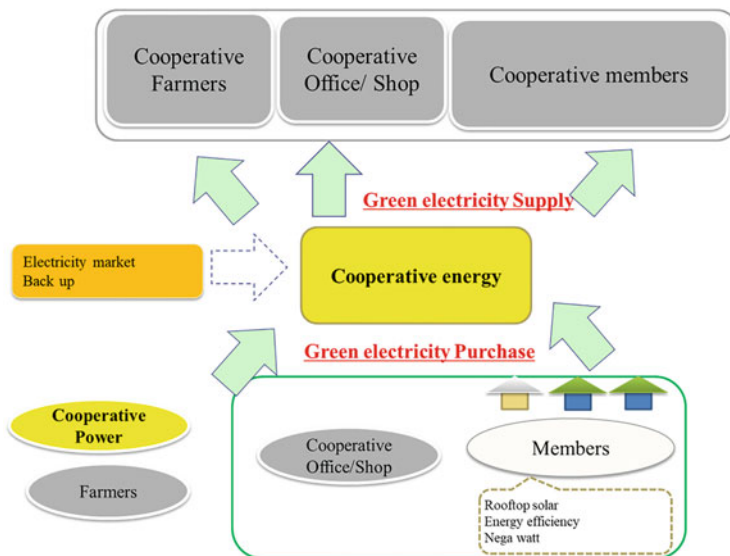
Fig. 10.3 Schema of Seikatsu-club energy

plants operated directly by the cooperative. Seikatsu Club is also scheduled to begin the purchase of power from members' rooftop solar panels. On the demand side are the cooperative members and Seikatsu Club's facilities. By incorporating a method such as this, it has become possible, as a matter of economic transactions, to use renewable energy. As a general argument, in urban areas, the amount of energy consumed is large, but there is a limit on land use. For this reason, self-sufficiency within an area using renewable energy is, in almost all cases, unrealistic.[7] When looking at the goal of the Paris Agreement, to reduce carbon dioxide emissions to effectively zero, the vast majority of urban areas will have little option but to procure power from an extensive area. For areas that supply energy, this suggests the possibility of new industrial development.

10.4.4 Spillover Effects from Exchanges Between Communities

The point to focus on in the activities of Seikatsu Club is not the business model but its expansion of its social network, which goes beyond the effects triggered by the renewable energy policy. A relationship was built up between the wind power generation in Nikaho City and the cooperatives in Tokyo through the supply of energy, but a new kind of connection was also created. Seikatsu Club worked hard to build up the relationship with the local community both before and after construction

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[7]For instance, 1.8% of the demand in Tokyo Metropolitan Area is supplied by local renewable energy.

Fig. 10.4 Japanese drumming at the operation start ceremony of the wind farm

of the wind turbine, holding a number of exchange meetings and forums because they did not want to see the risks forced only onto the production site. This was in line with the Seikatsu Club's principle of "equal and mutually beneficial relationships." This principle is a philosophy that took root when thinking about the relationship between producers and consumers regarding agricultural products, and has the sense of having consideration for the other party and not limiting the relationship to the bounds of a mere commercial transaction. The principle is also presented as one which desires to see benefits for both sides, taking care to avoid the power issues that easily rise to the surface in relations between producers and consumers. Seikatsu Club is striving to apply this approach also to its wind energy project.

Seikatsu Club has been actively conducting their initiatives in a way that would lead to benefits for the local community, as mentioned above. A nickname for the turbine was recruited with the help of the local elementary school, resulting in the turbine being named "Yumekaze (Dream Wind)." At the start of operation of the turbine and at the five-year anniversary event, the elementary school also put on a display of "*wadaiko*" Japanese drumming (Fig. 10.4). Nature walks and study tours to a sake brewery were also included as parts of these events. Besides these events, several dozen Seikatsu Club members and staff regularly visit the site each year for sustainable development workshops.

In the Tokyo area, Nikaho City product exhibitions are held regularly in an effort to expand the trade in agricultural produce and processed goods. These product exhibitions provide opportunities for exchanges between the cooperative and the business operators from Nikaho City and also among Nikaho City business operators themselves. Being aware of Seikatsu Club's standards has enabled business operators to gain suggestions for product development and to be able to form a

more concrete image of the consumers, and it is reported that this has become a strong stimulus for their work (Seikatsu Club Turbine Yumekaze News, October 2013).

In 2013, one year after the start of operations of the wind turbine, an exchange meeting was held between local residents who live closest to the wind turbine and Seikatsu Club members, this leading to the establishment of a council to promote cooperation with Nikaho City. The purposes of the council, among others, are to boost public awareness of the Seikatsu Club wind turbine, encourage exchanges between Nikaho City and Seikatsu Club, and to promote local specialty goods and agricultural and fisheries products. Around four million yen has been provided each year from wind energy business profits to cover the costs of exchanges.

The local producers and cooperative members have also collaborated in efforts to develop local specialty goods. Thus far, consumer materials such as Japanese sake, ramen, oil-pickled fish, fig compotes, and fish sauce have been developed and are being supplied under the trademark "Yumekaze Brand." During the development process, producers and consumers hold repeated food samplings and exchange views in order to determine whether or not the products meet the Seikatsu Club procurement standards and quality. This is a very significant experience for producers, who have few opportunities to hear views directly from consumers. The members of the cooperative are, to borrow a local expression "consumers who set the bar high," and with many restrictions on food additives in the cooperative's procurement standards, these are also challenging endeavors for producers. Nevertheless, sales of products developed in this way grow faster than existing commodities and the producing side is also deepening its confidence in these goods.

As well as the development of these kinds of consumer materials, contract farming for soybeans and the commissioning of tomato production to farmers in local communities is also being carried out. While the tomatoes are raw materials for the tomato ketchup handled by the cooperative, the harvest time serves as a special event when Seikatsu Club members come to visit with their children (Fig. 10.5).

These activities are based on the principle of "equal and mutually beneficial relationships," and contain the significance of narratively linking a solution for the energy problem with consumption. Thus, rather than simply being a movement for a nuclear phaseout, this is an effort to realize benefits for diverse stakeholders within that process. Having said that, far from being merely the qualitative manifestation of a social change, there are quantitative effects. Gross sales in the Tokyo area from Nikaho fairs and so on total roughly five million yen each year, and the Yumekaze Brand efforts boast annual sales of 12 million yen. In addition, there are the sales of tomatoes and soybeans. Compared with the average local economic effect from 2 M-class wind power generation of approximately ten million yen, there exists here a roughly 20 million yen effect if exchange meeting costs are included. For this reason, the residents and administration of Nikaho City have recognized the Seikatsu Club approach as being "not just a wind turbine."

This Seikatsu Club approach is a valid concept for building relationships between communities, and is also useful as a viewpoint from which to consider the

Fig. 10.5 Harvest event of Seikatsu Club members

relationships between the locations where renewable energy is produced and consumed. If an economic relation of the two parties were limited only to energy demand and supply, we would have to say that potential of renewable energy is not being fully exploited. That is, without external benefits, there is little difference between their social-benefits model and conventional energy businesses, where the rural areas support, while taking the risk of environmental changes, mass consumption in the urban areas.

10.5 Discussion

In this chapter, having framed a broad overview of the current state of renewable energy governance in Japan, cases of and possibilities for expanded distributive justice have been discussed. The handling of externalities, including environmental impacts associated with the deployment of renewable energy, is an issue that concerns how we might think about tradeoffs that lie within the category of "the environment." Furthermore, it is also a problem of environmental justice across spatiotemporal scales such as the present generation vs. future generations and local society vs. the broader society.

Since the framing of tradeoffs within these broad spatiotemporal scales is very diverse, even when multiple values are shared, relationships that must engage diverse values within each community will be complex. It is possible that resolutions to problems will be fraught with difficulties as evidenced by the current situation in Japan, where we witness the polarized reactions of local communities toward the introduction of renewable energy projects. Even while overall optimization may be crucial in the current situation, the question itself of what factors to emphasize may

not be a simple one. At the same time, while there may be agreement within each overall project framework, this does not mean that individual projects will necessarily be justified. In some cases, discarding individual problems may lead to a backlash.

What, then, is needed is a "translation" that allows a coherent incorporation of diverse social contexts and values such that while overall optimization is respected it is also rational in the local context. The activities of Seikatsu Club taken up in this chapter are one example of this. Multiple social contexts are engaged simultaneously in this project and, as a result, the social context of the resolution of global environmental issues and the context of local sustainability coexist in an indivisible form through myriad values and relations. Wind energy aids the phaseout of nuclear power and fossil fuels, and also contributes as a means of sustainable energy use and climate change mitigation. For the local people, it is, at the same time, an opportunity for exchanges with Seikatsu Club members and product development as well as being a vehicle for autonomous development of their livelihoods and community. Even though wind power generation itself may not necessarily be actively welcomed, the overall assessment, including the values associated with it, has been that this is "not just a wind turbine," but is recognized as something ethically more, and that should be welcomed. In this sense, the "translation," having diverse social values contexts embedded within it, has functioned correctly, and a synergistic effect has been generated between the resolution of local issues and solutions for global challenges.

Japan has a centralized socioeconomic structure with population and capital and thus forms of power concentrated in large cities. It is also not realistic for large cities to be self-sufficient through the use of renewable energy and thus it is necessary for cities to be supplied with energy from the rural areas. Based on this current situation, not only in ownership by local actors but even with projects pursued by urban actors, there will be an awareness of the necessity and effectiveness of ingenuity to realize multiple values simultaneously in one project through "translation." At that time, the distribution of economic benefits is one form of "translation," but it is also necessary to realize that this has limitations. In fact, diverse forms of "translation" are possible, such as community sustainable development and volunteer activities, or nature conservation and social exchanges. The practical efforts of Seikatsu Club are the result of pursuing the principle of "equal and mutually beneficial relationships" in a situation where they, being based in an urban area, had little option but to rely on other areas for their energy supply.

As renewable energy is generated from decentralized resources, it is also possible to employ renewable energy to resolve community issues in accordance with the diverse circumstances of the community. Not only consent building in the narrow sense of the term but the simultaneous resolution of the energy problem and realization of social well-being may also be anticipated from an increase in endeavors of this kind.

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Trial of Tools to Evaluate Adaptive Processes in Environmental Activities

11

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Abstract

Environmental problems are "wicked problems" with multiple interacting causes; they cannot simply be solved by eliminating a single factor. To solve wicked problems when they occur, perspectives and responses to the problem must spread, allowing various people to detect the problem early and respond appropriately. A creative learning process is also required when responding to the problem. One way to create such a learning process is to evaluate an activity process that promotes mutual learning among diverse people. This chapter introduces two evaluation tools we have developed. The first is a social assessment tool for environmental activities which shares environmental activity processes. The other is a visualization tool for environmental activities which promotes mutual learning by encouraging dialogue between people involved in environmental activities. The social assessment tool incorporates self-assessment into the environmental activity process, which could lead to the immediate discovery and sharing of a problem, collaboration among different people, and finding the optimal way forward. The visualization tool promotes dialogue, focusing on "listening" to and "speaking" the reasons for people's opinions. This helps people become conscious of their own perceptions, learn about others' perspectives, deeply examine concepts and values, and cooperatively define their meanings. Both tools aim to create intellectual resources that lead to solutions by respecting diversity in opinions on the problem.

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11.1   Introduction

Environmental problems are "wicked problems." Because they are caused by multiple interacting factors, they cannot simply be solved by removing a single cause. One example of a wicked environmental problem is the degradation of biodiversity caused by the underuse of natural resources. The *Satoyama* environment, which involves hot spots of biodiversity in Japan, is a secondary natural environment that has been maintained and managed through human use. However, agricultural fields and forests that make up *Satoyama* began to be abandoned and left unmanaged because of lifestyle changes in mountainous areas, the declining economic value of natural resources produced in *Satoyama*, and the issue of a declining and aging population. As a result, the unique flora and fauna adapted to *Satoyama* are changing.

The cause of such biodiversity loss would be relatively easy to identify if it were only related to certain developmental activities. The search for solutions would then be possible, although not necessarily simple. However, if the degradation of *Satoyama* is related to the loss of economic activities in such environments and the decline of the rural communities that have been instrumental in their management, then we must face "wicked problems" that involve socioeconomic issues and consider possible solutions for the revitalization of the *Satoyama* economy as well as rural communities. The problem of *Satoyama* is not just a matter of preserving ecosystems. The important question is how to find clues to revitalize the relationship between people and nature, and how to formulate policies and activities accordingly.[1]

The conservation of the secondary natural environment would be made possible by the search for solutions to wicked problems. The main question explored in this chapter is what approaches are necessary for solving such wicked environmental problems. We examine this question based on a case study of the tools we developed for assessing environmental activities.

11.2   From Adaptive Management to Adaptive Process

It is important for solutions to environmental problems to be based on scientific data and theory. However, no matter how much progress is made, science has limited knowledge and cannot always provide a clear answer to every question. This results in "scientific uncertainty." One reason environmental issues are difficult to solve is that element reductionism, a scientific approach to problem recognition that is often thought of as logical, must rely on science for solutions despite its limited ability to

account for interactions, multidimensional meanings, and changes over time (Sato and Hiroishi 2018: 33).

In contrast, adaptive management, which manages the natural environment by trial and error based on feedback from ecological monitoring, has been developed based on the scientific method: investigating as much as possible, planning for maintenance and restoration, executing the plans, verifying results, and correcting course accordingly. This approach assumes that some things cannot be understood based on element-reductionist science. However, it is not enough to make plans based on scientific knowledge and manage them adaptively. This is because solving environmental problems should be regarded as "social work." It is necessary to consider who the actors will be and what kind of relationship with nature will be preserved and regenerated through their activities. Furthermore, natural uncertainty is only one part of the problem (Miyauchi 2013: 17). Actors do not include only researchers, government officials, and people with a particular interest in environmental issues, they span various fields. Consequently, conflicting interests and opinions may arise between the actors. However, people's values are pluralistic. Not only are the actors diverse, they are also changeable. Even their visions may change. Naturally, society is also uncertain.

We deal with nature through uncertain and complex societies. Given the uncertainty and variability of both science and society, it is desirable to create a flexible process in which diverse people—such as researchers, government officials, and the public—collaborate and adapt their methods, systems, and goals depending on the situation. Let us describe this as an "adaptive process" (Miyauchi 2017). In an adaptive process, we shift from the scientific approach of element-reductionist problem solving to a dynamic, comprehensive approach (Sato and Hiroishi 2018: 7). Emphasis is placed on building the ability to respond to issues through repeated dialogue between people who may have different opinions (Kuwako 2016). This is essential to manage both the decision making of actors involved in environmental work and the natural environment itself.

Thus, solving a wicked problem does not mean eliminating it. It means creating a process by which perspectives and methods of addressing the problem are shared widely, allowing various people to detect the problem early and respond appropriately should it arise (Sato and Hiroishi 2018: 37). To do this, it is necessary to utilize people's differences in perspective, scope, specialty, and available resources. Diverse actors must recognize each other's differences and build a relationship in which they share what they can and cannot recognize alone (Sato and Hiroishi 2018: 49).

However, how can we create a process to leverage actors' differences?

11.3 The "Evaluation" Perspective

11.3.1 Emergent and Creative Consensus Building

People have different opinions about environmental issues. As human beings are social and communicate with each other, it is common for conflicts to emerge from differences of opinions (Kuwako 2016: 1). Consensus building is the process of generating the state of consent, integrating various perspectives based on the assumption that people generally possess different opinions (Kuwako 2016: 2). Consensus building can be understood as a "process of creating a solution" (Kuwako 2016: 13) in which diverse people recognize each other's differences and build relationships that allow them to identify and do things that they could not do on their own. In other words, consensus building is essential to generating outcomes without ignoring people's differences.

However, the creativity of such outcomes changes depending on how we design the consensus building processes. To clarify this point, let us compare two types of consensus building: "deductive consensus building" and "emergent and creative consensus building" (Toyoda 2017: 37). We will explain the difference of these approaches using the case of reintroducing the nearly extinct bird, *Nipponia nippon* (the Japanese crested ibis), to the natural environment. This project has been underway in Sado Island, Niigata Prefecture with the initiative of the Ministry of the Environment. Under the global mission of protecting endangered species, habitat conservation for the crested ibis has advanced through the collaboration of the government and the public in maintaining and restoring the wetland environment in paddy fields and *Satoyama*. However, due to serious depopulation in rural areas, the conservation of such environments has become quite difficult. In deductive consensus building, necessary measures are searched for in order to complete the important mission of preserving the species; this process starts from the assumption that conserving the crested ibis is important and aims to generate consensus for particular conservation measures. Deductive consensus building forms an agreement based on a clear vision, such as returning the crested ibis to the wild. Opinions are extracted and issues are discussed according to the theme of "co-existence with the crested ibis." The theme controls the shared opinions. However, deductive consensus building presupposes a common understanding among participants—in this example, that symbiosis with the crested ibis is important. If residents' main concerns relate to their living circumstances instead—such as the decline of public services, including education and welfare, due to population decline and depletion of the local economy—inconsistencies or even conflict may arise in settling issues (Tomita 2014). Thus, there are limits to the deductive consensus building approach in the face of various values and thoughts.

Another approach—emergent and creative consensus building—identifies or establishes a connection to the crested ibis while also unraveling the issues that concern local residents. For example, non-farmers, women, and children who had little contact with the crested ibis may be re-evaluated as people with opinions. In our work, we created a space in which to listen to these voices and form a new consensus

from the diverse regional opinions. For example, a women-only workshop discussed the necessity of measures for elderly people living alone, suggested encouraging elderly people to participate in crested ibis birdwatching, and debated whether the crested ibis could be used to improve welfare. This debate resulted in an effort to investigate information on crested ibis sightings by elderly individuals. The idea behind emergent and creative consensus building is to initiate discussions based on people's diverse interests, using the opinions to form the theme.

Shifting from a deductive approach to an emergent and creative approach will change people's perception of the issues. For example, the deductive approach focuses on symbiosis with the crested ibis and considers that the problems arise from the declining birthrate and aging population. This opens the possibility for the counterargument that countermeasures against population decline are more important than symbiosis with the crested ibis. In contrast, the emergent and creative approach discusses the various problems arising from population decline in local living. For example, discussions may involve real-world concerns such as the impact of school consolidation on the community and elderly individuals' purpose. In this way, opinions on population decline are diversified, perspectives about symbiosis with living creatures are diversified by considering population decline, and the potential for action is created (Toyoda 2017).

Dialogue among people with various opinions in emergent and creative consensus building can be recognized as a "mutual learning" process that diverse people participate in. In other words, ideas emerge because diverse people learn from each other.

11.3.2 Evaluation as Mutual Learning

One effective method to promote mutual learning among various people is evaluating the activity process. Visually assessing the activity process to determine what effects are being produced and what are not, as well as what achievements are made and what are not, makes individuals and businesses more likely to modify their activities and learn how to proceed. In this way, evaluation produces learning, which enables the discovery and confirmation of various values. An evaluation framework that leads to learning will also rebuild trust among those with opinions to share (Miyauchi 2017). The evaluation we describe here is a "self-evaluation," in which we evaluate our own activities while adding others.

Below, we explain two assessment tools we have created and experimented. Tool A was first developed with the aim of elucidating and evaluating the process of environmental activities from the social viewpoint (Kikuchi et al. 2017). Tool B was developed based on the review of Tool A and designed with the aim of facilitating dialogue among actors for self-evaluation. Through the experimental workshops to implement these tools, we conclude that Tool B is promising as a practical method for self-evaluation of environmental activities.

11.4 Tool A: Social Assessment Tool for Environmental Activities

11.4.1 Tool Development Process

Thus far, evaluation of environmental activities has generally been limited to the natural science methods of concrete regeneration techniques and natural monitoring. However, environmental activities are comprehensive efforts with various effects on local communities. Therefore, the social process by which environmental activities create nature-related activities and increased value of living in an area must also be evaluated. Our social assessment tool for environmental activities targets this social process.[2] The tool uses ten items to evaluate environmental activities from a social perspective. The items were extracted by researchers involved in tool development from their practical experiences in environ*mental conservation and natural restoration.

The first aspect we consider important in social evaluation is recognizing the issues. Because issues are not corrected and change depending on the situation, recognizing what the specific problem is must be a repeated process.

Second, it is important to create a physical place for communication between the various people and networks involved in environmental activities. Accordingly, "actors," "platforms," and "networks" were included in the evaluation of activities.

Knowledge and technology are also essential aspects of environmental activities. Environmental activities require knowledge and skills, such as ecology and environmental engineering. At the same time, social technology[3] that converts the scientific knowledge of the field into practical local knowledge is crucial. It is important to determine whether external academic knowledge can be utilized in the region or if it remains extraneous and inaccessible.

Evaluating environmental activities should consider both the pleasure and fulfillment felt by those who participate and appraisals from outside the region. In many cases, evaluations from outside a region have motivated rediscovery of the region's richness.

Decision-making within the region is indispensable to promoting environmental activities. Engagement in activities differs depending on whether decisions are being made locally or remotely.

Finally, specific actions relate to environmental activities. Some actions directly intervene in nature, while others form networks. Regardless, the actual actions of the people involved drive the overall environmental activities.

Based on the above considerations, social evaluation indices for environmental activities were summarized in ten items. By setting the social evaluation index on the vertical axis of a graph and time on the horizontal axis, changes in the index and their respective relationships can be expressed. This may lead people to visualize the process of environmental activities and consider directions in which to proceed. Figure 11.1 shows a social evaluation sheet used for a workshop.

	Evaluation item	Evaluation item content	Specific content
Problem		The process of collectively identifying an issue	
People	People involved	Entities engaged in environmental activities	
	Human connections	Status of connection with others	
	Gathering place	A predominantly spatial area where diverse people exchange information and services	
	Decision-making mechanisms	Mechanisms for determining a goal and selecting a specific means from among all those available	
Technology and behavior	Know-how for nature restoration	Technology that converts environmental activities into social objects	
	Specific actions	Specific actions related to environmental activities	
	Nature restoration technique	Technology that intervenes naturally	
Knowledge and evaluation	Knowledge	Content and method of recognizing/understanding an event	
	Evaluation	Positive feedbacks from outside; people's feelings of fulfillment	

Fig. 11.1 Social assessment sheet

We employed this evaluation tool on a trial basis at several environmental activity sites in Japan. Through this implementation, we examined and sought to improve the tool's effectiveness.

11.4.2 Natural Restoration of Nakaumi

One of the authors, Kikuchi, tested the social assessment tool at the site of the Nakaumi Nature Restoration Project in 2015. Nakaumi is a brackish lake, the fifth largest lake in Japan, located on the border of Shimane and Tottori Prefectures. Until around 1960, it was a beautiful lake with clear water, beaches, abundant macroalgae, and various types of fish and shellfish, including blood clams. Beginning in 1963, the government-run Nakaumi Reclamation Project (hereafter "Reclamation Project") was tasked with resolving post-war food shortages and expanding land area. A quarter of the lake, approximately 2500 hectares, was reclaimed to create advanced agricultural land suitable for modern farming (Shibuya 2012: 42–43). However, because of public and resident action and critical public opinion of large-scale public works, the project was cancelled in 2002 (Shibuya 2012: 14–15; Asano 2009).

Despite the project's cancellation, Nakaumi's ecosystem was severely damaged by the nearly 40 years of extensive public works. The relationship between the people and the lake was also changed. Regenerating the deteriorated environment and ecosystem posed a significant challenge. However, the Nakaumi area's natural environment was preserved and, in November 2005, Nakaumi and Lake Shinji were designated as Ramsar Convention registered wetlands. In March 2006, in

cooperation with administrative agencies, local residents and researchers from the local Shimane University gathered to establish the Nature Restoration Center and begin restoring Nakaumi. The Nature Restoration Center was approved as an NPO in April 2007. In June 2007, several NPOs, governments, and universities launched the Nakaumi Nature Restoration Council (hereafter the "Council") based on the Act on the Promotion of Nature Restoration, and there has since been movements to organize individual restoration projects.

Fierce conflicts have arisen in Nakaumi over land reclamation projects. People involved in environmental protection activities have called for a break in project promotion. However, the same people were instrumental in creating a desirable environment, realizing the commercialization of various proposals. Rather than opposing administrative policies, a movement has been actively re-creating ties with Nakaumi (Asano 2009: 253).

The aim of Nakaumi's natural restoration, which pursues the theme of "Revived, Rich, Fun, and Beautiful Nakaumi," is to restore the lake's rich beauty, environment, and ecosystem and rebuild the natural environment and resource circulation of the former Nakaumi. Specific activities include using Hi-Beads to backfill numerous depressions created by the Reclamation Project that have significantly affected Nakaumi's water quality.[4] Other activities include providing environmental education on Nakaumi through experience-based activities in elementary schools and reusing macroalgae. (Macroalgae remaining as an unused resource is collected to reduce nutrients that cause water pollution in lakes and processed into fertilizers for agricultural products.)

11.4.3 Social Evaluation of Natural Restoration in Nakaumi

A social evaluation workshop on natural restoration in Nakaumi was held in October 2015. Ten individuals participated: the director and secretary-general of the Nature Restoration Center, a Council chairperson, a Ministry of the Environment representative, two staff members from Shimane Prefecture, two staff members from Tottori Prefecture, and two Chugoku Electric Power Company employees involved in backfilling depressions as a social contribution.

Every two years, from FY2007 to FY2014, the stakeholders were asked about the activities. Specifically, they were asked what was done and when, who participated, and what results were obtained. We organized the stories that emerged and recorded them on the assessment sheet. This eight-year history of the activities ultimately lasted 3 h. Figure 11.2 shows an evaluation sheet summarizing the workshop results.

The sheet shown in Fig. 11.2 illustrates data between FY2007 and FY2008, activities mainly involved holding study sessions and formulating the overall concept of natural restoration. At that time, the activities were initiated and led by researchers, showing the attractiveness of the activity as a research field. Shimane University researchers and their networks played a central role. Little external evaluation was conducted.

	Items	2007–2008	2009–2010	2011–2012	2013–2014
Problem		Attractive as a research field	Depression and water quality issues / Establishing connections with residents	"Sea for swimming" → Creating a vision to involve residents / Objective → A comprehensive perspective	Independence/sustainability of activities / Encouraging empathy → Symbolize blood clams and promote community participation
People	People involved	Researchers at Shimane University	Fishery cooperative, Yonago National College of Technology	Nakao san, Mr. Kumagai (Yonago National College of Technology)	Companies, governments, NPOs, residents
	Human connections	Shimane University Network / Residents' meetings Business sphere	Government agreement Networking with companies/NPOs	Primary schools Exchange with Yonago	Networking with companies
	Gathering place	Shiragata salon	Nakaumi Conference (2010)	Eco shop estranged from Yonago	
	Decision-making mechanisms				
Technology and behavior	Expertise in nature restoration	Study group Council established / Formulation of the overall concept	Strengthening the secretariat system (2009) Focus on environmental learning Building trust and cooperation Online call for ideas and implementers	Secretariat operation (indirect expenses) Procuring grants Environmental learning in elementary schools	Certified NPO (2013) Ending reliance on grants Employment of specialists (accountants, labor consultants, etc.)
	Specific actions	Surveys and study sessions / Activity trial and error	Backfilling depressions Conservation and restoration of common eelgrass	Backfilling depressions Biodiversity conservation and environmental activities Sundowner concert	Organizational strengthening
	Nature restoration technique		Hi-Beads , Chugoku Electric Power Company		
Knowledge and evaluation	Knowledge	Water quality and ecosystem	Preservation and regeneration of common eelgrass	Integration with city planning	
	Evaluation	Minimal external evaluation Active transmission	Accumulated social achievements Government recognition Biodiversity Action Award	National recognition Resonate Award	Social evaluation and responsibility UN Decade on Biodiversity Japan Committee Cooperation Project (Sep. 2013)

Fig. 11.2 Nakaumi nature restoration sheet

In FY2009–2010, depressions and water quality were identified as problematic through research progress. Backfilling the depressions became a specific activity, and Chugoku Electric Power Company provided technology and materials called Hi-Beads as part of its social contribution. A common eelgrass conservation and regeneration project was also started. Using the sheet to reflect on activities visibly conveyed the progress of cooperation with the government and formation of networks with companies and NPOs. As these networks expanded, strengthening the secretariat system became challenging. The government also became aware of the activities and provided external evaluations such as granting the project a Biodiversity Action Award.

In FY2011–2012, backfilling of depressions continued and other activities were added, such as biodiversity conservation projects and concerts for the general public. Using the sheet, we confirmed that stakeholders began re-examining the purpose of natural restoration as external evaluation increased, although the activity did not expand greatly in the area. Researchers specializing in urban planning participated to consider the relationship with the land area in addition to the lake, and the vision of a "sea for swimming" was established to gain residents' empathy. At this point, the activity gained nationwide recognition.

In FY2013–2014, the Nature Restoration Center gained greater social reputation and increased responsibilities through certification as an authorized NPO. It aimed for a self-sustaining organizational operation without reliance on government subsidies. The sheet visualized that networks with companies were strengthened at

this time, emphasizing the promotion of public participation to create empathy by symbolizing the once-abundant resource of blood clams.

As the participants collaborated to create the assessment sheet, they visualized the changes in problems, people, technology and behavior, and knowledge and evaluation that occurred over the history of the activities and their relevance. Ultimately, the activity theme changed from researcher-led water quality issues to public participation. In particular, interest shifted from the lake alone to linking with shorelines and hinterlands, symbolizing the delicious seafood of Nakaumi, and eliciting empathy from the public. This indicates that Nakaumi, which fell out of public familiarity because of the reclamation work, is once again becoming more familiar. Additionally, with theme changes, the activity's challenges shifted to building networks with various stakeholders and strengthening organizational management. No major change in the technology for natural restoration, primarily technology for backfilling depressions, occurred. Because the lake activity is highly specialized, it is difficult for the public to feel connected to it. Although the major theme of the activity is shifting toward public participation, such participation is currently lacking. Thus, creating public participation activities was clearly identified as a future direction. The next challenge is to modify the organization to function as a hub for networks of various actors and create multifaceted activities. The decision column was left blank. Although blank space is also important data, no efforts were made to fill it. However, awareness of the system's limitations, which could fulfill social responsibilities and create multifaceted activities, has increased.

What was the significance of using the assessment sheet for the participants of the workshop? To clarify this, Kikuchi interviewed the workshop participants in May 2016. The investigation confirmed some effects. First was the "awareness effect." The purpose of the project's natural regeneration is to rebuild the relationship between Nakaumi and the people who were disenfranchised by the Reclamation Project. Without widespread empathy, cooperation with diverse people cannot progress, and the relationship between people and Nakaumi cannot be restored; because researchers initiated Nakaumi's natural restoration, the work would become simply a "research" activity. Researchers accustomed to element-reductionist thinking are not adept at coordinating between various people and tend to take a narrow perspective. However, the natural restoration is not only for research. The workshop participants were not fully aware of the scope, but knew that the restoration activity was expanding.

Second, using the assessment sheet shifted the participants' perspective on the research and allowed them to discover the significance of contact with different viewpoints. Reflection on the activities regarding social evaluation indices clarified that it was important to accumulate new activities, such as shore-based activities and gaining empathy through food. Thus far, issues were managed from a research perspective, but the participants came to realize that people, technology, behavior, knowledge, and evaluation were connected. Through the workshop, participants reframed their view of natural restoration as a social activity affecting local communities. There is a gap between this perspective and that of natural science research, however. Thus, it is necessary to shift the research perspective to meet that

of citizens and promote natural and regional regeneration in an integrated and flexible way.

Third, comparison built confidence. It is difficult for individuals alone to verbalize changes in their activities or view the entirety remotely. Dialogue with other workshop participants enables a bird's-eye perspective and allows individuals to more clearly see what needs to be done. Even Kikuchi, who specializes in environmental sociology, reported becoming more confident in promoting the natural restoration of Nakaumi as a social activity because of the workshop. Thus, individuals self-evaluate activities and projects through exchanges with the other participants. Applying the social assessment tool allowed the users to confirm their awareness of the challenges and potential of their activities.

11.4.4 Achievements and Issues

Mutual learning by evaluation is one method for promoting environmental activities through a flexible process that leverages the advantage of different perspectives, specialties, scopes, and resources. The social evaluation tool we developed can also incorporate self-assessment into the process of environmental activities. This helps users discover and share problems in the field, work with different people, and identify how to proceed. The social assessment tool is significant in its ability to handle environmental activities (Miyauchi 2017).

However, some of the tool's shortcomings were identified. First, it is costly. The workshop was lengthy, and the results could not be summarized on the same day. Because it is difficult for the tool to show its results immediately, the effect of promoting communication remains questionable. Second, implementing the tool is currently challenging without a workshop coordinator. It cannot be used without guidance from a specialist. To make the tool more versatile, it will be necessary to create an operation support manual.

By reviewing Tool A's function, we recognized that it would be necessary to create a simpler tool that is more user-friendly. Tool B was developed based on the experiences of implementing Tool A.

11.5 Tool B: Infographic Tool for Activating Dialog Among Environmental Actors

11.5.1 Tool Development Process

Based on the social assessment tool's limitations, we developed a visualization tool for environmental activities. The social evaluation tool introduced in Sect. 11.4 evaluates activities based on sharing of the activity process. The infographic tool introduced in this section evaluates activities by promoting dialogue between participants.

Kikuchi identified the need for a tool to regularly evaluate activities and initially proposed a simple activity checklist to the Council.[5] In December 2016, a workshop of Council stakeholders was held, self-evaluation items were selected from among the activities, and a checklist of 50 items was constructed. Items were classified into six groups: participation, process management, people and networks, technology and behavior, knowledge and assessment, and financing and management.

Users select an answer of "yes," "no," or "I don't know" for each of the 50 items, such as "Do you explain the principle of your activities to local stakeholders?" and "Are the goals of your activities established through participation by various stakeholders?" Results from the checklist revealed that even among those involved in the same activity, answers differed widely. For example, in response to the questions above, some Council members answered "yes" and others answered "no" despite performing the same activity. The activities' core members tended to rate items more critically, whereas peripheral supporting members tended to provide ratings that are more positive. This "assessment gap" could be an important factor in reviewing one's own activities. For example, when asked, "Are the goals of your activities established through participation by various stakeholders?", some respondents answered "yes," and others answered "no." This may indicate differences in how people interpret the terms, "various stakeholders" or "participation." In other words, even when people take part in the same activities, they may see things differently. However, is this not natural when people with different perspectives collaborate? Clarifying this difference in perception and deepening debate may promote development and revitalization of the meaning of environmental activities. Thus, the checklist could be used not only for evaluation but also as a tool for communication between active members, able to help a diverse group of people recognize each other's differences and support the construction of relationships that allow people to share and recognize aspects of an issue they could not identify as individuals.[6]

11.5.2 Using the Tool

The questions on the checklist proposed by the Council were reviewed and reorganized. As shown in Fig. 11.3, the worksheet contains 50 simple questions with ambiguous expressions that can be interpreted in various ways (such as "various stakeholders" and "participation" in the previously mentioned items). We opted to retain this ambiguity because it may cause a gap in answers that can activate discussion. For example, the checklist includes the following questions:

1-1: Do you explain the principles of your activities to local stakeholders?
2-1: Do you ensure diversity among experts?
2-5: Do local residents actively participate in the activities?
2-7: Is the number of participants in the activity increasing?
3-8: Do you involve multiple stakeholders?
4-5: Do you discuss the blessings of nature?
5-5: Do you make decisions through discussion?

1-1	Do you explain the principle of your activities to local stakeholders?	(Yes / No / I don't know)
1-2	Are the goals of your activities established through participation by various stakeholders?	
1-3	Are your activities linked to community revitalization?	
1-4	Do you discuss issue awareness within your organization?	

People and networks

2-1	Do you ensure diversity among experts ?
2-2	Does the government actively participate in the activities ?
2-3	Do companies actively participate in the activities?
2-4	Do NPOs actively participate in the activities?
2-5	Do local residents actively participate in the activities?
2-6	Are stakeholders (fishers , farmers, etc.) actively involved in the activities ?
2-7	Is the number of participants in the activity increasing?
2-8	Do you promote activities through cooperation with related parties?
2-9	Do you actively promote exchange outside the region?
2-10	Are the generations well-balanced in the activities ?
2-11	Is the gender of actors well-balanced?
2-12	Is there a certain place where stakeholders gather?

Technology and behavior

3-1	Are participants able to use the technology to carry out environmental activities?
3-2	Do you conduct technical trial and error in your activities?
3-3	Do you make proposals to the national or local government?
3-4	Do you make proposals to companies?
3-5	Do you make proposals to people involved in manufacturing?
3-6	Do you offer environmental education opportunities to elementary, middle, and high school students?
3-7	Are jobs created by your environmental activities?
3-8	Do you involve multiple stakeholders?
3-9	Do you actively disseminate information?

Knowledge and assessment

4-1	Do you use scientific knowledge?
4-2	Do you use traditional knowledge (e.g., fisherman's wisdom)?
4-3	Do you try to combine scientific knowledge with conventional knowledge?
4-4	Do you incorporate external assessment into your activities?
4-5	Do you talk about the blessings of nature?
4-6	Do you regularly conduct environmental monitoring?
4-7	Do you implement environmental monitoring with citizen participation?
4-8	Are the results of monitoring fed back into the activity?
4-9	Do you try to disseminate your activities?
4-10	Do you hold study sessions or observation sessions?

Financing and management

5-1	Do you get financial support from the government?
5-2	Do you have external funding?
5-3	Have you implemented external assessment in your organization's operations?
5-4	Do you collect donations or gifts?
5-5	Do you make decisions through discussion ?

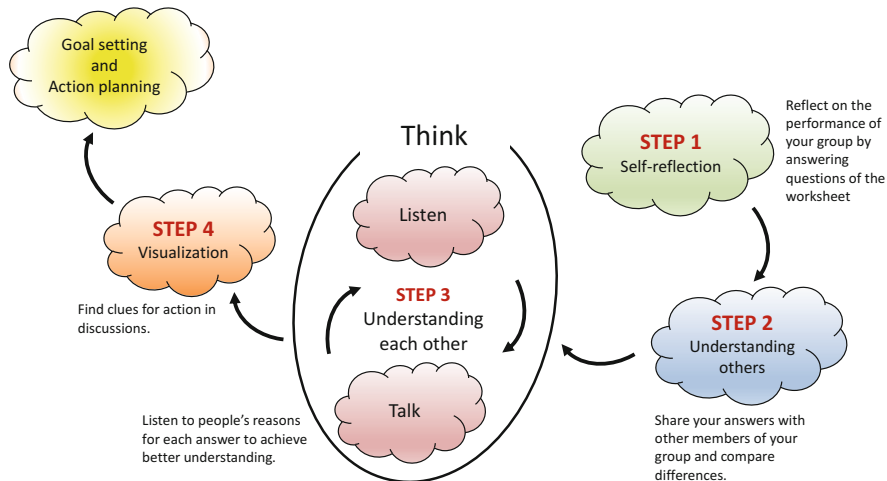**Fig. 11.3** Visualization worksheet for environmental activities

Fig. 11.4 Four-step infographic tool to promote dialog among environmental actors

Implementation of the tool proceeds in four steps (Fig. 11.4). In Step 1, respondents are asked to answer "yes," "no," or "I don't know" to the 50 questions. The process of answering "yes" or "no" to simple but ambiguous questions can cause uncertainty. Based on that uncertainty, respondents each sort out their opinion and the reasoning behind it. Thus, a question that can be interpreted differently can trigger deeper thinking. For example, when answering the question, "Do you ensure diversity among experts?", conceptual questions that are rarely asked may arise, such as "Who is an expert?" or "What is diversity?" The importance of the question is that it is simple but ambiguous enough to enable various interpretations, which leads to organizing one's own opinions and reasoning. Actually answering "yes" or "no" is not as crucial. Thus, Step 1 is considered the process of "self-reflection."

In Step 2, all answer data are input into Excel and displayed on a projector screen. Comparing the answers reveals that some questions have similar answer tendencies, whereas others receive vastly different evaluations. It also provides a rough grasp of others' tendencies, provoking questions such as "Why does that person have a different answer from me?" or "Why does that person have the same answer as I do?" Thus, Step 2 is considered the process of "understanding others."

In Step 3, based on the projected results, the coordinator selects questions to discuss, both with different and matching answer tendencies. Each participant explains the reason for their "yes" or "no" answer, and the dialogue proceeds from there. As participants already took time to reflect on their opinions in Step 1, the reasons for their answer should be easy to articulate. This should also make it easier for those who are not actively vocal at workshops to participate. The reasons for people's differing opinions become clear as the discussion progresses. It is crucial that participants both listen and speak. Further, those who initially answered "yes" may change their opinion to "no" because of the discussion, or vice versa. This is a

mutual learning effect. Thus, Step 3 is considered the process of "understanding each other."

In Step 4, the discussion promotes visualization of participants' activities, allowing them to find areas of agreement and clues for future action. Thus, Step 4 is considered the process of "visualization."

11.5.3 Workshop with the Actors of Restoring the Kamoko Estuary on Sado Island

From January 2017 to the end of December 2019, 12 workshops using the infographic tool were held. The following briefly summarizes the results of a workshop conducted in May 2018 with an NPO called KAMOKEN (*Kamoko Suikei Saisei Kenkyūsho*: Research Community for Restoring the Watershed of Kamoko). KAMOKEN was inspired by fishermen engaged in oyster farming on the brackish Lake Kamo in Sado Island, Niigata Prefecture. It was established as a citizen laboratory on July 11, 2008, to consider the regeneration of the Lake Kamo estuary—which is experiencing eutrophication due to sheet pile revetment and drainage inflow improvements during the high economic growth period—in collaboration with industry, government, and academia.

Six people involved in the laboratory's activities participated in the workshop, including both key members, such as the president and directors, and some members who had recently begun participating. The workshop lasted about two hours and included six of the 50 questions in the discussion. Two questions are presented below to provide an example of the resulting discussions (Fig. 11.5).

Question 2–7: Is the number of participants in the activity increasing?

This question appears to refer to objective facts. However, answers were split. We asked each person for the reasoning behind the answer and received the following responses.

Actor D: There were more than 70 participants in reed boat making. I feel that the number is increasing compared to before.

Actor B: I answered no [because] participation by the key actors, fishermen, is difficult to increase.

Actor A: You say there were 70 participants, but how do you get to 300 or more? Do we not have to think about that?

	Question item	Actor A	Actor B	Actor C	Actor D	Actor E	Actor F
1-4	Do you discuss issue awareness within your organization?	No	Yes	Yes	Yes	No	Yes
2-7	Is the number of participants in the activity increasing?	No	No	Yes	Yes	No	Yes
2-8	Do you promote activities through cooperation with related parties?	No	I don't know	Yes	Yes	Yes	Yes
4-6	Do you regularly conduct environmental monitoring?	I don't know	Yes	I don't know	Yes	No	No
4-9	Do you try to disseminate your activities?	No	No	Yes	Yes	I don't know	Yes
5-5	Do you make decisions through discussion?	Yes	Yes	Yes	Yes	Yes	Yes

Fig. 11.5 Research community for restring the watershed of Kamoko (implemented May 7, 2018)

Actor E: I also answered no [because] the number of core members who are involved in planning has not increased.

Actor F: Even if you are unaware of it, the number of people participating in the resource cycle of Lake Kamo is steadily increasing.

Actor B: It may be true that the number of children playing at Lake Kamo has increased.

Actor A: [However,] they do not continuously [increase]. They stop at temporary involvement.

Actor C: I have been trying to create a playground for children. [Has this not just begun]?

It became clear that interpretation differed based on the word "participants," and participants made discoveries based on each other's remarks. Their "yes" or "no" answers were unimportant compared to asking the reason for their opinion. This is because "giving a certain opinion is different from giving a reason for that opinion" (Kuwako 2016: 74). The point of the exercise is to mutually understand the reasoning, interests, and concerns behind others' opinions. Promoting dialogue led the group to collaboratively define the concept of "participants" in the context of their specificity.

Question 5-5: Do you make decisions based on discussion?

All six participants answered "yes" to this question. However, sharing the results raised objections from the participants. One member felt that he discussed decisions in detail, but another thought he was making top-down decisions. Participants asked what exactly an agreement made through discussion is. Does it refer to providing information? Thus, the meaning of "discussion" was again called into question.

11.5.4 Effects and Issues

In some of the 12 workshops conducted thus far, we included a questionnaire for participants on the tool's effectiveness. Questionnaire questions and responses are shown in Figs. 11.6–11.9. The results identified effects related to communication, discovery of new ideas, and review of one's own philosophy and goals.

In the open-ended response column, opinions related to the communication effect included "I was able to learn from other people through this workshop," "It was a

| Question 1	Did you share your thoughts and ideas with other members?
Question 2	Did you get to know what other members were thinking?
Question 3	Did you notice anything new?
Question 4	Did it cause you to rethink your philosophy and goals?
Question 5	Have you come to recognize issues regarding your organization/activity?
Question 6	Have you identified new possibilities for your activities?
Question 7	Do you think these discussion opportunities are needed regularly?

Fig. 11.6 Participant survey
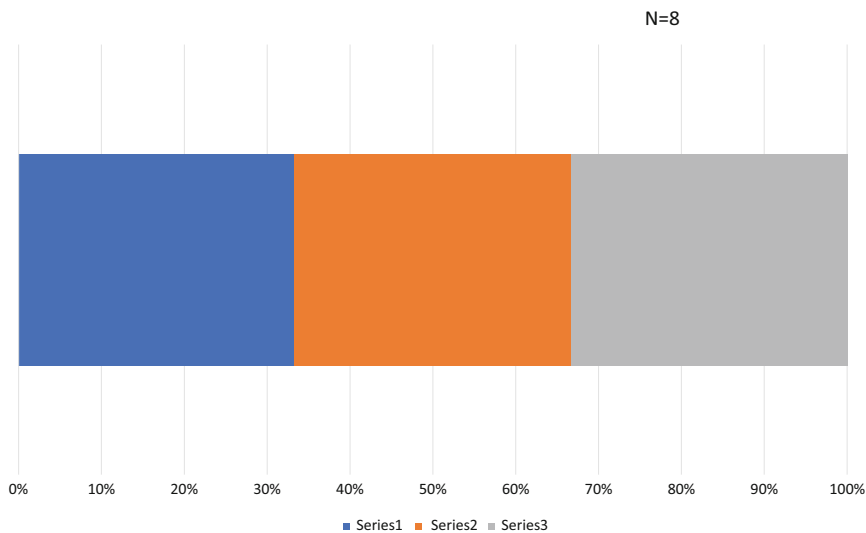
Fig. 11.7 Kami Sarobetsu Nature Restoration Council (January 24, 2019)

good opportunity to share issues with each other," and "I felt it was a very good tool and good a workshop to get to know others' thoughts." In contrast, the effect on identifying new activities was somewhat small, with open-ended responses such as, "I don't know exactly what happened. I think it is a good workshop, but we must go a step further and discuss as a group what we should do in the future." Furthermore, all respondents indicated that it would be better to conduct regular workshops, which could serve as a monitoring tool for activities.

Based on the results of the implementation and questionnaire survey, the following effects of the infographic tool for environmental activities were identified. First, it allowed people to visualize differences in others' awareness and perception of the same situation. Because people interpret issues based on their own life experiences and position, different perspectives on the same problem are common. It is often unclear whether they even see the same problem (Kuwako 2016: 14). Even when engaged in the same activities or occupation, people's perceptions differ. By allowing participants to listen to and share the reasons behind their opinions, this tool creates the opportunity to visualize that outwardly matching opinions may be based on different reasoning, or that outwardly opposing opinions may be based on the same reasoning. Second, the tool naturally encourages dialogue that helps participants identify the reasons for differences in opinion and understand others' perspectives. This generates acceptance of diverse opinions and promotes mutual communication. Third, users of the tool can delve deeply into the issues related to their activities as their understanding of the concepts and values expand. For example, discussions lead to collaborative definition of terms such as "participation," "region," "active," "related parties," and "diversity of experts," deepening participants' mutual understanding.
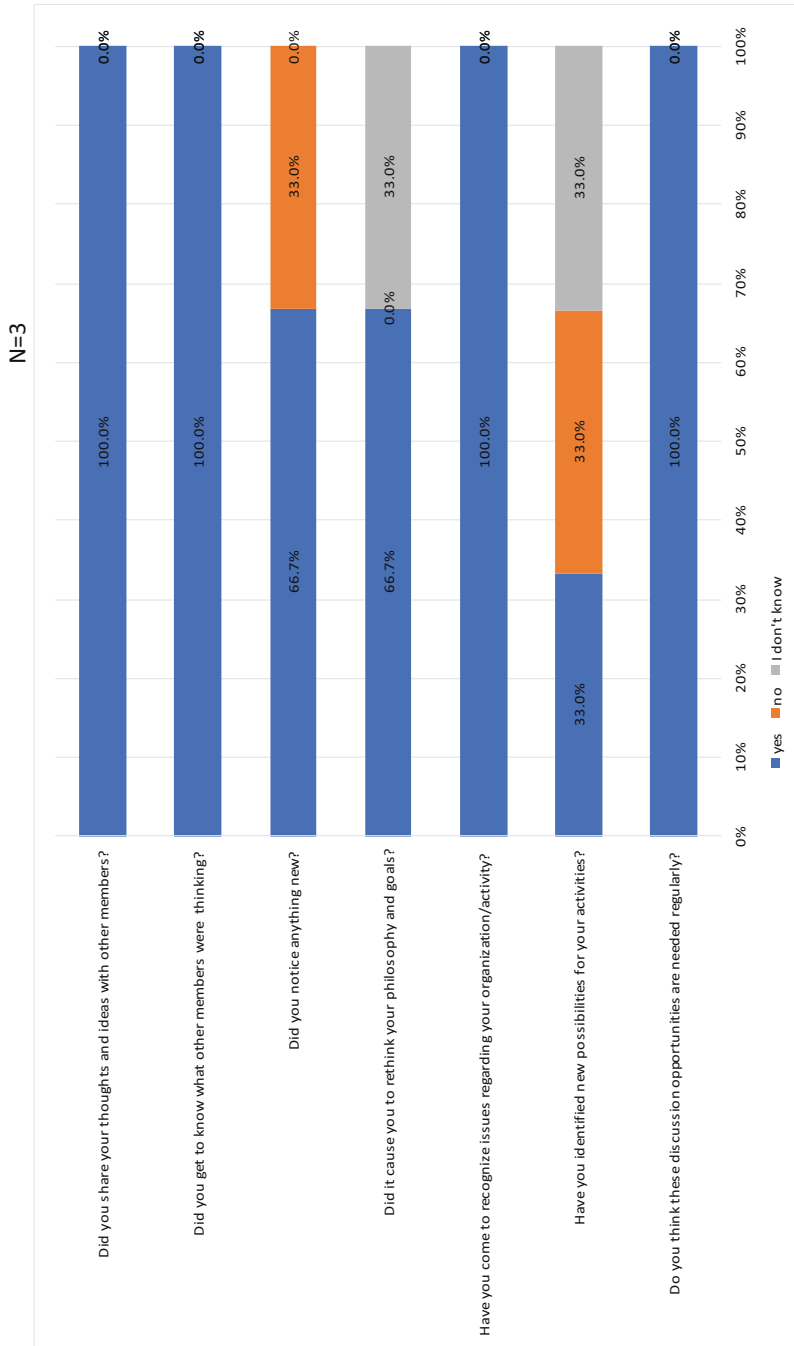
Fig. 11.8 Fushinogawa Tidal Flats Nature Restoration Council (February 7, 2019)

N=14

Did you share your thoughts and ideas with other members?   71.4%   0.0%   28.6%

Did you get to know what other members were thinking?   92.6%   0.0%   7.1%

Did you notice anything new?   78.6%   21.4%   0.0%

Did it cause you to rethink your philosophy and goals?   78.6%   14.3%   7.1%

Have you come to recognize issues regarding your organization/activity?   78.6%   7.1%   14.3%

Have you identified new possibilities for your activities?   76.9%   0.0%   23.1%

Do you think these discussion opportunities are needed regularly?   92.9%   0.0%   7.1%

0%   10%   20%   30%   40%   50%   60%   70%   80%   90%   100%

■ yes   ■ no   ■ I don't know

Fig. 11.9 Stork Symbiosis Promotion Liaison Council in Echizen City (March 30, 2019)

Fig. 11.10 Adaptive process loop: respecting differences of opinion
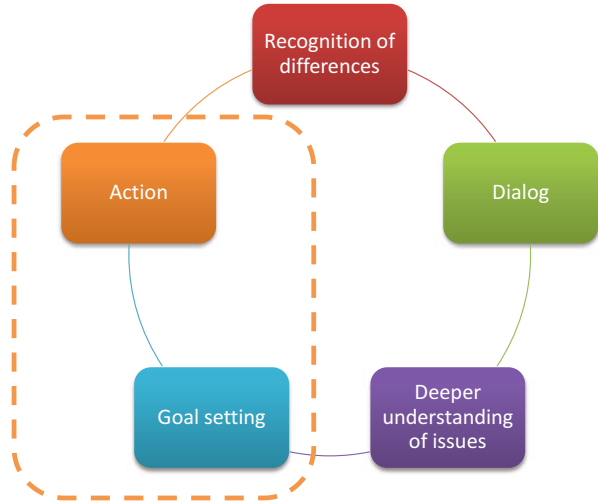
Although the tool was expected to encourage consideration and visualization of future activities, effects on these aspects were not pronounced. It may be more effective to combine this tool with another tool geared for visualization and action.

The adaptive process loop established by the tool is shown in Fig. 11.10. Within the loop, issue recognition is deepened through dialogue, which is sparked by recognition of differences in opinion that are made clear by action. Subsequent actions then differ depending on how the activity process is assessed. A dialogue process in which different perspectives can be shared and recognized is vital, and this tool is effective in promoting that dialogue.

11.6   Conclusion

Solving wicked problems involves building people's ability to respond. To this end, it is important to drive a "process of accepting diverse opinions, exploring the values underlying each opinion, sharing that information, and creating solutions" (Kuwako 2016: 13). Different perspectives, scopes, specialties, and resources can be leveraged as an advantage. Emergent and creative consensus building helps construct relationships that can properly utilize these differences. Evaluation is one method for implementing this mutual learning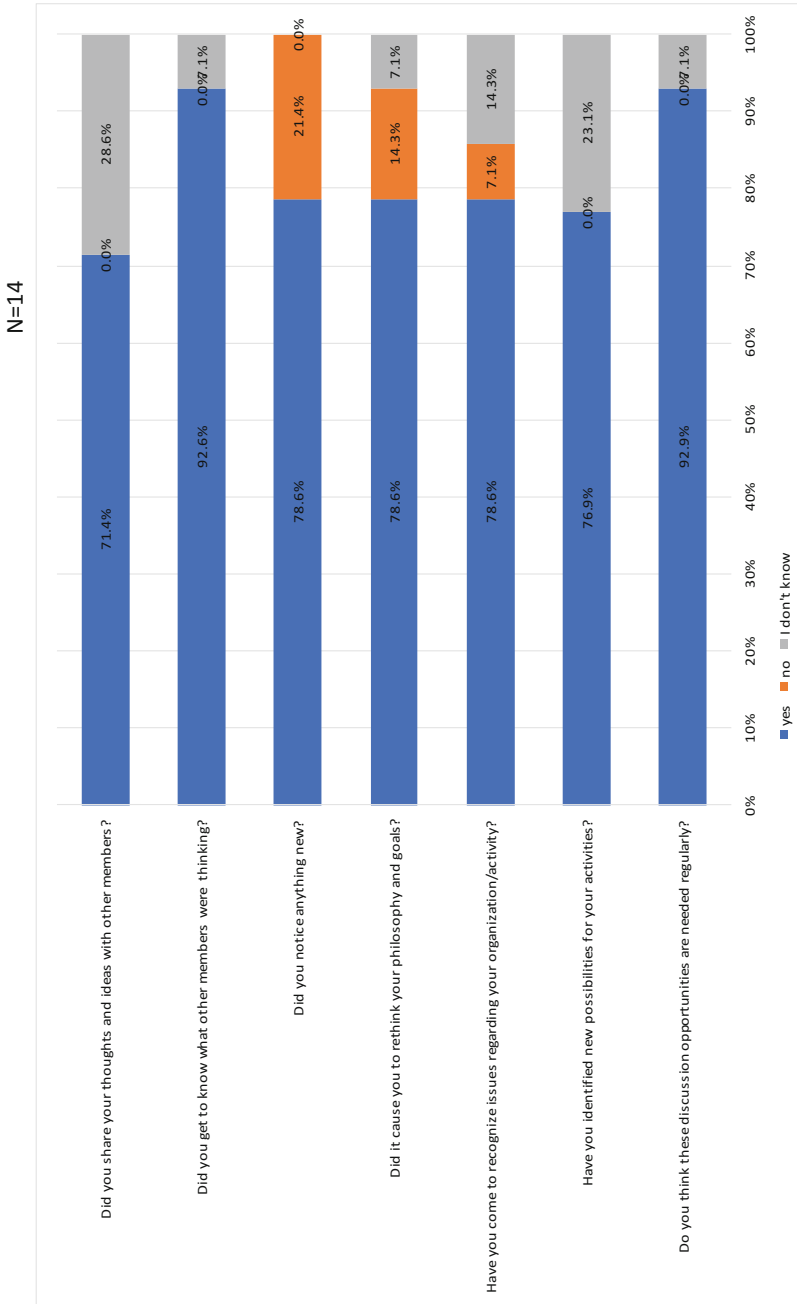 process. Accordingly, in this chapter, we introduced some results from workshops using a social evaluation tool and a visualization tool we are developing for environmental activities.

The social assessment tool for environmental activities incorporates self-assessment into the environmental activity process; we predicted that this could produce immediate discovery and sharing of issues, collaboration with others, and identification of direction for future action. However, the tool is difficult for people to implement independently.

The infographic tool for environmental activities, which promotes a dialogue process through "listening" to and "speaking" the reasons for individual opinions, effectively helped participants understand their own perspectives, learn about others' perspectives, delve deeply into concepts and values, and define their meanings collaboratively. However, this tool alone did not lead to visualization for future action.

It is necessary to consider wicked problems from multiple angles. This means respecting a diversity of views on the issue. Naturally, diverse opinions have the potential to cause conflict, but they are also important intellectual resources that can lead to better responsiveness and solutions (Kuwako 2016: 6). The two tools discussed in this chapter aim to build emergent and creative consensus that integrate diverse perspectives as an intellectual resource.

Notes

1. This question setting is related to the research history of the two authors. Kikuchi participated as an environmental sociologist in a project to return an endangered species of stork to the wild around Toyooka, Hyogo Prefecture. Although the main goal is to increase the number of storks, the project also conducts some regional revitalization activities related to secondary nature involving paddy fields and *Satoyama*, which serve as a stork habitat. Refer to Kikuchi (2018) for details. Toyoda is working on the regeneration of brackish lakes from an environmental philosophy perspective, while operating Sado Island's Lake Kamo Water System Nature Restoration Laboratory.
2. Other members involved in the tool's development since 2011 include the following: Mami Shikita, who has been building a model of the activity process while studying the regeneration of Kyōtango in Kyoto Prefecture and Kiritappu Wetland in Hokkaido; and Mayuko Shimizu, who specializes in environmental policy and has been conducting research on the regeneration of polluted areas and renewal of areas centered on coral reefs around Ishigaki Island. We utilized our differences in perspective, specialties, scopes, and resources.
3. In a broad sense, social technology is intended to solve social problems and manage society smoothly. This refers not only to engineering technology but also to social systems, including legal and economic systems, education system, and social norms (Horii 2012: 1).
4. Hi-Beads are functional materials for environmental restoration made by adding a small amount of cement and water to coal ash. Their effectiveness in improving the habitat of living organisms has been previously demonstrated (Saito et al. 2014).
5. Kikuchi first referred to the Philippine Marine Protected Area (MPA) management effectiveness evaluation system. This system aims not to determine good and bad MPAs, but to encourage mutual learning to improve MPAs with reference to other districts. Other benefits of the system beyond mutual learning are its adaptive management ability and capacity to report on activities in a way that is comparable to other regions. The system consists of 48 question items.
6. This tool was developed in collaboration with relevant members of the Nakaumi Nature Restoration Council. It is also the result of joint research with Yushu Tashiro of Sasayama City Hall, Toshihisa Asano of Hiroshima University, Mayuko Shimizu of Ryukoku University, and Mami Shikita of Hokuriku Advanced Institute of Science and Technology.

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Process of Making Use of Narratives to Actualize Local Knowledge for Effective and Appropriate Application: A Case Study of Participatory Action Research on Human–Nature Relationships in the Aya Biosphere Reserve

12

Ryoto Tomita

Abstract

Local knowledge of nature fostered in communities, such as Traditional Ecological Knowledge (TEK), plays an important role in environmental management, such as biodiversity conservation, natural resource management, and climate change responses. However, local knowledge is not only an element that makes up a community's cultural context, it also relies on the cultural context. It thus has a quality different from scientific knowledge. Without taking this quality into account, the use of local knowledge is simply cherry-picking and is ineffective. What's more, it becomes intellectual exploitation, depriving local knowledge holders of benefit and causing injustice.

Therefore, in this chapter, I focus on methods for actualizing local knowledge using narratives describing involvement in a community's ecosystem. Not only experts but also concerned citizens participated in these methods. I seek to clarify conditions needed for the effective and appropriate application of local knowledge.

Through a case study of participatory action research (PAR) on human–nature relationships in the town of Aya, I clarify three conditions for the effective and appropriate application of local knowledge: (1) whether or not methods that can assimilate, interpret, and use local knowledge, which is reconstructed each time it is given account as a narrative, can be presented; (2) whether or not local knowledge can be actualized while respecting plural narratives, which exist for the same object and in the same time period, and their interpretations; and (3), whether or not "learning" by people and organizations that seek to use local knowledge is possible; for such "learning," people and organizations reflect local

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knowledge in actual actions and policies by critically reviewing their own framework of thinking in light of narrative accounts and actualized local knowledge.

12.1   Introduction

It has been observed that local knowledge of nature fostered in communities, such as Traditional Ecological Knowledge (TEK), plays a critical role in biodiversity conservation, natural resource management, and responses to climate change (Inglis 1993). For example, TEK is defined as a "cumulative body of knowledge, practice, and belief" accumulated in a people's involvement with an area's ecosystem (Berkes 1999: 8). This knowledge does not simply supplement scientific knowledge, it also has significance in the indigenous body of knowledge and society. Therefore, describing environmental conservation and its significance with local knowledge allows residents, who are not scientific experts, to easily discern the significance of environmental conservation (Berkes et al. 2000).

Such local knowledge is an element that forms a community's cultural context. At the same time, it has a dual nature in being dependent on a cultural context, including history, for its existence. As a result, unlike scientific knowledge, it is difficult to ensure the reproducibility of local knowledge as-is and use local knowledge systematically. In short, to use local knowledge of nature like TEK in environmental conservation, the following two hurdles must be cleared.

First, much of local knowledge is tacit knowledge (Polanyi 1966). It is therefore not always presented as explicit knowledge. Even in its use, it does not always fit a clear model through which knowledge, as assumed by Tengö et al. (2017), and its support system pass. As a result, local knowledge, which is dependent on a community's cultural context, cannot be effectively used unless an actualizing process is perceived as central.

Second, as observed by Geertz (1983), local knowledge's dependency on its cultural context means its demonstration of efficacy in response to particular natural or social conditions. Accordingly, to use local knowledge, the cultural context on which the local knowledge depends must be understood as a precondition.

If these requirements are not met, the use of local knowledge becomes piecemeal and ineffective. What's more, it becomes simple intellectual exploitation and an act of injustice, unexpectedly depriving local knowledge holders of benefit (Nadasdy 2003). Therefore, effective and appropriate application of local knowledge cannot be realized if methods to actualize local knowledge and share it, including sharing its cultural context, are not considered.

In this chapter, we focus on methods that use narratives concerning a community's ecosystem and its accumulation of human involvement to actualize local knowledge, allowing residents who are not experts to participate. Our purpose is to clarify the conditions needed to make use of local knowledge effectively and appropriately. Specifically, we focus on participatory action research (PAR) on human–nature relationships developed by the Nature Conservation Society of Japan (NACS-J). This research uses narratives to actualize, describe, and share local knowledge of nature using narratives. We examine PAR through a case study of the town of Aya in Miyazaki Prefecture.

PAR introduced here was conducted by citizens themselves concerning their involvement with the nature around them in everyday life. The results were gathered while being shared. The methods were developed by NACS-J beginning in 2004 as part of a joint research project. I participated in this research, and was also involved in PAR in Aya, described below. Around 2005, the researchers established the basic idea of repeating a process of interviews and field surveys and sharing the results with participants. The results would be organized and presented in the form of maps and pamphlets. In 2007, PAR was conducted in the town of Aya, located in Miyazaki Prefecture, in the southwest region of Japan. Aya was also the site of the Aya Lucidophyllous Forest Project (Aya Project), organized by NACS-J. Members of the 2004 joint research project also participated in PAR. The results were included in a handbook published in 2010 (NACS-J 2010).

12.2   Conservation of Lucidophyllous Forests and PAR in Aya

12.2.1   History of Lucidophyllous Forest Conservation in Aya

The town of Aya in Miyazaki Prefecture is located in southern Kyushu, Japan's southwestern most island. Aya is located on the boundary between remote mountains and flatlands. Two rivers originating from the remote mountains, Ayaminamigawa River and Ayakitagawa River, flow through the town. Aya's population was 7002 as of November 1, 2019. In 2012, Aya was registered as a UNESCO Biosphere Reserve (BR).

Aya's environmental conservation movement began with the conservation of lucidophyllous forests, deep in the town's mountains (Fig. 12.1).

The timber industry in Aya grew until the 1960s. Not only timber railroads but also settlements, schools for timber workers and their families, and lumber mills were built in Aya's remote mountains to support timber activities (Aya Town 1982). During this time, a highland development project from 1956 to 1960 cleared about 4000 hectares of forests to build a dam (Ikeda 2006). After the development project ended, Aya experienced a sharp drop in population. In contrast to a population of 10,067 residents in 1960, the population fell to 8419 in 1965 and to 7339 in 1970. Aya during this period was called "a town in which people absconded at night" (Goda and Goda 2005). Minoru Goda assumed office of mayor under these circumstances in 1966. He opposed the plan by the central government's Forest

Fig. 12.1 A lucidophyllous forest in Aya (Photo by Morio Sakamoto)

Management Office to cut down about 300 hectares of lucidophyllous forests and succeeded in forcing its withdrawal (Ikeda 2006). He was motivated by his childhood memories of Aya's landscapes, which sustained him during his military service. He also felt remorse for his time as the assistant to mayor, during which the highland development project devastated Aya's rivers and mountains and contributed to the town's depopulation (Goda and Goda 2005).

Goda served as the mayor of Aya until 1990, and implemented various reforms. In 1967, he established "self-governed communities" a system to improve the self-government capabilities of each village in Aya. Self-governed communities are self-government organizations established on a per-village basis. They are not organizations subordinate to the town hall. Instead, their defining feature is their considerable ability to operate autonomously. In 1975, Goda established natural environment protection ordinances with the goal of realizing the well-bring of residents. In 1983, he established a charter declaring Aya as a town that revives and nurtures the natural environment. In 1988, he established ordinances that promoted organic farming. The policies set forth by Goda had in common the creation of value to be realized by taking advantage of the potential of the region's nature and people (Ikeda 2006). In short, Goda did not tackle the issues of self-government, agriculture, and environmental conservation separately. He conceived an integrated set of policies so that Aya could harness the potential of the region's nature and people. The natural environment of Aya, including its lucidophyllous forests, was positioned as the foundation of these policies.

However, these policies were Mayor Goda's original idea, and the townspeople did not necessarily understand it explicitly. Lucidophyllous forests are found in Aya's remote mountains, and most residents had few opportunities to recognize the concrete relationship between the town's promotion policy and the forests. For example, in the late 1990s, the proposed construction of high-voltage power lines in the lucidophyllous forests set off a protest movement. This movement included a movement to include Aya's lucidophyllous forests in the registry of World Heritage Sites as a countermeasure. However, the protest movement did not spread to Aya's residents in general, and it could not stop construction.

12.2.2 Implementation of PAR in the Uwabata District of Aya

As a result of the movement opposing high-voltage power lines and the World Heritage registration movement, the rarity of Aya's lucidophyllous forests was scientifically demonstrated. Connections with environmental conservation groups at the national level, such as NACS-J, were established. Furthermore, the Japanese government also adopted a new national forest policy. In 2005, the Aya Lucidophyllous Forest Project (Aya Project) was begun by five entities: the central government's KYUSYU Regional Forest Office, the Miyazaki prefectural government, the municipal government of Aya, NACS-J, and the Teruha Forest Association. Headquartered in Miyazaki City, the latter is a citizen's group with about 200 members that carries out protection and restoration of lucidophyllous forests.

While the Aya Project began with the aim of rebuilding forests with the participation of residents, very few Aya residents joined. Kozo Kawano, who worked at the Biosphere Reserve Promotion Office in Aya and was involved in the conservation of lucidophyllous forests for many years as a high school teacher, spoke about this situation:

> The way it was, I didn't think the Aya Project could be a project that Aya resident could participate in. I've always thought that it wouldn't be possible for the townspeople to get involved. (Interview on September 28, 2015)

In December 2007, NACS-J proposed the implementation of PAR for the Aya Project. Mr. Kawano said, "I thought, 'This is good,' and was immediately attracted." Afterwards, through the auspices of the Teruha Forest Association, a group that included residents of Aya self-governing communities and researchers from NACS-J, including me, came together to conduct joint PAR in Aya's Uwabata District. This was the first PAR in the Uwabata District.

PAR began in March 2008. An interview survey of nature experienced by the five senses were carried out: (1) scenery that comes to mind, (2) sounds that linger in one's ears, (3) scents that bring back memories, (4) sensations that one recalls, and (5) nostalgic flavors. In the case of the Uwabata District, an overwhelming number of responses were related to the Ayaminamigawa River, which flows through the area (Table 12.1).

Table 12.1 Results of survey of the sensory elements in the Uwabata District (items with most responses)

	Content	Number of responses
1	Rivers/Ayaminamigawa River/small brooks	20
2	Catching fish/fishing for *ayu* (sweetfish)	11
3	Chinese milkvetch (fields)	10
4	Swimming/playing in rivers	7
4	Chirps of birds	7
5	Satsuma mandarin	6
6	Field mustard (fields)/rapeseed	5
6	Miso/miso soup/peanuts miso	5

Fig. 12.2 Field survey in action

The results were shared with local residents the following month. A community roundtable discussing human–nature relationships was held and, in June, the group conducted a walking survey in the Uwabata District. Community roundtable discussions and field surveys were repeated (Fig. 12.2). Work to organize the results began in January 2009.

Fig. 12.3 Process of producing an illustrated map of the Uwabata District (1)
Illustration: Tomoko Iwai Production: Yui-Design Network

Facing the highlands of lucidophyllous forests, the Uwabata District allows access to the forests from the center of Aya. However, many tourists simply pass through this area when heading to lookout spots in the remote mountains. The Uwabata Self-Governed Community felt strongly that "we want a variety of people to feel the allure of the Uwabata District." They felt that, instead of a pamphlet, what was desirable as a deliverable was an illustrated map that visitors could carry as they toured the area. A draft of the map was created by an illustrator who walked around local sites. It was completed by holding roundtable discussions with residents and incorporating their views (Figs. 12.3–12.5).

In this way, the depiction of Ayaminamigawa River, which flows from the highlands in which lucidophyllous forests are found, was emphasized in the illustrated map. Also included were edible fauna and flora, a "talking rock," which children believe turns around and sucks them in when they call out to it, and water deities existing in various places in the area (Fig. 12.6).

The first edition of the illustrated map was completed in October 2009. Preceding this, in August 2009, the Uwabata Self-Governed Community organized an event where elementary school students walked in the Uwabata District using a draft version of the map. In February of the following year, general participants were recruited and an event to walk through the district was held under the co-sponsorship of the Teruha Forest Association. The organizers continued to hold this event several times a year, including observation tours. Around 2013, this activity was also

Fig. 12.4 Process of producing an illustrated map of the Uwabata District (2)
Illustration: Tomoko Iwai Production: Yui-Design Network

applied to the project of creating footpaths in different areas of Aya as part of the efforts of the Regional Development Working Group, described below.

12.3 PAR in the Uwabata District and Its Ripple Effects

12.3.1 Implementation of PAR in Other Areas

Following Uwabata District, PAR was carried out in other areas of Aya: the Furuya District (2010), Mokudou District (2012), and Kawanaka District (2014). For the survey of the Furuya District and subsequent surveys, besides the relevant Self-Governed Community, NACS-J, and researchers, the Teruha Forest Association also joined the efforts. However, during the time of PAR in the Furuya District, there was an outbreak of foot-and-mouth disease and a nearby volcano erupted, making it difficult for NACS-J and researchers to visit Aya. As a result, the Teruha Forest Association, which had an observer status, initially played an important role in conducting the PAR and organizing the survey results.

Due to these unforeseen circumstances, the Teruha Forest Association became involved in the planning and implementation of PAR. It led PAR in the Mokudou and Kawanaka Districts.

Fig. 12.5 Discussion of draft map

12.3.2 Establishment of Regional Development Working Group

The PAR activities had an effect on the other activities of the Aya Project. In June 2008, when PAR was conducted in the Uwabata District, the Regional Development Working Group was formed with the purpose of creating opportunities for Aya residents to participate in this project (Table 12.2).

However, initially, the Regional Development Working Group was composed of residents who were asked to join by the Aya Town Hall. The townspeople mistakenly thought that the Aya Project itself was a part of the previous movement against power line construction. As a result, townspeople who became members of the working group were confused as to why they were chosen. Because of this, many of them needed to learn through lectures over the course of a year what kind of enterprise the Aya Project was. Afterwards, from 2009, the Regional Development Working Group discussed specifically the activities that should be carried out, and focused on PAR in the Uwabata District. At that time, Shun-ichi Konishi, the head of the Uwabata Self-Governed Community, who participated in the Regional Development Working Group as a board member of the Parent-Teacher Organization, introduced PAR as something that would change the community. In June, the members participated in a field observation of PAR in the Uwabata District.

Observations of community-building in the Kagurazaka District of Tokyo were also conducted in February 2010. While this was done as a learning activity by the

Fig. 12.6 Completed illustrated map of the Uwabata District
Illustration: Tomoko Iwai Production: Yui-Design Network

Regional Development Working Group, as a result, its members felt the depth of Aya's community-building potential. Misako Soma, a staff member of Teruha Forest Association who worked on the Aya Project, reflects on the reaction of a member of the Regional Development Working Group at that time:

> *Compared with Kagurazaka, Aya has more and better points. You can eat delicious things cheaply. This member experienced the opposite of the initial purpose of observation in Kagurazaka, and their perception changed considerably.* (Interview on September 28, 2015)

12.3.3 Registration of Aya as a Biosphere Reserve

This series of experiences led to ideas like the footpath project in Aya. In addition, it also led to the proposal to register Aya as a UNESCO Biosphere Reserve (BR) in July 2010. The Biosphere Reserve is part of the Man and Biosphere Programme (MAB), which began in 1976 and seeks to advance scientific research related to the logical use and protection of nature. Initially, the emphasis of MAB was on the conservation of ecosystems in core areas. However, the Seville Strategy set forth a new direction in 1995 whereby conservation and development would be carried out in harmony. Transition areas that would serve as the model of sustainable

Table 12.2 Chronological table of PAR in Aya and activities of the regional development working group

	PAR	Regional development working group
Oct. 2007	Introduction of survey methods by the Aya Project	
Mar. 2008	Five-senses survey in Uwabata District	
Apr. 2008	Uwabata PAR roundtable discussion	
Jun. 2008	Field survey in the Uwabata District	Regional Development Working Group established
Jan. 2009	Creation of illustrated map begins with repeated roundtable discussions and field surveys	
Jun. 2009		Observation of PAR in the Uwabata District
Aug. 2009	Walking event with elementary school students in the district.	
Oct. 2009	Illustrated map of the Uwabata District completed.	
Feb. 2010	Walking event with general participants in Uwabata District.	Observation in Kagurazaka, Tokyo
Mar. 2010	Five-senses survey in Furuya District	
Apr. 2010	Outbreak of foot-and-mouth disease. Furuya survey suspended.	
Jul. 2010		Proposal of registering Aya as Biosphere Reserve
Jan. 2011	Eruption of nearby volcano. Furuya survey suspended.	
May 2011		International lucidophyllous forests summit held
Mar. 2012	Furuya District PAR pamphlet completed.	
Jul. 2012	PAR begins in Mokudou District	Aya registered as Biosphere Reserve

society-building are thus chosen (UNESCO 1995). Current Biosphere Reserves emphasize the registration and evaluation of transition areas.

The Aya BR, registered in 2012, was the first transition area in Japan. Aya was highly evaluated not only for its lucidophyllous forests, which are ecological rarities, but also its long history of promoting organic farming in water basin areas (UNESCO 2012). In short, not only lucidophyllous forests in the remote mountains but also Aya's community-building as a whole, which includes agriculture in areas

of human habitation and its foundation, was internationally evaluated as a model of sustainable society-building.

12.4 Significance of Actualizing Local Knowledge with Narratives

12.4.1 Uncovering the Cultural Contexts of Local Nature

PAR was first conducted with the hope of creating opportunities for Aya residents to participate in the Aya Project, which seeks to conserve lucidophyllous forests. However, PAR conducted in the Uwabata District focused not on lucidophyllous forests in the remote mountains but on nature nearby in human habitation areas. Interview surveys, discussion meetings, and field visits were carried out to collect narratives. As a result, the survey of the five senses (Table 12.1) and the illustrated map (Fig. 12.6) highlighted the Ayaminamigawa River, which flows through the district; playing in the river and fishing; edible fauna and flora; and the supernatural existence of deities and a "talking rock." In the process of creating the illustrated map of the Uwabata District, when a draft was shown to the residents, everyone pointed out in detail the positions of Ayaminamigawa River's channels and bridges (Fig. 12.5).

Information incorporated into the illustrated map from narratives is not just objective knowledge. In the midst of infinite daily activities related to nearby nature, playing and fishing in the rivers were often described, edible fauna and flora were emphasized, and meaning was attached to a roadside rock as a "talking rock." These were expressions of local knowledge about nature by Uwabata residents. Underneath these expressions was not only the natural environment for local individuals and the community but also things with strong ties to a cultural context, such as history, culture, and identity.

Accordingly, narratives elicited by PAR is not just information about factual connections to the past, no matter how positive it is with interesting or boast-worthy content, or how negative it is with difficult or unpleasant content. The narratives are accounts backed by their cultural contexts. And so, the meaning of descriptions, including what is told to other residents, NPO staff members, and researchers, must be considered as narrative. Mr. Konishi remembers the motive of the survey as not wishing to simply guide tourists in a village:

> *Because children don't know different things about their village, we have to teach them. When I look at my own children, I don't see them playing outside. They're not at the river. They're always doing school club activities.* (Interview on September 30, 2015)

In short, someone told another person, showing that there was something that was considered worthy to be passed on. These are characteristics that arise as a result of narratives. Residents are not usually aware of such local knowledge explicitly. It is summoned by the residents' sharing the narratives among themselves and by

interviews with survey researchers. If there was no opportunity that is PAR, this summoning would not exist, and local knowledge holders would not be able to convey it to others. The evidences of local knowledge would also disappear as generations of residents proceed. As a result of gathering and recording narratives associated with nature, not only hidden local knowledge but also the cultural contexts that lie beneath the local knowledge, such as the knowledge residents have of nature and the value they attach to it, are actualized. It could be explicitly transmitted and interpreted.

12.4.2 Learning and Formation of Human Networks for Survey Participants

By describing local knowledge and cultural contexts explicitly, "new things" that survey participants had not known until now were discovered. This occurred with not only NPOs and researchers involved in carrying out the survey but also among the residents. Mr. Konishi reflects on his participation in PAR:

> *It was good for me. I could listen to a variety of new stories. I thought, "That person also knows the mountains here. He's been making charcoal in the mountains since he was twelve. I become good friends with that elderly man.* (Interview on September 30, 2015)

In this way, because local knowledge of nature depends on individual keepers of knowledge and on the time period, there is much knowledge that individuals do not mutually share, even if they have been residents for a long time. Also, the act of telling a narrative about contact with nature evokes something that its narrators are not explicitly aware of in their daily lives. It is rediscovered by the narrators themselves as something "new" as it is reconstructed.

The discovery using narrative also strengthened the human ties between participants. A classic example was Mr. Konishi's becoming good friends with a narrator (who was also an Uwabata resident) as a result of listening to his stories about the mountains. And, because the staff of the Teruha Forest Association handled the planning and operation of PAR in the Furuya District, they formed (could not help but form) a close relationship with the residents of Aya through not just the survey but also through coordinating the research. Ms. Soma, who was involved in planning and operations as a staff member of the Teruha Forest Association, reflects:

> *This has become a strength of the group. We also got to know the people of Aya very well, and there are many residents who help us out in a variety of ways.* (Interview on September 27, 2015)

In this way, through PAR, exchanges between non-Aya residents, who made up most of the membership of the Teruha Forest Association, and Aya residents were newly reestablished. The PAR of the Kawanaka District, carried out from 2014, was made possible by the cooperation between members of the Teruha Forest

Association and the Regional Development Working Group. This achievement
shows the effectiveness of collaboration and the importance of seeing Aya's
community-building and the conservation of lucidophyllous forests as integrated.

12.4.3 Triggering Chain-Reaction Efforts

Furthermore, other separate efforts were launched in a chain-reaction manner as a
result of describing nature-related local knowledge and cultural contexts and
recognizing their significance socially. Because local knowledge and cultural
contexts related to nature in the Uwabata District were presented in a visible form,
residents in other districts of Aya intuitively felt the significance of these
descriptions. Residents some districts of Aya carried out PAR and, which then led
to diverse efforts (Fig. 12.7).

For example, the registration of the Aya BR was a major turning point for
environmental conservation in Aya. The residents-led Regional Development Work-
ing Group carried out activities to propose applying for the registration in July 2010
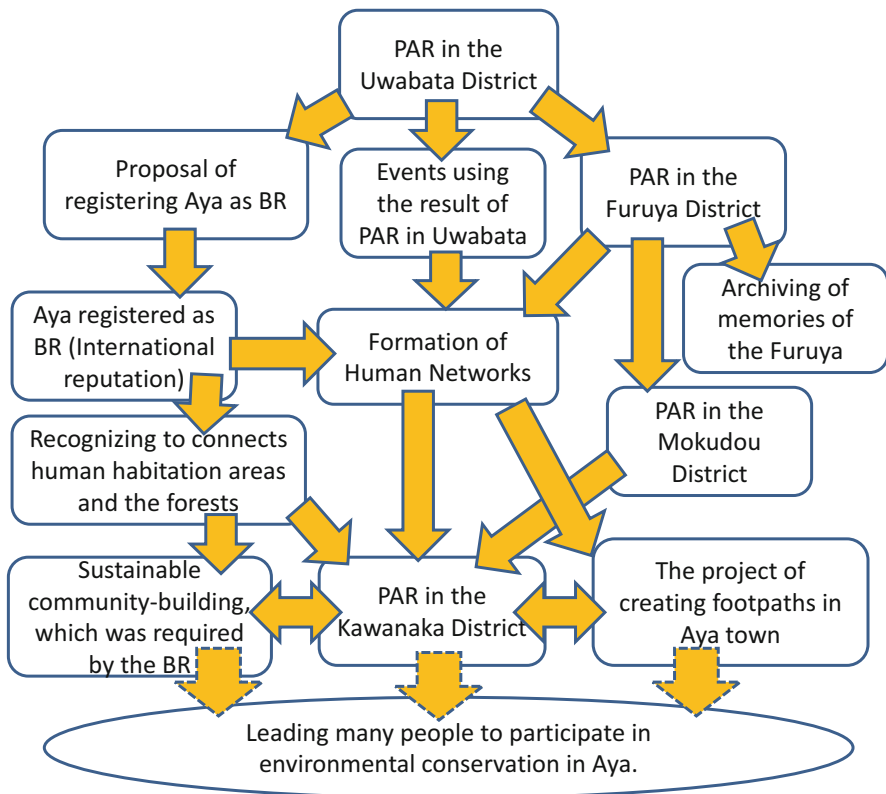

Fig. 12.7 Stimulation of chain-reaction efforts in the Uwabata District, beginning with PAR

(Table 12.2). What led to this proposal was PAR in the Uwabata District. Initially, even the Regional Development Working Group, which was established within the Aya Project, did not sufficiently connect conservation of lucidophyllous forests in the remote mountains and community-building through organic farming in the human habitation areas. However, when observations were carried out in June 2009 in the Uwabata District, local knowledge about the Ayaminamigawa River and fishing in the river were recorded. The importance of the existence of lucidophyllous forests in the mountains, the source of the river, emerged (Fig. 12.6). As a result, members of the Regional Development Working Group got the idea of connecting Aya community-building with lucidophyllous forest conservation, and envisioned concrete sustainable community-building, which was required by the BR program.

Although coincidental, the movement protesting the logging of lucidophyllous forests, begun in 1967, the starting point of the lucidophyllous forest conservation movement in Aya, also connected human habitation and lucidophyllous forests through rivers; movement members and residents told one another and others about this connection. At that time, they spoke of the possible extermination of golden *ayu* (sweetfish), which lived in the rivers, due to logging. The anti-logging movement thus connected lucidophyllous forests and human beings through fish (ayu) and rivers (Goda and Goda 2005). In the twenty-first century, golden *ayu* are now no longer found, and the current relationship between rivers and people has changed greatly. However, PAR in the Uwabata District succeeded in connecting and describing the relationship between lucidophyllous forests and people in a similar manner more than half a century ago. And it connected this relationship to an international effort that is the Aya BR.

PAR was carried out in the Kawanaka District, located in the remote mountains that contain lucidophyllous forests, from 2014 in the manner described above. At present, no one resides in Kawanaka. However, local knowledge of lucidophyllous forests is actualized and described by narratives concerning memories of timber activities in the forests and the history of a shrine that is the focus of strong faith within and outside Aya and the network of people involved with the shrine. Unlike narratives of "contact with nature that is around me" in other districts, in Kawanaka, local knowledge concerns direct contact with lucidophyllous forests in the remote mountains.

As a result of the increase in efforts in a chain-reaction manner, environmental consciousness expanded throughout communities, leading many people to participate in environmental conservation (especially conservation of lucidophyllous forests) in Aya.

12.5 Conditions Needed to Make Use of Local Knowledge Effectively and Appropriately

12.5.1 Assimilation of Narratives in Reconstructed Local Knowledge

In this way, PAR is not only an activity that actualizes nature-related knowledge with narratives, it also expands into a chain of efforts as a result of forming networks of participants. Based on this case study, we discuss the conditions needed to make use of nature-related knowledge effectively and appropriately.

What a narrative describes are not past facts in and of themselves. At the very least, a narrator attaches value to the narrative he or she tells because he or she wishes to convey it to someone else. In addition, a narrative and its meaning change depending on the social circumstances in which its narrator is placed and his or her relationship with listeners. Accordingly, we must remember that local knowledge actualized from narrative accounts are newly reconstructed each time it is actualized.

For example, PAR in the Uwabata District in 2008 and the movement protesting the logging of lucidophyllous forests in 1967 are similar in that they in effect actualize local knowledge that connects human habitation areas and the forests through rivers. However, the accounts of narratives from 1967 and their meanings have changed over the course of half a century. Lucidophyllous forests have changed from mountain forests to scarce resources around the world. Over the course of half a century, the human habitation area that is Aya has changed from "a town where people absconded at night" to a town that is the model of sustainable society-building through organic farming. The conditions of rivers, which mediated local knowledge, are also changing. For example, golden *ayu* (sweetfish) used to exist in visible abundance. However, they are now remembered as something that is lost. Another difference is whether or not narrators are limited to Aya residents or include non-residents like researchers and NPO members.

In short, because of the differences in the accounts of narratives in 1967 and 2008, the actualized knowledge also differs due to the cultural context upon which it depends. Local knowledge actualized in 1967 was not just rediscovered as-is in 2008; it was re-actualized as something different. Because of this, we do not know if the description of local knowledge in 2008 will be accepted socially as valid in the future. The validity of local knowledge reconstructed by narratives is constantly changing.

However, this means that, as a result of reconstruction, local knowledge can be assimilated and used in accordance with the circumstances then. Local knowledge actualized in the Uwabata District in 2008 attached value to lucidophyllous forests based on ecological rarity and environmental conservatism that was different in 1967. It then became connected to an international system like the Aya BR. PAR was not carried out to register Aya BR. But it was actualized in a form where connections could be derivatively formed with international value standards that evaluated Aya as a Biosphere Reserve.

12.5.2 Respect for Plural Narratives and their Interpretations

A feature produced by narrative is not just the reconstruction of local knowledge as described above. A narrative is always something local and specific because of its narrator and community. Even if some narratives are about local knowledge of the same subject and from the same time period, their contents differ depending on the narrator and his or her community. Differences in content means that actualized local knowledge and cultural contexts are also plural.

For example, the results of PAR in the Uwabata District were summarized in an illustrated map. However, there were many narratives that were not included. Lucidophyllous forests are the sources of rivers that bring about abundant crops. They bring material blessings such as timber and wood fuel. On the other hand, many people have died while working in the forests. For example, a narrative that brought back painful memories concerned the death of the narrator's father. He died in an accident in the mountains. Because the narrator himself was holed up in the mountains for many days making coals, he found out about his father's death only after the funeral was over.

PAR in the Uwabata District gathered many narratives that reflected blessings by a variety of water sources like springs, not just rivers. Meanwhile, PAR in the adjacent Furuya District recorded narratives that emphasized the hard labor constantly involved in securing water, as the area is hilly. In this way, there are a plurality of narratives for the same natural object. How to describe these narratives and actualize local knowledge together with its cultural context so that they are socially appropriate is a practical challenge (Elliot 2005).

The illustrated map created in the Uwabata District contains local knowledge actualized by interpreting the narratives. So other interpretations are also possible. This chapter is also an indirect interpretation of Aya's narrative. An interpretation may become an unjustifiable interpretation from another standpoint. There is a tense relationship between plural narrative accounts and interpretations. The possibility of socially questioning the validity of the interpretation of a narrative and allowing different interpretations to coexist should therefore always be open. Otherwise, the interpretation of a narrative may become sloppy, and simply results in building a new ruling regime (Smith 1990).

Concerning this point, what are shown by local knowledge in the Uwabata District in the form of the illustrated map are extremely profound. Compared with written descriptions, an illustrated map does not necessarily tell a particular story eloquently. From the map, readers have room to interpret multiple narratives, even though the interpretations are second-degree.

Of course, it is effective to record as many narratives as possible. Pamphlets that compile narratives that could not be otherwise completely compiled are being created, thanks to PAR in each district. As a result of recording multiple accounts, there can be room for other interpretations and actualization of local knowledge. Multiple narratives can also easily coexist as a result of the effective actualization of local knowledge by other communities' narratives and the engagement of many

people in community revitalization efforts. Their interpretations can also come to exist in diverse forms.

12.5.3 Informal "Learning" Through Narratives

As we see above, the ability to newly reinterpret narratives that are reconstructed each time in line with their cultural contexts at the time is connected to assimilating and using the local knowledge. And, to be aware that there are multiple narratives and interpretations, it is necessary to remember and respect the existence of "separate narratives," which are different from long-familiar narratives and their interpretations.

In short, to make use of local knowledge effectively and appropriately, the people and organizations who seek to use it must have the fundamental ability to "learn." This learning means critically reviewing their traditional framework during the process of actualizing local knowledge with narratives and reflecting this review in actual actions. This learning is informal learning without a clear relationship between teaching and being taught. This is because it occurs as narratives are described and shared, so it is not institutionalized like school education (Coombs and Manzoor 1974; Iwasa 2015). This learning is necessary for actualizing local knowledge through narratives and using it (Tomita et al. 2019), and it is also needed for the Education for Sustainable Development (ESD) program (UNESCO 1997, 2006).

To ensure this learning, it is critical for a community of residents, one of the agents who produce narratives and use local knowledge, to have political authority and the willingness to use it. In Aya, self-government organizations called self-governed communities, which have strong power to set their own budgets and rule on a per village basis, were formed through more than half a century of municipal policies. Each self-governed community in Aya played a great role in carrying out PAR, from conducting surveys to assembling the results. Without the willingness and the authority by self-governed communities to use narratives, it would be difficult to concretely reconstruct local knowledge from the narratives and make use of it, no matter how many narratives are recorded by PAR.

This is also a challenge for governments, which tend to be bound by budgets, laws and regulations, and precedents when they use local knowledge actualized by narratives. Actually, much of the surface area of lucidophyllous forests in the Aya BR is national forests managed by the central government of Japan. It has not been able to sufficiently manage the forests with local knowledge actualized by PAR, as PAR begins from human habitation areas.

As described above, the movement to actualize local knowledge with narratives in Aya and to use it to connect human habitation areas and lucidophyllous forests occurred first at the residential level. A chain, where an effort triggered another effort, occurred. Furthermore, as long as strong self-governed communities back up such an effort, town halls and governments at all levels cannot continue to ignore these developments. Municipal, prefectural, and national governments also

understand that local knowledge, such as TEK, is critical for the sustained management of lucidophyllous forests. Accordingly, the next challenge is to assimilate and reflect local knowledge being actualized by narratives in the policies of governments.

12.6 Conclusion

As described above, participatory action research (PAR) in Aya not only actualized local knowledge, its chief significance, it also formed networks among the participants. These developments triggered a chain reaction of activities. This case study revealed the following three conditions for effective and appropriate application of local knowledge.

The first condition is whether or not local knowledge reconstructed each time it is given an account as narrative can be assimilated and interpreted and a method of its use can be presented. The second condition is whether or not local knowledge can be actualized by respecting plural narratives and their interpretations, even for those concerning the same target and from the same time period. The third condition is whether or not people and organizations that seek to make use of local knowledge can "learn"—that is, critically review their own traditional framework of thinking in light of the described narratives and actualized local knowledge, and reflect this reassessment in actual actions and policies.

By meeting these conditions, local knowledge is applied effectively and appropriately, resulting in a model of a sustainable society as presented by the Aya Biosphere Reserve.

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Narratives Crossing Jurisdictions: Watershed-Scale Collaborations for Adaptive Decisions and Actions

13

Tetsu Sato and Kenji Kitamura

Abstract

The mechanisms of emergence of collective actions and production of broader impacts upon transformations toward sustainable futures were examined in a case study in Nishibetsu River Watershed in the eastern part of Hokkaido, Japan. In this watershed, a local voluntary organization named Nijibetsu Kor Kamuy Society has been mobilizing effective collective actions to restore habitats of Blakiston's fish owl, an environmental icon of ecosystem services and supporting natural environments for sustainable dairy farming and coastal fisheries. Detailed transdisciplinary analyses of collective actions for the past 25 years in this watershed have revealed that overarching narratives of visions of sustainable futures of the watershed have been co-created and shared among stakeholders. The visions are consistent and undeviating for the long term. Actors have combined local and livelihood-rooted knowledge and skills with robust scientific knowledge through bilateral knowledge translators. Through these dynamic and on-going relations, they have created shared meanings out of different knowledge sets, themselves derived from diverse epistemic communities, all to support collaborations and to cultivate shared senses of ownership among participants. Narratives emphasizing the importance of legitimate networks across jurisdictions have been shared among actors, including town offices, mayors, and community leaders, thereby facilitating dynamic formations of multilayered institutions for collective actions. These processes have been interacting with each other to mobilize collective actions and their adaptive improvements at local

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communities and at the watershed levels, producing bottom-up impacts of community-driven collective actions across and beyond jurisdictions.

13.1 Community-Based Collective Actions and Their Broader Impacts

13.1.1 Potentials of Collective Actions for Societal Transformations Toward Sustainable Futures

Social-ecological systems in Japan, as well as worldwide, are facing tremendous challenges regarding sustainability, including climate change, degradation of natural resources and supporting ecosystems and ecosystem services, demographic changes, and increasing inequity and poverty. In order to tackle these diverse and complex social-ecological challenges listed in the Sustainable Development Goals (SDGs) (United Nations General Assembly 2015), local communities all over the world have been mobilizing innovative types of collective actions to greater or lesser degrees of scopes across spatial scales and impacts. Through the two research projects, "Creation and Sustainable Governance of New Commons through Formation of Integrated local environmental knowledge (ILEK project)" supported by Research Institute for Humanity and Nature (RIHN), Kyoto, Japan (2012–2017), and "Transdisciplinary Study of Natural Resource Management under Poverty Conditions Collaborating with Vulnerable Sectors (TD-VULS project)" supported by Japan Science and Technology Agency, Research Institute of Science for Society (RISTEX), Japan Science and Technology Agency (JST), Tokyo, Japan (2017–2020), we have compiled a range of case studies of collective actions to achieve sustainable and equitable futures from diverse communities around the world (Sato et al. 2018a), in collaboration with the "Sociological Study on Adaptive Governance in Uncertainty and Plurality" project.

Through these case studies, we have been successful in extracting meaningful narratives co-produced among participants regarding processes, outcomes, and impacts of collective actions undertaken by the local communities, as well as narratives with continuing challenges. We also have recognized that scientific or epistemic uncertainty derived from complexities embedded within social-ecological systems are one of the root causes of various 'wicked' problems facing local communities, which requires adaptive processes of decision-making and actions (Berkes et al. 2003; Biggs et al. 2015; Folke 2007; Ostrom 2009). Transdisciplinary integration of various types of knowledge derived from different groups of people through collaboration of diverse knowledge producers and users are essential for facilitating adaptive and dynamic processes that can mobilize collective actions

toward solutions amidst on-going wicked problems. Such integrated knowledge has been termed "integrated local environmental knowledge (ILEK)" (Sato 2014; Kitamura et al. 2018; Sato et al. 2018b, c), which is the transdisciplinary blend of heterogeneous knowledge systems from diverse actors for responding to complexities of social-ecological challenges. Traditional, culturally specific knowledge, local procedural knowledge acquired in daily life and livelihoods, and scientific knowledge: All are the important components of ILEK, and all are dynamically produced, transformed, and blended through collective actions among relevant actors to provide a shared knowledge base for adaptive decision-making and collective actions (Sato et al. 2018b). ILEK also includes three types of knowledge essential for mobilizing social-ecological transformations toward sustainability: systems knowledge (multidimensional knowledge on states of social-ecological systems), target knowledge (goals or visions to be shared and achieved), and transformative knowledge (knowledge of mechanisms, paths, and procedures toward achieving these targets) (Pohl and Hirsch Hadorn 2007; Wiek and Lang 2016).

The ILEK-based collective actions by actors of local communities create transformative narratives on the adaptive processes to tackle with challenges facing communities. Transformative narratives include overarching narratives of visions of sustainable futures and different types of case-specific narratives co-created through collective actions, and these are characterized by dynamic adaptive natures in their structures and messages, and their significant impacts to mobilize networks of actors and facilitate collective actions toward societal transformations. The transformative narratives created through ILEK-based collective actions are shared among community members to adaptively support existing actions and creating new ones, and among broader actors outside the communities to produce linkages beyond the jurisdictional boundaries of their communities. Our case studies have revealed that these collective actions initiated in local communities often have impacts not limited to the local communities but to broader spatial scales and governance levels by sharing these narratives through scaled-up channels. ILEK is incorporated into components of transformative narratives and provides logical as well as epistemic foundations for legitimate collective actions. Shared narratives are dynamically transforming because of the adaptive nature of ILEK itself. This process of incorporation of ILEK into narratives is promoted by making new meaning of local collective actions and associated narratives for actors at various spatial scales and governance levels mediated by bilateral knowledge translators. Bilateral knowledge translators are defined as "individuals and/or groups able to bridge gaps between heterogeneous sets of knowledge (including specialized know-how) that emerge from different framings of knowledge, by creating new meanings of the knowledge from different perspectives or different epistemic communities" (Kitolelei and Sato 2016; Sato et al. 2018b). Narratives are co-created and transformed through the process of collective actions by diverse actors, including bilateral knowledge translators, to represent multiple meanings from the contexts of challenges at different spatial scales and governance levels.

By virtue of accumulations of case studies in these research projects, we are now prepared to make efforts to understand processes and mechanisms of societal

transformations toward sustainable futures starting from local communities and expanding across broader scales and levels. These processes are mediated by transformative narratives incorporating transdisciplinary integration of knowledge (i.e., ILEK) and dynamically mobilizing legitimate collective actions through collaborations among heterogeneous actors in local communities. In this chapter, we analyze a series of collective actions and narratives emerging among actors who are deeply involved in these processes, including the authors, in a case of Nishibetsu River watershed in eastern Hokkaido, Japan. We aim to elucidate mechanisms of emergence of collective actions beyond jurisdictional boundaries to achieve broader impacts utilizing integrated knowledge and transformative narratives to promote sharing of meaning of systems, targets, and transformation knowledge. This also represents a unique attempt of transdisciplinary knowledge co-production and collective actions initiated by a small group of people in a limited locality to involve diverse local as well as broader scale actors from different epistemic communities, including researchers such as the authors of this chapter.

13.1.2 Nishibetsu River Watershed and People

Nishibetsu River watershed is located at the eastern part of Hokkaido, Japan. Nishibetsu River receives its water from Lake Mashu in Teshikaga Town (Fig. 13.1), a small and clear caldera lake in Akan-Mashu National Park, which

Fig. 13.1 Lake Mashu, the source of water for Nishibetsu River located in Akan-Mashu National Park in eastern Hokkaido, Japan

Fig. 13.2 Nishibetsu River watershed with ca. 450 square km area across Teshikaga, Shibecha, and Betsukai towns (Source: Kitamura et al. 2018)

has no outlet. Groundwater soaked from the lake springs up in the headwaters of the river in Nijibetsu area of Shibecha Town, approximately 10 km from the lake, at a rate of more than 100,000 tons per day. Water temperature at the source is constant at 7–10 °C, and upstream areas of the river are not frozen and keep flowing even in winter when temperatures in the area are well below 0 °C. The river flows down for about 80 km through Shibecha and Betsukai Towns to feed in Nemuro Bay, a rich coastal fishing ground for salmon, Japanese scallops, and other fisheries products, including two Ramsar-designated sites. The total area of the watershed of Nishibetsu River and its tributaries is approximately 450 square km (Fig. 13.2). In this chapter, we refer to the Nishibetsu River watershed, including Lake Mashu, following Kitamura and Ohashi (2018).

The Nishibetsu River watershed once had healthy broad-leaved and coniferous forests and riverine ecosystems harmonized with the lifeways of the Ainu, an indigenous people of Hokkaido; these ecosystems supported rich terrestrial and aquatic biodiversity and ecosystem services. Nishibetsu River has been home to nine salmonid species, and the chum salmon (*Oncorhynchus keta*) caught in the river had been famous for its quality and taste even in the Edo-period when "Nishibetu Salmon" was regularly offered to the shogun, a hereditary commander-in-chief in feudal Japan, as a special gift since the nineteenth century. Salmon and other natural resources of these watershed environments had been important components of local daily life culture. These historical social-ecological systems were closely linked to life of people in these watershed environments, and had been maintained even after the Meiji Restoration, the turning period of Japanese modernization in 1868 and following industrial and economic development. Still, massive transformations of land cover and land uses started through large-scale development projects in the area

Fig. 13.3 Blakiston's fish owl (*Ketupa blakistoni*)

after the 1950s to establish dairy industries (Kitamura and Ohashi 2018). Riparian forests were cleared to develop pasturelands, and water quality of the river soon deteriorated due to influxes of soil and nutrients. These changes in land-cover and land-use patterns and water quality in turn produced negative impacts upon coastal fisheries, including salmon and Japanese scallops.

One of the most vulnerable biological species to this drastic change of riverine and terrestrial ecosystems was Blakiston's fish owl (*Ketupa blakistoni*), one of the world's largest owl species endemic to Northeast Asia, including Hokkaido, of about 70 cm length and 180 cm wingspan (Fig. 13.3). It had been widely distributed throughout Hokkaido until the early twentieth century. This owl requires large hollows of old broadleaf trees as a breeding nest where parents raise one or two chicks every year, and healthy riverine environment which does not freeze in winter as their feeding ground throughout the year upon small fishes and frogs (Slaght and Surmach 2008). These two essential habitats for the owl had deteriorated dramatically due to land use changes described above, resulting in drastic decline of the owl population. Blakiston's fish owl has been in danger of extinction (BirdLife International 2001), and is now in the Critically Endangered (1A) category of the Ministry of the Environment's Red List of endangered species in Japan, with only about 140 individuals currently inhabiting mainly in the eastern part of Hokkaido, including Nishibetsu River watershed (Kitamura and Ohashi 2018). The indigenous Ainu people in Hokkaido had deep traditional and cultural ties with the owl, calling it "Kotan kor Kamuy," meaning village guardian god in their language with respects (Kitamura et al. 2018). Even though direct sighting of the owls was rare in recent years, local residents in the later period also recognized the owl when they heard

characteristic deep voices of the birds alternately exchanged between the pair during breeding seasons, as the owl habitats were contiguous with human inhabited areas.

The deterioration of environment and ecosystem services (Millennium Ecosystem Assessment 2005) in the Nishibetsu River watershed has been well recognized among residents in the area. For example, fishermen in Betsukai town conducted a series of grassroots surveys of Nishibetsu River environments in 1973 by observations using rubber boats drifting from the headwater down to the river mouth, identifying multiple point sources of pollutions caused by land-use changes and development activities near the river (Kitamura and Ohashi 2018). The livelihoods of people in the Nishibetsu River watershed depend mainly on two key industries: dairy farming in the entire terrestrial areas of the watershed, and coastal fisheries targeting salmon and other diverse fisheries resources near the river mouth. People are proud of the quality of milk and salmon produced in the area. And in turn, these industries are supported by healthy watershed environments. The coastal fishermen were probably in the best position to sense the deterioration of riverine environment at its initial stages among concerned actors in the watershed's communities. In 1993, Katsuhiko Ohashi, a salmon setnet fisherman in Betsukai Town and a participant of the grassroots surveys mentioned above, witnessed a pair of Blakiston's fish owls hunting fish reared in his trout aquaculture pond located at the headwaters of a tributary of Nishibetsu River in Nijibetsu area of Shibecha Town (Kitamura and Ohashi 2018). He and several colleagues in Nijibetsu agreed to establish a voluntary local organization aiming at conservation of Blakiston's fish owl and its supporting environment immediately after sighting the owl in their natural habitat near Ohashi's pond. The Nijibetsu Kor Kamuy Society was established in April 1994, with Sadayoshi Tate, the former municipal government officer in charge of river management and current director of the society, Ohashi, the secretary general, and about 20 original members. The name of the Society was derived from "Kotan kor Kamuy," referring to Blakiston's fish owl in the Ainu language, with the prior consultation and permission from the Ainu elders in the area (Kitamura and Ohashi 2018). Currently, 75 members from the entire watershed, including dairy farmers, fishers, civil servants, and independent businessmen, as well as people from outside the region, including a few professional scientists, are conducting collective actions described below in collaboration with municipal governments of three riparian towns, the local office of the Ministry of Environment, conservation organizations, and other relevant actors in efforts to improve terrestrial and riverine environments and ecosystem services to support the owl and sustainability of the key industries of the area.

13.1.3 Integrated Knowledge and Overarching Narratives of Visions at the Watershed Scale

In the Nishibetsu River watershed, various types and categories of knowledge are dynamically co-produced through the interactions and collective actions among diverse actors and integrated into integrated local environmental knowledge

(ILEK). These categories and types of knowledge incorporated in ILEK shared among the major actors in the community are summarized in Table 13.1, together with associated collective actions described in later sections. The knowledge integrated into ILEK can be classified into three knowledge types: systems knowledge on past and current conditions and challenges of environment and social-ecological systems in the watershed; target knowledge concerning sharable future visions of key industries and supporting ecosystem services; and transformation knowledge regarding methods and procedures of effective mobilizations of collective actions at local and watershed scales. These forms of knowledge have been co-produced among members of the Society, including professional scientists, translated by the bilateral knowledge translators (mainly Tate, the director, and Ohashi, the secretary general) to bear new meanings relevant to the settings of each action, and tested in the processes of collective actions and adaptively improved.

Transformative narratives have been co-created mainly among Nijibetsu Kor Kamuy Society members based on integration and dynamic transformation of ILEK in the processes of their collective actions. These have been shared at local communities and broader watershed scales across jurisdictions. The narratives address environmental conditions of the watershed and challenges facing local social-ecological systems, future visions of sustainability of the riparian communities, and basic principles and practical know-how of collective actions to restore environment and ecosystem services essential for the life of Blakiston's fish owl and sustainability of key industries of the area. Details of these collective actions and associated narratives are described in the subsequent sections.

At the initial phase, their narratives of visions (Chabay et al. 2019) were centered on Blakiston's fish owl, an environmental icon symbolizing ecosystem services of the watershed environment (Sato 2008; Sato et al. 2018c). Soon enough, these narratives and visions were transformed to emphasize more on sustainability of the key industries toward the future as the basic messages delivering synergistic future visions of the community to a wide array of actors at the watershed scale. The consistent and undeviating visions expressed in the overarching narratives by the leaders of the Society were best represented in the statement of a purpose document of one of their collective actions, the Nishibetsu Watershed Concert in 1996, which reads as follows:

> The sacred Nishibetsu River originates from Lake Mashu, flows from Nijibetsu in Shibecha Town to Betsukai Town, and finally into Nemuro Bay, serving all of us in the watershed, as well as its industry and culture.

> As society has developed, however, the flow of the sacred Nishibetsu River has become low and muddy, and the once-abundant water crowfoot in the downstream has disappeared.

> . . . Shall we think of the past, present and future of Nishibetsu River together, while listening to the songs by . . . , a musician who makes concert tours around the country?

Table 13.1 Categories and types of knowledge shared among major actors and associated collective actions (modified from Kitamura et al. 2018)

Categories and types	Contents of knowledge	Related collective actions (sections in this chapter)
Conditions and challenges of watershed environment and social-ecological systems symbolized by Blakiston's fish owl as an environmental icon(Systems knowledge)	• Local and scientific knowledge on the critical issues in the watershed area • Local and scientific knowledge on the owl and its current conditions in the watershed • Local and scientific knowledge on riverine ecosystems and their linkages to coastal ecosystems • Government policy to protect the endangered owl • Local knowledge on the owl as a sacred species to the Ainu indigenous people	• The 100-year project of creating forests for Blakiston's fish owl (13-2-1) • Restoration of water crowfoot (13-2-4)
Ecosystem functions and services of watershed supporting riverine environments and key industries (Target knowledge)	• Local knowledge on values of key industres for sustainability of local communities • Local and scientific knowledge on linkages between habitat conditions of the owl and key industries in the area • Local knowledge of key industries and their products as ecosytem services of healthy watershed environment • Scientific knowledge of impacts of key industries on watershed ecosystems	• The 100-year project of creating forests for Blakiston's fish owl (13-2-1) • "Neighborhood Meeting of Mashu and Nishibetsu Watershed" and "Mashu Water and Environment Forum" (13-2-3) • Restoration of water crowfoot (13-2-4)
Approaches for mobilizing collective actions in riparian communities (Transformation knowledge)	• Local knowledge on the importance of joint physical labor and the ways of working with relevant stakeholders • Local knowledge on the importance of sharing meals in the community events and gatherings • Local and livelihood-rooted knowledge on available materials and techniques for restoring habitats of owls • Local and livelihood-rooted knowledge on the available materials and	• The 100-year project of creating forests for Blakiston's fish owl (13-2-1) • Restoration of water crowfoot (13-2-4)

Table 13.1 (continued)

Categories and types	Contents of knowledge	Related collective actions (sections in this chapter)
	techniques for restoring aquatic environments	
Approaches for mobilizing collective actions at watershed and broader scales (Transformation knowledge)	• Local knowledge on self-organized actions with different approaches across the watershed • Local knowledge and livelihood-rooted knowledge on ways of working with governments and making different government agencies work together across jurisdictions	• Nishibetsu Watershed Concerts (13-2-2) • "Neighborhood Meeting of Mashu and Nishibetsu Watershed" and "Mashu Water and Environment Forum". (13-2-3)

We hope that the voices of the village guardian 'Kotan kor Kamuy' (Blakiston's fish owl) will be heard forever in the Nishibetsu watershed, and that the best salmon and milk in Japan will continue for many generations to come, just like the flow of the river.'—(modified from Kitamura et al. 2018)

This overarching narrative of visions at the watershed scale has been consistently expressed by the leaders of the Society up to now, in regular meetings and in events organized by the Society, which currently has members including stakeholders beyond jurisdictional boundaries in the watershed. The Society is an open collaborative platform inviting diverse members with different types of jobs or origins, and the only requirement for membership is regular attendance to their general meetings and other regular events, including the annual tree-planting festival, as described below, providing members with the opportunities to share and reinforce the visions repeatedly expressed by the leaders at these events. This is one of the soft but effective mechanisms of sharing fundamental visions of futures elaborated in the early history of the Society among its members. In the following sections, we describe details of collective actions and case-specific narratives that have emerged in the Nishibetsu River watershed as actors share these overarching narratives of visions supported by ILEK, in the chronological order following Kitamura and Ohashi (2018) and Kitamura et al. (2018).

13.2 Collective Actions, Narratives, and Their Accumulated Outcomes

13.2.1 The 100-Year Project of Creating Forests for Blakiston's Fish Owl

The largest in scale, most long-lasting, and most influential collective action by Nijibetsu Kor Kamuy Society is the "100-year project of creating forests for Blakiston's fish owl" and its annual Arbor Day (tree-planting) festival. The festival has been held on the third Sunday of May every year since 1994 to plant seedlings of about ten native tree species, mainly broadleaf trees, along the entire Nishibetsu River in order to restore riparian forests with rich biodiversity and thus provide nesting sites for Blakiston's fish owl. Every year it receives about 200 to 300 participants, mainly from communities around the Nishibetsu River watershed and including students of local schools and some from all over Japan. As of the year 2019, when the 26th festival was completed, a total of 83,655 seedlings have been planted in riparian areas along the river, from the headwaters to the river mouth (Fig. 13.4). Planting sites include private lands and town-owned lands. The Society leaders seriously plan to continue this festival for 100 years, recognizing that restoration of forests suitable for nesting by the owl takes even longer.

The original idea and baseline knowledge and skills of tree-planting probably originated from a long-term experience of Ohashi, the secretary general, on planting trees from his childhood guided by his father (Sato 2020). His experience-based knowledge and skills about riparian tree-planting were combined with other locally available knowledge and skills, including appropriate techniques of production of seedlings by a member of the Society. Narratives of the purposes of and the procedures for the tree-planting festival are rooted in, and begin with, the integration of different categories of shared knowledge: knowledge on the importance of riparian forests for the owl, a perception of functions of forests as a buffer to prevent soil and nutrient runoff from the pastureland derived from shared experiences of deterioration of riverine environment after massive development of dairy farming, and perceptions among Ohashi and other coastal fishers that healthy rivers support salmon and other important coastal fisheries resources. During the planting, local milk is served to the participants, and the salmon hatchery at the headwaters of Nishibetsu River brings salmon juveniles to release into the river together with participating families and students, thereby strengthening shared meanings of the tree-planting. The vision of improving functions of riparian forests to benefit the owl, dairy farmers, and fishers provide the participants with a good reason to work voluntarily.

The importance of collaboration among different types of actors is also emphasized in the narratives shared through an important barbeque party with local seafood and other delicacies after the planting, which is prepared and managed by family members of the Society members. The barbeque introduces participants to important people and institutions, including town mayors and scientists collaborating with the Society and its tree-planting festival, who offer short speeches

Fig. 13.4 (**a**) Locations of tree-planting sites on annual Arbor Days from 1994 to 2019 with corresponding number of years of planting for each locations (①: 2004–07, 2012–13, 2019; ②: 2003, ③: 2000, ④: 1998, ⑤: 1995, ⑥: 1994, ⑦: 2008, ⑧: 1997, ⑨: 1996, ⑩: 1999, 2001–02, 2009–11, 2014–18, source: Nijibetsu Kor Kamuy Society); (**b**) Two leaders of Nijibetsu Kor Kamuy Society (right: Sadayoshi Tate, the director, left: Katsuhiko Ohashi, the secretary general) announcing the start of the 2019 Arbor Day; (**c**) Tree-planting by about 300 participants at the site ① in Betsukai Town in 2019

to the participants. They generally emphasize the importance of tree-planting and other collective actions by the Society and their willingness to collaborate from their own societal roles and functions. The Society recently made an agreement with the Town of Shibecha to plant broad-leaved trees at old plantation sites of Japanese larch trees in the upper reaches of the river with 50 to 60 year-old trees to be ready for harvesting. This agreement has created a new collaborative relationship with the municipal government, aligning with land management policies of the town. This story has also been shared with participants at the barbeque party. Technical skills of tree-planting have been brought in by local forestry cooperatives, which are shared among participants with the narratives addressing the importance of initial planting conditions for later survival of the seedlings. All preparatory works of the festival, including mowing the areas, the distribution of individual seedlings to their planting locations at appropriate intervals, and the setting up of the barbeque venue – all of these are through collaborations among members of the Society and town employees with different livelihood and job-related skills. The members also look after the seedlings even after the festival, checking the conditions of seedlings planted by less

skilled participants and replanting them if needed. They install and manage electric fences surrounding planted areas to prevent feeding upon seedlings by Japanese sika deer, and they mow undergrowth every year until the planted trees are well established. The leaders of the Society recognize values of such diversity of members and other collaborators with their skills and readiness for the collective actions, which are proudly incorporated into their narratives addressed at other occasions. The tree-planting festival has played a critical role in creating and strengthening human networks based on mutual trust inside and outside the watershed communities.

With regards to the vision of restoring original habitats of Blakiston's fish owl in harmony with dairy and fisheries industries in the watershed, it is obvious that tree-planting alone is not enough. The leaders and other members of the Society have fully recognized that the owl requires large tree hollows for nesting, which will not be available even 100 years after their forest restoration activities. The owl also feeds on small fish in the river, which are limited in supply in the current conditions of riverine ecosystems. Even at the very beginning of the Arbor Day festival, the Society had already started to install handmade nesting boxes for the owl, substituting the tree hollows by utilizing empty plastic containers of formic acid commonly used in dairy farming to control fermentation processes in grass silage. These containers (200 liters in capacity) were an industrial waste of dairy farming, but the Society found an effective re-use for them. Members of the Society also brought a range of skills required to make nesting boxes, including cutting hard plastics, manufacturing wooden frames at the entrance, and putting the boxes at the required height on the tree and attaching it. The nesting boxes made by integrating these local and livelihood-rooted resources, knowledge, and skills installed by the voluntary labor of the members have proved to function very well, even better than sophisticated and expensive models installed by government agencies, producing more than 30 chicks fledged from their nest boxes until 2019. In order to supplement the food resources for the owls, Ohashi has kept a part of his trout aquaculture ponds open for free hunting by owl parents nesting near his ponds. The Society even has taken further actions to improve riverine environment and its ecosystem functions by restoring water crowfoot, an aquatic plant symbolizing clear and healthy river environments, which is described in detail in a later section. Narratives on tree-planting, installation of nest boxes, and supplementing food resources for the owl are combined to co-produce synergistic narratives to address the whole picture of their collective actions to restore essential habitat for Blakiston's fish owl, the environmental icon symbolizing essential ecosystem services in the watershed.

13.2.2 Nishibetsu Watershed Concerts

The Nijibetsu Kor Kamuy Society has collaborated with many individual and institutional actors, both within and outside the watershed, in order to achieve their visions of restoring and managing a healthy watershed environment harmonized with the life of people. However, promoting the collaborative participation of

diverse actors in local communities was not an easy task, particularly at the watershed scale, in which environmental impacts in the upper reaches almost unidirectionally influence the watershed's lower reaches and coastal areas. In the case of the Nishibetsu River watershed, massive deforestation associated with the development of diary industries were a root cause of deterioration of the watershed's environments and ecosystem services, including coastal fisheries. Therefore, it was rather understandable, in the context of Japanese culture, that dairy farmers wouldn't dare to participate in collective actions to restore riparian forests, important habitats of Blakiston's fish owl, because they felt themselves responsible for destroying forests to develop pasturelands for their livelihoods. The coastal fishermen, in contrast, were active in monitoring and restoring riverine environment, because riverine environments directly benefit their livelihoods by contributing to sustainability of coastal fisheries resources. At the early stage of collective actions to restore riparian habitats of the owl, the leaders of the Society felt the gap between dairy farmers and other watershed actors, including coastal fishers, which could be seen in the limited number of dairy farmers who participated in the collective actions of the Society.

In 1994, the director of the Society, Sadayoshi Tate, met a professional singer-songwriter, Michiyo Shirai, who was sympathetic to environmental conservation activities in Japanese local communities. She was touched by Tate's persuasive narratives on the Society's initiatives and decided to have a concert in the Nijibetsu area. "Nishibestu Headwaters Concert" was held in September 1995 inviting Shirai, as a cultural event supported by Shibecha Town. A fisherman in Betsukai Town who came to the concert expressed his desire to have the same concert at the river mouth, and this idea evolved into having a series of concerts at several communities along the whole Nishibetsu River. From the year 1996, a week-long series of concerts by Shirai titled "Nishibetsu Watershed Concerts" had been held every May for ten years until 2005 at four or five communities along the river from Nijibetsu at the headwaters to Honbetsukai at the river mouth. In turn the Arbor Day festival was set a few days after the last concert in which the participants of the concert and musicians including Shirai participated and planted trees. The profit from the concerts was donated to the Society to purchase a portion of seedlings planted on Arbor Day. The Society played central roles in overseeing the whole series of concerts as the secretary of Federation of Executive Committees for Nishibetsu Watershed Concerts, with Ohashi as the Secretary General. Every year, each concert at a community was managed by a local executive committee organized by residents of each small community hosting a concert, and these committees were tied together to constitute the Federation of Executive Committees, led by the Society. This is a unique feature of this series of concerts, which facilitated participation of the many stakeholder groups in the watershed communities, including dairy farmers, partly because the concerts and music played there did not have direct linkages with specific industries and its environmental impacts. Participation of diverse local actors opened a window for the Society to expand and strengthen their network and, at the same time, provided multiple channels for residents from different geographical and cultural background to interact, to collaborate, and to learn from

each other in the process. Organizing concert events by residents themselves served as an opportunity to build capacities to plan and implement community-driven collective actions, and cultivated a sense of ownership of the action and its outcomes, including expanded and strengthened human networks. The two leaders, Tate and Ohashi, and the singer, Shirai, shared a common perception that the gap between dairy farmers and other actors in the watershed was gradually filled through the annual concerts, which paved the way to further mobilize collective actions at the watershed scale after ten years when the last concert was held and the Federation of Executive Committees for Nishibetsu Watershed Concerts was dissolved. Transformative Narratives addressing values of participation opportunities, diversified networks of broader actors, and a sense of ownership among participants are co-created in this process with pleasant memories of the concerts. The narratives were shared among the Society members and diverse actors collaborating at different spatial scales and governance levels along the watershed, including the municipal governments of three towns and their employees.

13.2.3 "Mashu Water and Environment Forum" and "Neighborhood Meeting of Mashu and Nishibetsu Watershed"

Collective actions to restore habitats of Blakiston's fish Owl through the Arbor Day festival and to expand and strengthen human networks at the watershed scale through the Nishibetsu Watershed Concert were genuinely community-driven actions, initiated and promoted by a voluntary organization of local actors, the Nijibetsu Kor Kamuy Society. The persistence of these grassroots collective actions had led to the emergence of institutions for collective action (Ostrom 1990; Lubell et al. 2002), including the Federation of Executive Committees for Nishibetsu Watershed Concerts, and local executive committees constituting the federation. The Federation led by the same leadership of Nijibetsu Kor Kamuy Society was not just an institution for holding concerts; it had much broader perspectives to promote different types of collective actions through translation and integration of diverse categories of knowledge, including natural and social sciences into ILEK shared among actors across the watershed. For example, the Federation launched an annual workshop in 1996 titled Mashu Water and Environment Forum in May or early June at a place rotated among three towns, effectively utilizing networks formed in these three towns and which had expanded and strengthened through the Arbor Day festival and Nishibetsu Watershed Concerts. The Forum was co-hosted by the Society and another local institution named Coordinating Committee of Mashu Water System and the Nijibetsu Watershed, which was a working-level organization composed mainly of officials of the three towns and headed by one of the mayors. It invited guest speakers of scientists and activists, whose diverse experiences and knowledge bases related to conditions and challenges facing the watershed (systems knowledge), future visions of social-ecological systems in the watershed (target knowledge), as well as diverse approaches of collective actions toward sustainable communities across the watershed (transformation knowledge). The talks and

Fig. 13.5 The 18th Mashu Water and Environment Forum at Nakashibetsu town in 2019 with one of the authors (TS) giving keynote speech (photographed by Nobuyuki Abe)

discussions were often followed by a mini concert by Shirai. The Forum has intended to promote sharing of these categories and types of knowledge among actors at the watershed scale, and to co-create narratives based on the knowledge translated and incorporated into ILEK through the Forum. The topics of the talks of guest speaker included water supply mechanisms from Lake Mashu through groundwater; effects of forest ecosystems and land-use patterns upon water quality; updates of monitoring of the river environments; potentials of branding using resource management certifications and; the potential of UNESCO Biosphere Reserve registration for sustainable futures of the watershed, which was given by one of the authors (TS) in 2019 (Fig. 13.5). The Forum, in parallel with the Arbor Day festival and Watershed Concerts, has made significant contributions to the legitimate networking of involved actors, especially with the town offices, based on sharing knowledge and narratives and cultivating mutual trust. After its dissolution in March 2006, the Federation of Executive Committees for Nishibetsu Watershed Concerts was restructured into a new institution, the Executive Committee for Mashu Water and Environmental Conservation, which continues today as one of the co-organizers of the Forum.

Concurrently, other approaches for collective actions to strengthen collaboration with the mayors and town offices have emerged, mainly because of leaders of the Nijibetsu Kor Kamuy Society, especially Tate, the director, who has developed strong personal ties and mutual trust with the three town offices and mayors based on his long career as a civil servant. Based on these strengthened networks with the

town offices, the Society made a proposal in April 2000 to the Town of Betsukai to designate May as "Month of Thinking About Rivers," which was adopted and started in 2001. The Town of Shibecha followed by designating May as "Month of Forests and Rivers" in 2001. These designations provided legitimate and institutionalized bases for the towns to promote collective actions by different institutions in order to contribute to watershed environments during the month of May, in addition to those that already existed, like the Arbor Day and the Forum. Examples included cleanup of Nishibetsu River by the Executive Committee for Mashu Water and Environmental Conservation and tree-planting events at three or more different locations in Shibecha Town, organized by the town office and other local institutions covering different watersheds. These collective actions supported by different institutions have shared consistent and undeviating narratives of future visions co-created through collaboration among the leaders of Nijibetsu Kor Kamuy Society and other diverse actors at the watershed scale. These, in turn, have been strengthened through the environmental policy of the town of Betsukai, represented in the preamble to the "ordinance on river environment conservation and healthy use of rivers" enacted in April 2015.

> In Betsukai Town, rivers starting with Nishibetsu River, with its source at the foot of Mt. Nishibetsu, and other rivers, such as Furen River, Tokotan River, Shunbetsu River and Tohoro River, flow into Lake Furen and then Notsuke Bay and Nemuro Bay, blessing us who live in this lush vast land and a fertile life-supporting watershed with abundant fishing resources. However, the burden on our river environment in no small way is coming from increasing industrial activity, so that if matters remain this way, the impact will doubtless move from the natural environment to our foundation industries, farming and fishing. Thus, we enact this ordinance to protect these irreplaceable rivers with the resolve to hand on to future generations the many blessings that come from the abundance of nature in those rivers that flow through the vast heathland of Betsukai by working to protect and improve the river environments for our children, our grandchildren and all people who visit the watershed.— (modified from Kitamura and Ohashi 2018)

Collaboration with riparian towns was further reinforced by Tate's leadership through his organizing of annual regular meetings of the three town mayors and town officials, starting in 2001. The meeting was initially named "Meeting of the Fame in Mashu Water System and Nishibetsu Watershed" inviting mayors from Teshikaga, Shibecha, and Betsukai Towns and the leaders of Nijibetsu Kor Kamuy Society. It had gradually developed to allow participation of senior town officials, and the name of the meeting was changed to "Neighborhood Meeting of Mashu and Nishibetsu Watershed" in 2010. The mayor and town officials of neighboring Nakashibetsu Town also joined the meeting from 2015, and the date of the Meeting was carefully arranged every year to secure attendance of all four town mayors. The Neighborhood Meeting has been a venue of open and frank dialogue among mayors and leaders of the Society, and the record of discussions are not opened to the public. In this sense, it is a safe space for the mayors and town officials to continue deep dialogue and collective thinking on the challenges and opportunities in each town and at the watershed level. Together with the Mashu Water and Environment Forum, the Neighborhood Meeting is a rare example of bottom-up linkages among top

officials of the townships beyond jurisdictional boundaries initiated by a volunteer organization mobilizing collective actions and sharing transformative narratives at the watershed scale.

13.2.4 Restoration of Water Crowfoot

In recent years, scientists, local producers of scientific knowledge, and bilateral knowledge translators deeply tied to the watershed have started to appear at the surface of a collective action to co-create and dynamically transform integrated knowledge and narratives in Nishibetsu River Watershed. The secretary general of the Society, Ohashi, has taken on the role of residential researcher and knowledge translator (Sato 2014; Sato et al. 2018b) from the very beginning in order to incorporate diverse scientific, local, and livelihood-rooted knowledge into ILEK and narratives shared among members of the Society and with relevant actors. He has translated diverse knowledge into contexts of the series of collective actions by the Society, which included knowledge on important ecosystem functions and services of riparian forests, practical skills of tree-planting, outcomes of empirical monitoring of riverine environments, and functions of riverine ecosystems upon salmon juveniles and other fishes as food resources of Blakiston's fish Owl. He has also developed networks with scientists regularly conducting long-term research on Nishibetsu River watershed environments through his practices of empirical grass-roots research and opportunities of knowledge sharing including the Mashu Water and Environment Forum.

Ohashi and members of the Society have recognized through their monitoring of riverine environments that the water crowfoot (*Ranunculus nipponicus var. submerses*), an iconic aquatic plant symbolizing clear water of rivers—and which riparian residents have long enjoyed for the aesthetic values of its tiny flowers blossoming in the clear water (Fig. 13.6)—was once abundant in Nishibetsu River but has decreased significantly during winter in recent years. The decrease was mainly caused by predation by Japanese sika deer (*Cervus nippon yesoensis*). The population of the deer has drastically increased in Hokkaido and in the watershed of Nishibetsu River in recent years due to decrease of hunting and changes to its habitats. The deer was known to produce negative impacts upon aquatic plants, including water crowfoot, which grows in shallow waters, by feeding on them (Takafumi et al. 2015). Ohashi and his colleagues found that other predators of water crowfoot such as waterfowls might also have negative impacts, but the deer produced the most significant effects by feeding not only on leaves, but even on the rhizomes of the plant, especially during winter when other food resources were limited, making it difficult for the plant to regenerate in spring. These local researchers/translators were also aware of the ecosystem functions of water crowfoot to produce disturbances of water flow, thereby create heterogeneities of river bottom topographies, which slowed the flow of water and created micro-habitats for aquatic insects and smaller fishes as the food sources for Blakiston's fish owl. When water crowfoot disappears, the river bottom flattens due to rapid flow of water, and this
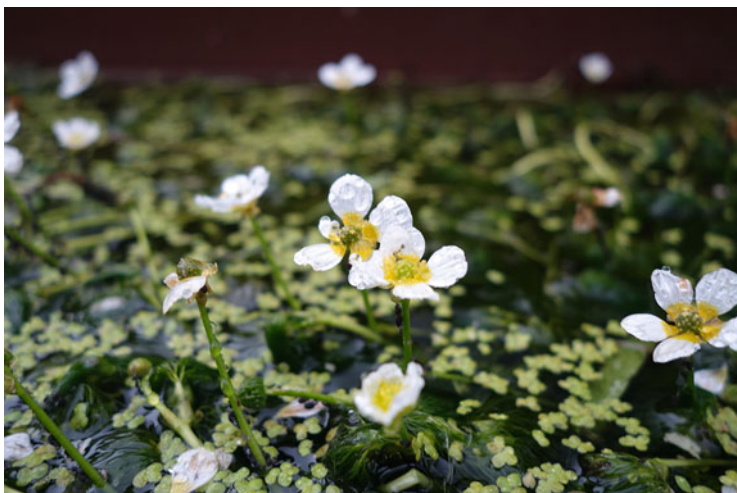
Fig. 13.6 Water crowfoot (*Ranunculus nipponicus var. submerses*), an iconic aquatic plant at the upper reaches of Nishibetsu River

monotonous environment does not provide favorable habitats for many aquatic organisms including juvenile salmon.

Ohashi and the Society members undertook a series of discussions on protective measures of water crowfoot from predation by the deer. In 2013, they started an experiment at a few areas in the upper reaches of the river where water crowfoot had been abundant until recently. They covered the surface of water during winter seasons with big nets to prevent intrusion of the deer for feeding upon water crowfoot. They found that old fishing nets and anchors used in Ohashi's salmon setnets were ideal materials, as these were tough enough to support the structure against rapid flow of river water that was similar to the condition of coastal ocean where the setnets were placed. Empty plastic containers that held formic acid and which had been used for nesting boxes of the owl were useful as floats to keep the nets above the surface of the water (Fig. 13.7). Here again, livelihood-rooted knowledge, locally available materials, and skills developed through livelihoods were creatively combined to design and implement the experiment. Among Ohashi's network was a professional plant ecologist studying water crowfoot in Nishibetsu River for more than a decade. He lives in the area outside the watershed, but he has been a member of the Society and a regular contributor to Mashu Water and Environment Forum to share his research on water crowfoot and riverine environments. He participated in the experiments to share his knowledge and experiences about water crowfoot and riverine environments, reinforcing the perceptions among Ohashi and others regarding importance of ecosystem functions of the plant with scientific evidences. He also conducted scientific monitoring of the outcomes of the experiment together with his students and members of the Society, and the monitoring revealed positive effects of the protective nets. The results were

Fig. 13.7 Protective nets above water surface of Nishibetsu River to prevent feeding upon water crowfoot by Japanese sika deer

shared with the Society members in their meetings, and with much wider audiences at the Forum in subsequent years and the Training Workshop of Water Crowfoot Conservation held in 2014 and 2015. The workshop, coupled with a field trip to the experiment sites, invited relevant actors such as recreational anglers, underwater photographers, bird watchers, local residents, town offices, and salmon hatchery officials at the headwater who were concerned about habitats of salmon juveniles and provided one of the experiment sites. Narratives by Ohashi and the plant ecologist were supported by robust scientific research to convince such diverse audiences with importance of restoration of water crowfoot, thereby further expanding and strengthening their legitimate networks to promote effective collective actions.

Ohashi and the plant ecologist further moved forward, undertaking experiments of transplanting water crowfoot at the damaged areas in 2016, and with success. The transplanted colonies have grown well and confirmed to luxuriate in 2019 monitoring. They also developed a technique of seedling production and rearing of water crowfoot using experimental facilities set up in collaboration with the salmon hatchery. Their shared knowledge and techniques co-produced by transdisciplinary collaborations of local knowledge producers and professional scientists have a potential to be readily applied at broader scales. However, before trying to apply these new techniques, they have detected another factor, probably the root cause, responsible for the degradation of water crowfoot: the impacts of nutrient runoff from adjacent pasturelands. Another professional researcher of soil science born in

Fig. 13.8 Katsuhiko Ohashi, the secretary general of Nijibetsu Kor Kamuy Society conducting his regular water quality monitoring while commuting from his house near the river mouth to aquaculture ponds near the headwaters

Batsukai town has been a member of the Society from an early stage, when he was teaching at local high schools around the watershed. He has accumulated a wide array of research on soil management of pasturelands in dairy industries in eastern Hokkaido and its impacts upon riverine ecosystems supporting water crowfoot and salmon, in which he completed his PhD. thesis in 2017. Ohashi has been collaborating with the soil scientist for many years through mutual exchanges of ideas and observations about river environments, the status of deforestation, diversity of approaches for pastureland management, and complex chemical interactions produced by influxes of nitrogen from the pastureland into the river water, including toxic acid-soluble aluminum (Sasaki 2019). Diverse knowledge has been obtained from professional research by the scientist and empirical monitoring by Ohashi, which has continued for more than a decade (Fig. 13.8), and integrated in order to co-create and test hypotheses regarding social-ecological mechanisms of impacts of land-use changes and development of modernized dairy industries upon riverine ecosystems supporting salmon and water crowfoot. These hypotheses have been shared with the Society members and diverse actors, including dairy farmers in the watershed at Mashu Water and Environment Forum and on various other occasions. The transdisciplinary co-production of knowledge among Ohashi and other members of the Society, the plant ecologist and soil scientist, the officials of the

salmon hatchery, and the authors of this chapter, are actively continuing to develop and to dynamically transform shared narratives among wider actors in the watershed. The values of healthy watershed ecosystems and their ecosystem services have been realized through the knowledge co-production and translation centering on water crowfoot, the latest environmental icon in the watershed symbolizing healthy riverine ecosystems and its services. It does not produce conflicts of interest by itself, because these icons, the water crowfoot as well as Blakiston's fish owl, have no direct linkages with fisheries and dairy farming, the key industries of the watershed. This value-neutrality without direct interests in important economic activities enables diverse actors to collaborate, through the Nijibetsu Kor Kamuy Society, in this series of collective actions toward sustainable futures of Nishibetsu River watershed.

13.3 Mechanisms of Societal Transformation Promoted by Collective Actions Sharing Transformative Narratives

This chapter aimed to elucidate mechanisms and processes of emergence of collective actions to achieve broader impacts utilizing integrated local environmental knowledge (ILEK, Sato et al. 2018b, c). ILEK is incorporated into transformative narratives to promote collective actions by sharing meanings of systems, target, and transformation knowledge at the watershed scale (Pohl and Hirsch Hadorn 2007; Wiek and Lang 2016). Based on the case study of a series of collective actions guided by overarching narratives of the visions of futures of social-ecological systems in Nishibetsu River watershed (Kitamura et al. 2018; Kitamura and Ohashi 2018), we propose here hypothetical mechanisms composed of six essential elements, described below, for local collective actions initiated by community members to produce broader-scale impacts beyond jurisdictional boundaries in order to promote transformations of social-ecological systems toward sustainable futures. The hypothetical mechanisms and interlinkages of the six elements are schematically represented in Fig. 13.9.

1. Overarching narratives of consistent and undeviating visions of sustainable futures
   Overarching narratives of visions of futures (Chabay et al. 2019) emerging from community leaders and shared among actors to promote collective actions at the watershed scale have been long-term and broad-ranging, logically clear, consistent and undeviating, and yet adaptive, as they seek to emphasize the importance of sustainable dairy and fisheries industries supported by watershed environments that are essential for the survival of Blakiston's Fish-Owl, an environmental icon, and the well-being of people. These overarching narratives of visions at the watershed scale have been consistently expressed by the leaders in regular meetings and events, and provide a common ground for case-specific narratives emerging from each collective action regarding meanings and impacts of their collaborative initiatives.
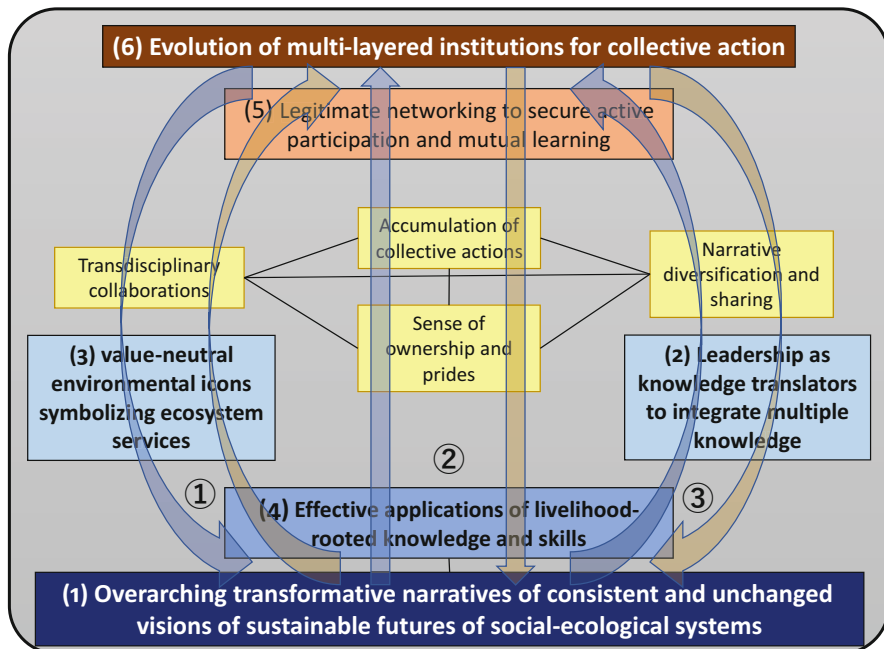
Fig. 13.9 Schematic representation of the hypothetical mechanisms of narrative-based, bottom-up societal transformation at broader watershed scales. Colors indicate processes of co-creation of narratives (blue), networking and institutionalization (brown), and tangible outcomes of the process (yellow) with synergistic interactions (black lines). Overarching narratives of visions and evolution of institutions for collective actions interact through three feedback pathways (blue and brown arrows): ① promoting transdisciplinary collaboration, ② accumulation of a series of collective actions, and ③ co-creation and sharing of transformative narratives at various spatial scales and governance levels. See text for more details

2. Effective applications of livelihood-rooted knowledge and skills to cultivate a sense of ownership

   Livelihood-rooted knowledge and skills emerging among local actors have played critical roles in establishing intellectual bases to work at local and watershed scales and for providing practical skills to handmade collective actions, which are unique and original in the area. This has included social knowledge and skills for delicate procedures and methods meant to secure legitimacy of the shared visons and actions (Heller 1997). Case-specific narratives addressing uniqueness and originality of collective actions emerging among local actors incorporate stories of creative use of characteristic skills rooted to local livelihoods and human networks, thereby contributing to a deep and enduring sense of ownership and pride among participants of collective actions sharing these narratives.

3. Prudent choices of value-neutral environmental icons symbolizing watershed ecosystem services

Overarching narratives of visions of futures and the series of collective actions deliberately incorporate and use two important environmental icons in the watershed, Blakiston's Fish-owl and water crowfoot, which symbolize values of diverse ecosystem services at the watershed scale, beyond jurisdictional boundaries (Brauman et al. 2007). These icons are not directly connected to interests in important economic activities such as dairy farming and fisheries industries. This value-neutrality in the context of multiple ecosystem services represented in transformative narratives has lowered barriers and made it more acceptable for diverse actors to participate in transdisciplinary collaborations in the collective actions covering wide areas in the watershed, all meant to move toward sustainable futures.

4. Leadership as knowledge translators to integrate multiple knowledge derived from diverse sources

Community leaders mobilizing collective actions have played multiple roles as bilateral knowledge translators (Kitolelei and Sato 2016; Sato et al. 2018b), effectively utilizing their own networks of knowledge producers to create new meaning of knowledge from different epistemic communities. One leader has translated and integrated his livelihood-rooted knowledge with scientific knowledge of professional scientists deeply tied to local social-ecological systems, and the other has promoted sharing knowledge and visions created in local collective actions to actors at watershed scales, including town offices and mayors. Such multiplicity and transdisciplinarity of knowledge translations reflecting different experiences and standpoints of the two leaders have facilitated co-creation of diverse transformative narratives which are logically consistent and sharable with different epistemic communities to promote networking of diverse actors based on mutual trust at watershed scale.

5. Legitimate networking to secure active participation and mutual learning among diverse actors

The importance of transdisciplinary collaboration among actors is also emphasized in transformative narratives, shared at specific events and occasions. The leaders of and participants in these series of collective actions mutually recognize values of diversity of collaborators with their skills and readiness to engage in collective actions, which are proudly incorporated into their shared narratives. Narratives addressing values of transdisciplinary collaborations and sense of ownership upon their collective actions among participants promote legitimate networking of actors from different geographical and cultural backgrounds, especially between the town offices across jurisdictions, to interact through multiple channels, to collaborate and learn from each other based on shared knowledge and narratives, and the cultivation of mutual trust.

6. Evolution of multilayered institutions for collective action emerging from grassroots initiatives

Accumulations of grassroots collective actions have led to the emergence of institutions for collective action (Ostrom 1990) at the watershed scale and which provide legitimate bases of collaborations and trust-based human networks for town offices, mayors, and community leaders to promote collective actions,

both within each town and across jurisdictional boundaries at watershed scales. These collective actions have been initiated at grassroots levels and supported by different institutions at multilayered spatial scales and governance levels. Transformative narratives connected to grassroots initiatives with undeviating visions of sustainable futures have been co-created and dynamically transformed through transdisciplinary collaborations among actors at the watershed scales and shared among these institutions by community leaders.

These six elements are interacting with each other in complex ways to mobilize legitimate collective actions and their adaptive improvements, both at the scale of local communities and at much broader scales of the watershed, producing bottom-up impacts of community-driven initiatives beyond jurisdictional boundaries. Each element in the proposed hypothetical mechanisms undergoes adaptive and dynamic processes of interactions with other elements and transform their roles and functions in the contexts of the complex social-ecological systems. With this dynamic nature, the proposed mechanisms of societal transformation initiated by community-based collective actions and expanded to watershed scales probably have the potential to be generally applied at diverse local communities, watersheds, and even at much broader nationwide scales. Legitimate processes of promoting transdisciplinary collaborations among diverse actors beyond jurisdictional boundaries, trust-based networks emerged through a series of collective actions sharing consistent and undeviating narratives of visions, and the emergence of institutions of collective action based on co-created narratives at various spatial scales and governance levels, are assumed to be fundamental to promote transformations toward sustainability in local communities and at broader watershed scales in these processes (Fig. 13.9①–③). We conclude the chapter with the hope that the hypothetical mechanisms of narrative-based societal transformations proposed herewith will be tested in diverse social-ecological case studies around the world in order to provide empirical foundations for general theories of transformations toward sustainable futures.

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Governing the Urban Climate in Fukuoka City, Japan: What Can a Policy Narrative Approach Teach Us?

14

Leslie Mabon

Abstract

This contribution works with a policy narrative for green- and open space planning in Fukuoka, Japan, and assesses the role that the idea of *kaiteki kankyo*—a comfortable environment—plays in facilitating action towards maintaining a comfortable urban environment. Boundary objects and boundary concepts are terms and ideas which are vague and flexible enough to allow different interpretations, yet also robust enough to enable different groups to talk with one another and reach outcomes. By looking at policies for the urban green environment in Fukuoka since the 1980s, and also analysing practice-focused academic texts, the chapter argues that a comfortable environment does indeed function as a boundary object in Fukuoka. Whilst standards for attaining 'comfort' are never defined, the comfortable environment terminology persists over time in Fukuoka across different rationales for greenspace planning, from urban redevelopment to sustainability to climate adaptation. The chapter also cautions, however, that boundary concepts may draw actors towards more technocratic outcomes, and divert from attention to social processes which may help to sustain a narrative of a comfortable environment outside of the formal policy process.

Keywords

Fukuoka · Greenspace · Policy narrative · Thermal environment · Urban planning

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14.1   Introduction

This contribution assesses the role of *kaiteki kankyo*—a comfortable or liveable environment—as a boundary concept motivating governance of urban nature and greenspace in Fukuoka City, Japan. Fukuoka is distinct in Japan as a comparatively early adopter of municipal climate change policy, and also as a city with a tradition of locally led scientific research into the maintenance of comfort in the built environment through urban greening (Mabon et al. 2019a, b). To understand how this interest in a comfortable environment has been sustained over time, and also to evaluate what is meant by a comfortable environment in the Fukuoka context, this chapter constructs a policy narrative for comfort in the urban green environment through evaluation of current and recent policy texts, as well as underpinning academic research from the last several decades.

This chapter is the latest iteration of an evolving research project into the historical engagement of local government, academics, civil society and citizens in Fukuoka with questions of the urban thermal environment and adaptation to environmental change via urban greening more generally. The text builds on previous outputs into the role of an epistemic community of scholars in shaping greenspace and climate adaptation policy in the city (Mabon et al. 2019b); the evolution of greenspace policy and planning in Fukuoka to respond to climate challenges (Mabon et al. 2019a); engagement with publics on climate risks and adaptation actions (Mabon 2020a); and an environmental history overview of research and policy around extreme heat in Fukuoka (Mabon 2020b). This chapter builds on this existing work and adds new insight by taking the idea of a 'comfortable environment', which appears across numerous plans and practice-focused academic texts relating to green and open space in Fukuoka, and assessing the work that a 'comfortable environment' framing does as a boundary concept to build broad consensus for greening actions within Fukuoka.

It is also worthwhile clarifying key terms at this point. In this chapter, 'greenspace' is used as a generic term to encompass both formal, planned greenspaces and also informal greenery (such as street trees and green roofs and walls) referenced within plans, policies and academic texts. The thermal environment, which comes to have a major role in the policy narrative set out in the paper, is taken to refer to the temperature, humidity and variability of the outdoor environment as it is experienced by humans. Lastly, whilst the assessment and definition of comfort is itself a key point of contestation in the social science literature (see Sect. 2.1), 'comfort' in the lived environment can be understood as how the body relates to the everyday environment and weather (Shove et al. 2008).

14.2   Concept and Theory

14.2.1 Thermal Environments, Comfort and Environmental Change

The idea of a comfortable environment—and comfort in an environmental context— has been considered extensively not only from a natural science and engineering perspective, but also by scholars of science and technology studies and social

science more widely. Walker et al. (2016) summarise comfort as a system involving dynamic and complex interactions between the physiological, social, cultural and material, but call for more attention towards an understanding of comfort which emphasises meanings and social settings. Oppermann et al. (2019) propose thinking of thermal comfort in terms of the rhythms and flows exchanged, accumulated and dispersed through human bodies. In the context of people's interactions with the weather – and in particular the thermal environment—Shove (2003: 398) explains that "(s)ince the outdoor climate differs so much across seasons and between one country and the next, the worldwide provision and maintenance of comfort, technically defined, turns out to be an immensely resource intensive enterprise." Shove goes to introduce the 'science' of comfort, which she describes as the scientific specification of conditions under which most people will report comfort.

A comfortable environment is hence context-specific, and can be both created by and assessed through techno-scientific measures. Nonetheless, the definition of what is considered 'comfortable' is a social process. Nicol and Roaf (2017: 711), for example, hold that thermal comfort, and indeed the idea of a comfortable environment more widely, is a "socially determined notion defined by norms and expectations." In other words, societal and cultural influences will shape what is considered an acceptable level of comfort within a locality, and how this comfort may be attained. Social processes can also determine who has access to this comfort, and how it is distributed across space. At the city level, policies related to land use and urban development can create urban forms where the distribution of factors which may contribute to comfort, such as heat and the presence of greenspace, are unequally distributed. There is indeed evidence to suggest that comfort, in particular thermal comfort, may disproportionately accrue to wealthier areas, leading to 'thermal inequity' and 'green inequity' (Mitchell and Chakraborty 2015; Shokry et al. 2020). This means that both how comfort is defined and how it is implemented matter in terms of who has access to a comfortable environment.

14.2.2 Greenspace, Climate Change Adaptation and the Thermal Environment

The sustenance of comfort in the built environment under climate change, and the provision of comfort via environmental amenity, have become closely linked in recent years via increasing interest among researchers and international policy organs in urban nature as a provider of cooling and other benefits to human well-being. For instance, Keeler et al. (2019) list cooling as one of the core climate adaptation benefits which can be attained through the maintenance and expansion of urban nature, whilst also realising additional benefits to people such as mental and physical well-being and opportunities for social interaction. Academic interest in urban nature has been accompanied by increased attention to these so-called 'nature-based solutions', defined by Kabisch et al. (2016: 1) as "the maintenance, enhancement, and restoration of biodiversity and ecosystems as a means to address multiple concerns simultaneously." The terminology of nature-based solutions and climate

adaptation through ecosystems is prominent in, for example, the rhetoric of the United Nations' Environment Programme (United Nations Environment Programme 2019), in ICLEI Local Governments for Sustainability's Cities Biodiversity Center (ICLEI-CBC 2017), in the Intergovernmental Panel on Climate Change's Cities series (Prieur-Richard et al. 2018), and in the breadth of research-action projects into nature-based solutions funded by the European Union's Horizon 2020 programme (European Commission 2019).

At the same time, however, there is no standardised understanding of what constitutes a nature-based solution, or how nature-based solutions are distinct from other terminology related to urban nature such as green infrastructure and ecosystem-based adaptation (Kabisch et al. 2016). Garmendia et al. (2016) indeed believe that green infrastructure—one of the terms associated with urban nature with more technical origins rooted in the idea of a network of greenspaces—functions as a boundary object, which is plastic enough to be interpreted differently by different groups, yet also robust enough to enable cross-communication. Opdam et al. (2015) similarly develop the idea of boundary concepts, which are ideas that can help to create a discursive space to allow different groups of people to communicate with a common sense of urgency, but without needing full consensus or common knowledge base. Opdam et al. summarise that boundary concepts can help different groups to follow the same storyline together, but in a different way. Nonetheless, Garmendia et al. (2016) caution that boundary objects can act as ecological traps, where the pragmatic appeal of boundary objects in facilitating dialogue and consensus can draw time and attention away from targeted initiatives which could deliver more effective outcomes. Similarly, Westerink et al. (2017) believe there is a need to look not only at the presence of boundary concepts when making decisions about the landscape but also how these concepts are managed in practice to facilitate collective action.

14.2.3 A Comfortable Environment as a Boundary Object for Fukuoka's Greenspaces?

Taking the above points together, the objective of this contribution is to evaluate how—and to what extent—the idea of *kaiteki kankyo* has functioned as a boundary concept to guide the governance of Fukuoka's greenspaces in the public interest. Translated into English as 'comfortable environment' or 'liveable environment',[1] *kaiteki kankyo* encompasses both the subjectivities over defining and understanding 'comfort' outlined in Sect. 2.1., and the vagueness or contestation around what constitutes the urban natural environment as laid out in Sect. 2.3.

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[1] In previous outputs from this stream of research, some Japanese-language text extracts have translated *kaiteki kankyo* as 'liveable environment'. For consistency, when these texts are quoted directly in this chapter, the translation of 'liveable environment' is retained. However, in all cases, the original Japanese text read *kaiteki kankyo*.

This contribution also looks at how the provision of a comfortable environment over time could be considered an organising narrative to justify current and future actions towards the governance of urban nature in Fukuoka. Chabay et al. (2019) see narratives in sustainability as providing a rationale and a call for change, and giving a direction, goal and incentive towards a particular vision of a sustainable future. Shanahan et al. (2018) add that thinking in terms of narratives can provide analytical and explanatory insight into policy processes, either through using narrative elements and strategies to examine and make sense of the policy process for a specific issue; or exploring the role of narratives within a specific policy process. This chapter focuses mainly on the former of the strategies Shanahan et al. propose, working with available policy documentation to construct a narrative with the aim of understanding how *kaiteki kankyo* has functioned as a boundary concept over time in the governance of Fukuoka's urban natural environment. The analysis that follows pays respect to the elements that Shanahan et al. see as critical for a policy narrative to be more than a chronology: settings across space and time; characters (here in the form of institutions and individuals); plot/order of action; policy solutions; belief systems; and strategies.

14.3   *Kaiteki Kankyo* at Present

The first step in the analysis is to lay out how and where the *kaiteki kankyo* phrasing appears at present in polices and plans governing open- and greenspace in Fukuoka. First, the phrasing is included in the title of Fukuoka City Government's *New Generation Environmental City Vision*, which is sub-titled "Fukuoka: a shining comfortable environmental city, connecting people and nature to Asia" (Fukuoka City 2013). The language of comfort is also utilised repeatedly in the new *Central Park Basic Plan*, launched by Fukuoka City in 2019 (Fukuoka City 2019b); and across the most recent iteration of the city's greenspace plan, the *New Green Basic Plan* (Fukuoka City 2009). Lastly, the language of a comfortable environment appears within Fukuoka's *Climate Change Countermeasures Action Plan* in the context of both adaptation and mitigation (Fukuoka City 2016). Within these policy texts, there are two broad ways in which the idea of a comfortable environment appears. One concerns environmental amenity and pleasantness, and the other addresses moderation of the thermal environment more specifically.

14.3.1 Comfort as Amenity, Convenience and Aesthetic Quality

First, the idea of comfort is deployed in relation to the general quality of life. The *New Generation Environmental City Vision* proposes to "create green focal points and rest areas to improve the comfort of the urban environment" (Fukuoka City 2013: 37); and the *New Green Basic Plan* envisions Fukuoka as "a city where all citizens can live safely and comfortably by taking advantage of nature" (Fukuoka City 2009: 15).

The *Central Park Basic Plan*, created specifically to set out a vision for the large Ohori Park in central Fukuoka, emphasises in particular the aesthetic and mobility dimensions of comfort. In the vision it sets out, the plan proposes to "devise a design that allows anyone from children to the elderly to comfortably use the park" (Fukuoka City 2019a, b, c: 37) and explains that "for park users, the park is kept clean and offers comfortable and easy use" (*ibid*: 8). Moreover, the plan presents an illustration of a vision for the main gate of Ohori Park, which is captioned as showing a 'comfortable' environment and shows paved pathways being walked by people of all ages, with neatly lined trees and a small segregated area for vehicle traffic.

In this understanding of a comfortable environment, then, green- and open space is utilised as something to be managed and controlled, so that people may move easily through it and experience pleasant aesthetic qualities such as cleanliness and order.

14.3.2 Comfort as Regulation of the Thermal Environment

A second way in which comfort is deployed within Fukuoka's green and open space policies is in sustaining comfort through addressing the effects of environmental change. The *Climate Change Countermeasures Action Plan* connects the sustenance of comfort to climate change adaptation actions, noting that "to live a safe, secure and comfortable life, necessary information on the necessity of and methods for climate change adaptation will permeate" (Fukuoka City 2016: 81). The *New Generation Environmental City Vision*, likewise, links comfort in the urban environment to climate change imperatives and also international science-policy rhetoric, by stating that:

> to create a safe, secure and comfortable city which is adapted to climate change, the first step is to note that in 2007 the Intergovernmental Panel on Climate Change (IPCC) concluded that 'there is no doubt about global warming' and that 'adaptation to climate change is essential' (Fukuoka City 2013: 31).

Under this second understanding, comfort is positioned as something which is threatened by environmental change. Comfort here refers especially to mitigation of the urban heat island effect through Fukuoka's greenspaces. Indeed, the *New Generation Environmental City Vision* continues (Fukuoka City 2013: 52): "To solve the problems related to the comfortable environment of the city [. . .] We will promote comprehensive measures such as the suppression of the heat island phenomenon in urban areas." In a rather more technical explanation, the *New Green Basic Plan* outlines how "greenery also prevents high temperatures on the ground surface due to evapotranspiration and cools the surrounding air. Planting trees on places such as streets and parks make the space underneath cool and comfortable by creating shade" (Fukuoka City 2009: 17).

In addition to climate change justifications, the policy texts relating to comfort and the environment in Fukuoka City also make mention of air pollution, energy consumption and Asian Dust as environmental threats to comfort. Nonetheless, it is the thermal environment—especially the urban heat island effect—in which green and open space is most clearly and consistently linked to the maintenance of a comfortable environment.

14.4   *Kaiteki Kankyo* Context and History

Section 3 shows that the idea of a comfortable environment—*kaiteki kankyo*—remains a powerful organising force in Fukuoka City's governance of comfort through greenspace. Moderation of the thermal environment, and the language of thermal comfort via greening, are not unique to Fukuoka or even Japan. Yet what is striking in comparison to other Japanese city contexts is the level of technical detail that has developed in Fukuoka from a relatively early time—that is, since the 1990s—about the merits of urban greening for thermal comfort. This applies both to policy texts (e.g. the *New Green Basic Plan* showing thermal images of different temperatures at the building and street levels for different greenery configurations (Fukuoka City 2009)) and also academic research (for example, the textbook of Nitta et al. (1981)) on regulating the urban thermal environment and early remote sensing work into temperature around Fukuoka's greenspaces (Katayama et al. 1990)).

There is, therefore, a longer interest in the comfort of the urban green environment in Fukuoka which parallels Shove (2003) on the 'science' of comfort. The interest in Fukuoka in a comfortable environment as a boundary concept to motivate adaptation action may be seen to be linked to a longer history of resolving societal and environmental challenges through open space. Following Shanahan et al. (2018), this section hence aims to give some context to a narrative of policy for a liveable environment, by looking at shifts in rationales and framings for actions over time. To do so, this section draws not only on policy documentation, but also on scholarly outputs produced by academics working at the science-policy interface for a comfortable environment around this time (see Mabon et al. (2019b) for a fuller characterisation of this community of scholars).

The local lived environment took on greater significance within policy as a site for securing quality of life in Fukuoka in the 1980s, after pollution control had been priority in the 1960s and 1970s due to a number of high-profile incidents in the locality (i.e. Minamata Disease in the 1950s onwards and air pollution in Kitakyushu in the 1960s). Central to this turn toward interest in the lived environment was the idea of a comfortable environment. In a 1988 review of legal and policy provisions undertaken as part of a national government-funded project, Fukuoka University's Naohito Asano identifies this transition of local environmental research beyond pollution control:

> *Conventionally in Japan, the historical circumstances of how an issue emerged are reflected, for example for environmental issues, the argument is mainly around environmental pollution. [...] Arguing for a 'liveable environment' offers a new way to think about environmental issues that goes beyond this framing of 'pollution and nature.'* (Asano 1988: 14 (cited also in Mabon et al. 2019a))

The *kaiteki kankyo* phrasing can be seen elsewhere in Fukuoka at this time, for instance, a 1985 paper by Kenji Mitsuyoshi of Kyushu University titled *The city and a liveable environment* (Mitsuyoshi 1985), and the use of the phrase in Fukuoka City's (1986) environmental plan (Fukuoka City 1986). There is unsurprisingly no discussion of climate change issues or the role of the built environment in their mitigation. Yet there is recognition that the role of urban greening in a liveable environment goes beyond aesthetic and recreational considerations. Kyushu Institute of Design's Nitta et al. (1981: 245) use an example from Fukuoka City to argue "construction that avoids existing large trees does not only contribute to urban beautification, landscape and symbolism, but is also useful for temperature moderation and air purification." The urban environment—especially greenspace and open space—is thus part and parcel of a framing of a 'comfortable environment' extending beyond pollution control.

A previous text stemming from this research (Mabon et al. 2019b) has assessed in-depth how the rationale for policy- and practice-focused academic research into the thermal and green environment in Fukuoka has shifted over time. Without wishing to repeat this work, it is worthwhile highlighting some of the insights from this work to feed into the policy narrative this chapter constructs. The social and environmental challenges to which local greenspace policy has to respond shifted into the 1990s towards a greater emphasis on climate change, and to the local environment as the site at which global environmental issues manifest themselves and must be managed, yet can also in part be resolved. For instance, Imura (1993) makes reference to the UN Framework Convention on Climate Change, the Rio Declaration, and Agenda 21 in an article on balancing environment and development at the local level. Fukuoka City's Green Basic Plan of 1999 reflects this emerging framing of urban environmental problems as complex issues where new knowledges and skills are required to balance different and sometimes competing pressures. It lists climate change, acid rain, the ozone layer, and species extinction as factors ultimately affecting daily life which must be considered in greenspace provision within the city, as well as the relationship of greenspace to water provision, recycling and energy consumption (Fukuoka City 1999; Mabon et al. 2019b).

As such, the threats to a comfortable environment and also the targets which ought to be achieved through a comfortable environment shift over time. Yet a core theme in this narrative is the role that the planning of green-and open space is argued to play in translating knowledge about the quality of urban living, into practical action. Thinking around urban 'green' planning and its role in a comfortable environment is raised prior to formal consideration of climate change in articles on urban planning for comfort; and legal provisions for a liveable urban environment, respectively:

This renewal is an opportunity to plan the revitalization of public and private services, and to reserve appropriate open space. [. . .] Preparing for urban living is necessary, but this does not just mean securing housing. The provision of a comfortable environment through maintenance of open spaces such as parks, greenspace etc is required." (Mitsuyoshi 1985: 5–8 [cited also in Mabon et al. 2019a])

From the perspective of creating a liveable environment, thinking individually, for many points we can expect urban planning to have a necessary role, but it has not really been discussed until now. The existence of the 'green master plan' [. . .] is an important part of considering a green environment." (Asano 1988: 17)

Another finding from existing work (Mabon et al. 2019b) is that an epistemic community of researchers situated within Fukuoka has arguably worked to shape local environmental policy for green space and adaptation to environmental change in the public interest, using planning processes and expert committees as a common policy enterprise to exert influence. Given that the Shanahan et al. (2018) understanding of policy narrative emphasises the need for actors, belief systems and strategies, it is hence worth reiterating some of the insights from this previous Fukuoka-related research to show the strategies and rhetoric adopted by those seeing to shape policy for a comfortable environment. Actions such as preservation of wind corridors (Nitta et al. 1981) and city-scale climatological planning (Miura 1995) have been constantly justified in terms of bringing quality of life to citizens. Ooi (2008: 35) likewise justifies biodiversity conservation in terms of the lived experience of an urban 'green' environment, alluding to the aesthetic qualities (butterflies dancing) and audial pleasures (singing birds) that come as a result of biodiversity conservation (Mabon et al. 2019b).

Viewed in this context, the sustenance of thermal comfort via urban nature in present-day Fukuoka may hence be viewed as just the latest in a number of iterations of citizen well-being through urban environmental governance and underpinning research. Whilst writing about Japan more generally, National Institute of Environmental Studies scholar Yasuaki Hijioka reflects in *Environmental Evaluation*, a journal produced and edited by the independent Kyushu Environmental Evaluation Association based in Fukuoka (see also Mabon et al. 2019b):

Our country's adaptation actions are still just at the startline, but by bringing together a long history of experience, technology and knowledge in protecting citizens' livelihoods in areas such as disaster prevention, farming, health etc, I hope that industry and academia can work together to progress towards a safe and secure future society. (Hijioka 2017: 24)

This idea of climate adaptation as the continuation and evolution of extant practices seems particularly appropriate for Fukuoka. Current considerations of a comfortable environment in response to climate change pressures—and also an ongoing interest in providing amenity and convenience through management of urban greenspaces—are the latest iteration of a policy narrative which considers comfort in the urban green environment through firstly urban development and

expansion, then sustainable development pressures, then, more recently, explicit consideration of climate change.

14.5 Discussion: What Is Missing?

14.5.1 How Do We Know If 'Kaiteki' Has Been Achieved?

If we return to Garmendia et al.'s (2016) idea of boundary objects in a greenspace context as being flexible enough to allow different interpretation by different groups, yet also solid enough to facilitate communication, then it seems a 'comfortable environment' functions very much as a boundary concept in Fukuoka's greenspace and environmental change policy narrative. Within the strand of policy texts which consider comfort in terms of convenience and amenity, it is never clear how exactly comfort can be assessed or quantified—and, therefore, whether a comfortable environment has ultimately been achieved or not. The policy texts reviewed in Sect. 3.1. do list up and visualise factors which can contribute to a comfortable environment—lack of litter, ease of mobility, presence of well-maintained trees. But these texts do not clarify what exactly a comfortable environment is, or how exactly the stated characteristics contribute to comfort. It is similarly noticeable in the academic outputs stemming from the 1980s (e.g. Asano 1988; Mitsuyoshi 1985) that while a comfortable environment is advocated as a goal point for greenspace policy, and while characteristics of a comfortable environment are again described, specific standards for what constitutes comfort in the environment and how this may be assessed are not laid out.

Comfort is somewhat more tightly defined in relation to the urban thermal environment. Particularly within Fukuoka's climate policies, Wet Bulb Globe Temperature is used to set out temperature bands which are not only uncomfortable but also dangerous to human health. Specifically, a temperature over 31 °C is designated 'dangerous', whereas temperatures in the range of 28–31 °C are defined as requiring 'extreme caution' (http://heatstroke.city.fukuoka.lg.jp/wbgt/). The threat to comfort from a warming urban environment is also justified through reference across policies to IPCC scenarios and predictions. The name and outputs of the IPCC are used to legitimise the need for specific technical and planning actions to maintain thermal comfort. There are clear parallels here to Shove (2003) and the scientific specification of conditions under which most people will report comfort. Similar to Opdam et al. (2015), then, a comfortable environment—or more precisely the threat to thermal comfort posed by a warming environment—functions as a focal point for urgent action in the way one may expect a boundary concept to operate.

In sum, across the policy narrative of comfort through greenspace in Fukuoka City, there is plenty to suggest that a comfortable environment functions as a boundary concept to motivate specific greening actions. These actions include the planting of trees, creation of wind corridors, proliferation of green walls, preservation of green areas to sustain 'cool spots', and management of urban nature to sustain

accessibility and convenience for citizens. Moreover, the utilisation of the term 'comfortable environment' in outputs from government, academia and also independent organisations suggests that a certain degree of success has been achieved in bringing different actors and sectors together to work in a common direction. However, as Westerink et al. (2017) argue, the success of a boundary object rests not only on its presence, but also how it is managed. In this regard, limitations to a comfortable environment as a boundary concept emerge.

14.5.2   Limits of Boundary Concepts and Policy Narratives?

Norton (2008) cautions that analytical approaches to policy documents and texts may give a false impression of the quality or efficacy of a policy, if the analysis pays attention only to the presence of certain phrases or ideas and not to the wider context in which these ideas are implemented. It is for this reason that this contribution has sought to situate the evaluated documentation within a wider policy narrative (Shanahan et al. 2018), to contextualise the evolution of concepts such as a comfortable environment over time and assess their relation to non-policy texts such as scientific outputs.

However, what this policy narrative may miss is a much longer history of informal coping strategies to address comfort in the urban environment, which lie outside formalised policy processes, but may nonetheless support a longer narrative of actions creating a comfortable environment. A good example of this in Fukuoka is *uchimizu*, the practice of scattering water on streets and gardens in summer for keeping dust down, cooling the environment, and ritual performance. *Uchimizu* has recently been brought into formal narratives of thermal comfort. Fukuoka City Government held an *uchimizu* event in summer 2019 with the explicit purpose of raising awareness of the urban heat island effect (Fukuoka City 2019a); and Fukuoka Prefectural Government provide technical data on how a community *uchimizu* event reduced surface temperature from 51 to 46.1° on a hot summer day (Fukuoka Prefecture 2019). However, *uchimizu* as a practice to promote cooling in Japan dates back to the seventeenth Century (Solcerova et al. 2018), illustrating that the idea of creating and sustaining a comfortable environment extends far beyond the 'official' and techno-scientific justifications for *uchimizu* offered in more recent times.

As such, whilst a comfortable environment is a useful boundary object for stimulating policy action, it is crucial not to assume the goal of a comfortable environment is only understood by, or can only be achieved by, actors involved in the policy-making processes. The policy narrative of a comfortable environment in Fukuoka also illustrates a danger of boundary concepts. If used uncritically within technically driven policy processes, the Fukuoka narrative suggests boundary concepts may draw different actors towards technocratic 'solutions', which may be easier to understand or agree upon than social or structural changes. For instance, the policy texts analysed in this chapter, and also the related academic outputs, focus on

techno-scientific processes to enhance or sustain comfort. These include shaping or alteration of the green environment to facilitate accessibility and convenience, and strategic placing of greenery to cool the thermal environment. Within this narrative, citizens are portrayed as passive recipients of the benefits of policy decisions taken to secure a comfortable environment. Largely missing from this narrative are discussions on which members of society may be most vulnerable to environmental changes, or who ought to benefit most from a comfortable environment. Research elsewhere has argued that whilst they may be perceived as inherently 'good' and technically effective, strategies to mitigate the effects of environmental change via urban greening are not value-neutral and can reflect existing inequalities and exclusions (Haase et al., 2017; Shokry et al., 2020). Indeed, initial research conducted by Mabon et al. (2019a) indicates that formal greenspace, and also government-supported greening actions, are not distributed evenly across Fukuoka. The pragmatic appeal of boundary concepts in facilitating progress on urgent challenges thus runs the risk of closing down the discussion to the most obvious or readily quantifiable technical 'solutions', which may mask the underlying processes of green gentrification or green inequity—and subsequent unequal distribution of comfort – outlined at the start of the chapter.

14.6 Conclusion

This chapter took as its starting point the idea of *kaiteki kankyo* – a comfortable environment – as a boundary concept motivating policy for the management and development of greenspaces in Fukuoka. A comfortable environment remains today a core organising concept in Fukuoka's greenspace-related policies, and encompasses two key understandings. One is comfort through the creation of a pleasant environment for accessibility and mobility, attained through the management and control of nature. A second is comfort through the utilisation of greenspace to regulate the urban thermal environment, specifically the urban heat island effect, through the cooling benefits of greenspace. By looking at recent history of the development of greenspace research and policy in Fukuoka, however, we can see that the idea of a comfortable environment has functioned as a boundary concept to guide management of greenspaces in response to urban development, sustainability and, more recently, climate change adaptation pressures. Yet, at the same time, qualities contributing to a 'comfortable' environment cannot be assessed for definite. In the absence of a clear definition of what constitutes a comfortable environment, proxies such as the presence of specific features or the control of the urban climate below a certain temperature are drawn on by policy, plans and academic texts to hint at how comfort may be enhanced or maintained.

It is also important to acknowledge that even when attempts are made to situate a chronology of policy over time in a wider narrative involving characters, actions, rationales and motivations, caution ought to be exercised over informal practices and knowledges which may help to sustain the narrative over time. Such actions may

pre-date formal policies and may not be acknowledged within texts or by policy actors (or may be appropriated into formal policies at a later date), but can be critical in establishing narratives of environmental comfort within a locality. Lastly, whilst boundary concepts may indeed be helpful pragmatic tools to facilitate consensus, it is imperative that this desire for consensus and 'quick wins' does not close down the outcomes of the narrative to a series of technical solutions. This is especially imperative when one is dealing with the urban green environment, where a desire to see all urban greening outcomes as intrinsically 'good' can mask underlying questions of unjust or unequal access to a comfortable environment.

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Action Research Within Multilayered Hegemonic Structure: 'Workshop' for Adaptive Governance

15

Taro Hirai

Abstract

Attention has been frequently called to the value of action research in addressing the increasing complexity of contemporary society and the structural inability of public organisations to effectively handle these complex problems. In this context, I explore the kinds of communication, forms of collaboration, and processes which can produce both scientific and socially relevant knowledge and transformative action in solving community-based problems. In this chapter, the data was based on my own action research in a geographically marginal rural community in Japan beginning in 2017 in the context of a nationwide revitalisation policy. I conclude that special attention must be paid to the following three issues that are essential to the action research methods 'workshop', as indicated in previous researches. First, although the bureaucrats and analysts of public policy tend to urge the sense of crisis and ownership onto residents in consideration of the interminable fiscal difficulties, the government side must consider and give way to the residents before demanding their participation in public affairs. Secondly, it must be admitted that spontaneous, chain-reaction collaborative moments of importance arise from within asymmetrical hegemonic structures that underlie relations between the government and the local citizens. At the same time, the researcher must also recognise their unique position within these multilayered hegemonic structures. Finally, if the stakeholders are able to create a communicative space without excluding anyone because of their 'inefficient' ideas and propositions, and in accordance with the change in nationwide policy and the unexpected success, they can become active agents in amending the project plan and involve more extended stakeholders.

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15.1 Action Research and Depopulation

Recently, action research has attracted much attention from scholars and
practitioners. To explain this context, American sociologist Stringer (2014) has
pointed to the increasing complexity of our contemporary societies. Professional
practitioners and people working in service occupations—teaching, social work,
health care, psychology, youth work, and so on—find their work to be more
demanding and less satisfying in recent years. The cause of this rising tension is
that although workers are expected to provide some answers with regard to diversity
of their cases, they must mainly rely on human, financial, and intellectual resources
provided by 'centralised' policies and programmes based on the remarks of 'central'
intellectuals.

Similarly, in the field of policy analysis or sustainability transition research,
attention has been frequently called to the value of action research in addressing
the increasing complexity of contemporary society and the structural inability of
public organisations to effectively handle these complex problems (Bartels and
Wittmayer 2019). A segment of policy analysts has begun to notice that in complex
policy systems, academics lack the authority to define issues and can only provide
temporary and imperfect solutions collaborating with many interdependent
individuals, organisations, communities, and groups. Elements of sustainability
transition research have changed their focus in the same way. These transition
researchers have started exploring how to create spaces in which interactive and
participatory stakeholders can mutually experiment and learn how to create a
sustainable status.

Certainly, action research has a wide-ranging scope encompassing a range of
approaches, but in this chapter, I pay attention to the communicative and collabora-
tive processes which occur between researchers and stakeholders. In addition, I
explore the kinds of communication, collaboration, and processes which have
been effective in producing both scientific and social relevant knowledge and
transformative action.

In the following pages, I will draw on action research conducted in a rapidly
depopulated local community in Japan to answer these questions. Since 2008,
Japanese society as a whole has been experiencing a long stage of depopulation.
But for almost all marginal local communities in Japan, the depopulation process
began as far back as the 1950s, the starting point of high economic growth in Japan.
As a result, the population has been reduced by half or less in almost all depopulated
communities, in contrast to Japan's many urban centres.

Moreover, the central government has continually promoted the merger of local
authorities, especially in marginal area since 2000, because central bureaucrats and

analysts have feared that severe aging and depopulation will result in the political bankruptcy of increasingly marginal local authorities. So, just as Stringer (2014) indicates, the local authority staff and the residents of marginal communities in Japan themselves have to struggle with fewer human, financial, and intellectual resources amidst their issues: Such scarcities affect issues ranging from health care for the increasing elderly population, revitalisation of declining economic activity, management of obsolescent public facilities, and so on.

Simultaneously, the Japanese government has been also promoting researchers across numerous academic fields, including myself as a sociologist, in order to research these marginal local communities and support their struggling residents. The resulting research, as in the analysis of Gardiner (2019) of 'austerity' policy in contemporary Scotland, has not necessarily led to a collaborative relationship with stakeholders nor transformed the structurally arrested situation. Although the issues have continued to accumulate, the resources necessary to combat them have been rapidly depleted. So, by reflecting on my own government-recommended action research in a marginal local community, in the following section, I explore the turning point of collaborative production of knowledge, practices, and agreements among stakeholders, especially diverse local residents, local authority staff, and researchers.

15.2   Workshop: Creation of Communicative Space

15.2.1   'Workshop' and Depopulation in Japan

Practitioners of action research have cultivated numerous methods for creating communicative spaces that aid in initiating collaborative processes among stakeholders, including researchers themselves, action science (Argyris et al. 2013), human inquiry (Reason 1994), appreciative inquiry (Bushe 2011), participatory research or workshop (Chambers 2014), among others.

In the Japanese action research context, the simple term 'workshop' is the most popular of all of these methods because a diverse set of practices that constitute 'workshop' settings have been held in protest against orthodoxy in fields of contemporary art, the small theatre movement, the free school movement, the disability rights movement, among others, since around the end of the 1960s. Especially in the field of rural and urban planning, these 'workshops' have been adopted by the central government and local authorities as a method to increase or diversify participation of stakeholders in the process of planning. Since the 2000s, this trend has diversified to include fields in public policy, including health care, education, crime prevention, environment, to name but a few (Kinoshita 2007). In spite of this proliferation, some self-reflective critics have pointed out that the catchall term 'workshop' has lost its substance as a method of collaborative planning through institutionalisation in the public policy system (Kinoshita 2018).

According to these critics, this sort of institutionalised 'workshop' mainly has three defects: (1) the purpose of 'workshop' tends to be decided in advance by the

government; (2) the 'workshop' tends to be led by a restricted set of participants who are deemed by the local community to have certain capacities or privileges; and (3) the scope and timeline of 'workshop' or planning as a whole tends to be decided and limited to relatively short periods (at most less than five years). These three defects are also pointed out as issues of action research by Bartels and Wittmayer (2019: 2, 8–10), who raise the following three issues: (1) the negotiation of 'the starting point' of the research process; (2) enacting 'multiple roles and relationships' and 'addressing hegemonic structures, cultures, and practices'; and (3) the evaluation of 'reflexivity, impact, and change'. In the following analysis, I will focus on these three main issues.

The field of my action research (Hirai 2019) is situated on the northern tip of the main island of Japan in a local community called Wakinosawa (population: 1432 as of the end of 2019, area: 58.59 km^2, Fig. 15.1). It is a typical and literally 'marginal' local community. Its coastal area has historically been famous for fertile fisheries of cod and scallops. The population of this community had increased five times from the beginning of 'modernisation' (improvement of sanitary conditions and mechanisation of forestry and fishing industry) to 1960 (Fig. 15.2).

However, this marginal community has suffered from long-term depopulation and undergone rapid aging since 1960 because of a long decline (drain on resources and challenge from import goods) in both forestry and fishing industries (Fig. 15.2).

So, in accordance with the policy of the central government, this local community was merged into a proximate larger local authority in 2005. After this merger, Wakinosawa lost a number of public facilities: a junior high school, a tourist centre, a public farm, a local bank, and a public spa with a glasshouse for cultivating vegetables, fruits, and flowers using the heat of waste water. The integration and elimination of public facilities and services brought about not only a certain efficacy of public expenditure, but also additional depopulation, especially outflows of younger generations.

Faced with this vicious cycle of depopulation and public services cutbacks, in 2014, the central government began a new local revitalisation policy to urge competition among local authorities to discover a way of breaking that cycle. The local authority, which merged with Wakinosawa, also planned the renewal of their public spa through the participation of residents in the planning, refurbishment, and management. According to this plan, the renewed public spa was expected to combine several eliminated public facilities, as it were, including a public farm in the auxiliary glasshouse and a public restaurant for elders and tourists. Public spas in Japan have great popularity with almost every generation, so many developers, including local governments, have established them as customer attraction amenities.

However, three years had passed before the planning staff of the local authority could begin to talk about this plan directly to residents themselves, when I was invited to take on the role of facilitator of the 'workshop' for consensus building between the local authority and residents and the planning of the public spa renewal in April, 2017.

Fig. 15.1 Marginality of Wakinosawa

15.2.2 Negotiation of 'the Starting Point'

At the first meeting with local authority staff, I noticed that they established the deadline for consensus building and planning with local residents at the end of summer, 2017, and they estimated three 'workshop' meetings to be sufficient for that process. This deadline was set in accordance with the demands of the central government and the consideration of the mayor. The central government urged completion of the project within three years and the mayor assumed that the residents would be pleased if the public spa was opened again before the harsh cold of winter set in. This predetermination resulted in the loss of the substance of the 'workshop' as a process for creating communicative spaces for collaboration among

Fig. 15.2 Change of total inhabitants (left axis) and workers by industry (right axis) in Wakinosawa
(Source: before 1920 and 2019, Local Authority Resistration, 1920–2015, National Survey)

stakeholders, simply because the staff had not even spoken about their plan to any of the residents by that point.

So, first of all, I proposed the staff put off the deadline of the plan as a whole, confirm that the central government could wait for the completion of the renewal and what should be considered the parameters of the 'renewal' (the Japanese bureaucratic term 'renewal' means both the completion of repairs/construction work and the reopening of the facility), and then the mayor could change his warm-hearted directive.

It was not that I could not understand that the local authority staff could not talk about their plan to the residents. Surely, the central government urged them to action

and they themselves also agreed with the adoption of participatory management of the public spa as the most efficient way to enact the public service. However, changing to a system of participatory management meant that some portion of the local residents—all of whom used to utilise the public spas facility solely as customers—would now have to do the labour of cleaning the spa and waiting rooms without any kind of remuneration. The local authority staff thus could not unilaterally talk about this management change in compensation of the renewal of the public spa even if most of the residents were expecting it.

This proposal of the deadline shift is merely the beginning of the negotiation of the 'starting point' for creating a communicative space and collaborative processes. At the first 'workshop', I was surprised that more than 30 local residents attended the meeting. Before this meeting, I heard from the local authority staff that almost all residents would lack a so-called 'sense of crisis' and 'sense of ownership' relating to the future of their community. The concept of 'sense of crisis and ownership' has been appreciated by analysts and bureaucrats in the context of development theory concerning the organisation of local communities in Japan. Those analysts and bureaucrats tend to point out the lack of sense of crisis and ownership among stakeholders as the cause of failure or decline of organisations or communities. Although I cannot agree completely with this assumption based on my own experiences in a variety of communities across Japan, I do not doubt that severe depopulation and rapid aging in Wakinosawa are contributing factors. So, although I requested the local authority staff to strongly encourage residents to attend, I expected only the participation of several elderly and male leaders of small groups such as neighbourhood associations, the local fishermen's cooperative, the local agricultural cooperative, the local society of commerce and industry, the local tourist association, the local council of social welfare, civilian firefighters, the local crime prevention association, and a local amateur sports association. These small local groups have been organised in accordance with the 'silo structure' common in the central government ministries, but which tends to inhibit collaboration between groups and the leadership of these groups has been primarily occupied by elderly men.

However, I was surprised at not only the number of participants but also their diversity. Especially since the critics have pointed out the loss of the substance of these workshops, we could not have expected the attendance of younger generations or women raising children or full-time workers. In contrast, among the more than 30 participants at the first 'workshop' in Wakinosawa, I met two young woman seeking jobs, several housewives who were unknown by the small group leaders, and a young male staff member of the National Forestry Office.

In the meeting, after the local authority staff explained that the public spa renewal was expected to involve deep participation of residents themselves, I requested the participants of the first 'workshop' to vote for which of the different facilities up for renewal they themselves would use or be willing to manage themselves as regular staff. Although this request should have been a surprise to all of the participants, and additionally, some of the small group leaders had already informally demanded the use or management of certain facilities by people other than themselves, all

participants voted for a limited number of facilities that they themselves would use or manage in future.

In a word, the actions of the participants drew both the local staff's and my attention to the fact that that residents in this local community were never lacking in the sense of crisis and ownership. In choosing their facilities, the other participants also told me that all of them already noticed the necessity of public expenditure cutbacks and that they therefore understood the need to choose the facilities that they sincerely desired to use or manage.

After the meeting, I attended a social gathering for drinks and conversation with some of the local authority staff and small group leaders until midnight. One of leaders told me that everyone in this community realised that this project was the last chance of revitalisation for Wakinosawa, but, at the same time, that younger people could not afford to spend their time on this project without remuneration and that elderly people could not all attend at their volition due to physical limitations. Thus, everyone made up their mind about the choice of facilities at the first 'workshop' in spite of compelling and all-too-common reasons for hesitating.

After hearing this confession, I could not help being ashamed that I had doubted the sense of crisis and ownership among residents of this local community. In other words, if anyone wishes for another to develop a sense of crisis and ownership, they must understand the point of view of the local stakeholders by listening to their real voices. In this case, I should not have inconsiderately demanded such a vote at the first meeting, but instead should have listened to all participants, including the young jobseekers and elderly housewives.

In fact, at the second 'workshop', after the local authority staff informed the participants that they would postpone the deadline of the 'workshop' and the project as a whole for four months, one of the younger people in attendance suddenly proposed that the opening ceremony would be held during the cherry blossom season in order to attract customers. This proposition was agreed to by all participants without any discussion. This quick decision-making must be regarded as proof that the participants had changed their attitudes from that of a guest to that of a host of the public spa. I speculate that this mind shift was provoked by postponing the decision of the local authority. As this action of considering and giving way to the residents, in turn, they responded to the demands of the local authority. I would go on to observe in these moments a series of mutual consideration between local authorities and residents many times over the course of the workshops.

In this case, the negotiation of 'the starting point' meant not only the formal or numerical change of the deadline but also the mind shift of the local authority staff who demanded that residents participate in the public projects without any question. To generalise this observation, in creating a communicative space for collaborative participation and process, the demanding actor must, first of all, be considerate and give way to the actors being subjected to those demands. Most analysts and bureaucrats so far have tended to exaggerate the notion that they need to evoke a sense of crisis and ownership. Actually, when initiating the new local revitalisation policy, the Japanese central government appealed to the tragic future of depopulation and aging, especially in the marginal local communities. I can call this method of

policy promotion a kind of 'shock doctrine' (Klein 2007) because the appeal to the devastating consequences of depopulation and aging is (intended) to disable the residents' ability to criticise or reject the implementation of policies determined by the 'central' bureaucrats and researchers. However, following from my above analysis, this appeal has hardly produced the outcome one would expect to arise from a kind of 'shock doctrine'. It is the mindset of 'central' bureaucrats and researchers (including myself) that has to be shifted first of all. It is necessary for local policy promotion not to shock but to give way to the needs and opinions of local actors.

15.2.3 Listening to Whose Voices?

As written in the first section, for the usual 'workshop' in contemporary Japan, it has been pointed out that these workshops tend to be led by the limited participants who are recognised to have special capacities or privileges in the local community. In the field of ecological research, these 'capacities or privileges' have been conceptualised and problematised as a concept of 'legitimacy' (Fukunaga 2013). This 'legitimacy' becomes, in turn, closely woven into the 'hegemonic structures, cultures, and practices' (Bartels and Wittmayer 2019) in each local community. As the visible 'hegemonic structures' in my above case, two typical ones have been already noticed: the central-marginal structure and the traditional local structure.

At first, especially when the government or administrative sector leads the collaborative process for local revitalisation policy in the context of fiscal austerity, I can find the multilayered central-marginal structure: (1) the central government vis-à-vis a local authority, (2) the government side vis-à-vis the local residents, (3) the small group leaders vis-à-vis relatively invisible residents, and (4) the researcher vis-à-vis stakeholders, including the local authority staff and the residents.

In my case, to begin with, this revitalisation policy has been urged by the central government to local authorities (above [1]). Although the central government set the mutual competitive situation among local authorities at their own voluntary will, as in this case, the local authority cannot change the purpose and the deadline without permission from the central government. On the other hand, the local community is also not allowed the chance or capacity to determine the purpose and the timeline of its own revitalisation (above [2]). As cited above, the residents become aware of the fact that they have been backed into a corner by themselves and they become convinced that this project is the last chance for their community.

At the same time, the hegemonic structures in the local community cannot be overlooked, which I refer to as 'the traditional local structure'. Before the beginning of this 'workshop' process, a selection of the residents had already confirmed that the local authority staff had demanded that they renew the public spa. These people were the leaders of small groups: traditional groups segmentally organised by their neighbourhoods, sexes, generations, and occupations. In Japanese local communities, these people tend to be (A)elderly, (B)male, and (C)born in that community. Knowing about these hegemonic structures, I was surprised that the

participants in the 'workshop' included young female jobseekers, housewives raising children, and a public staff member who will transfer to another community within a few years. However, they were all apt to be ignored by the small group leaders and the local authority staff (above [3]).

Additionally, I have to admit that, as a researcher, I am situated among these hegemonic structures. I assume that the local authority staff listened and assented to my proposition of the deadline postponement because I was recommended by the central government. The participants also listened to my claim to their vote for choice of facilities in accordance with the hegemonic structures (above [4]).

Simultaneously, I took on the role of resetting or rearranging these hegemonic structures as a researcher through my interactions with the stakeholders. As I emphasised, my participation can be regarded as a catalyst of a series of responses between the local authorities and local participants, resulting in the local authority deciding to postpone the deadline of this project after my proposition. Through making the choice via a 'one person one vote' method, all voices of the participants were expected to be equalised, regardless if they came from the small group leaders or young female jobseekers. Surely multiple elderly housewives told me at every 'workshop' that it must be very difficult for me to commute eight hours from my university office to attend the meetings, but these words of appreciation could not be spoken by the participants if they did not recognise the literal 'central-marginal' structures between us.

In this sense, the researcher can take on the dual role of creating the communicative space and the collaborative processes in the multilayered central–marginal hegemonic structures. Ironically, researchers can reset or rearrange these hegemonic structures when they utilise their position as a researcher within the hegemonic structures in question.

Concerning the strategic intervention of researchers into the hegemonic structures of local communities, Chambers (2014) has long insisted on the principle of 'putting the last first' based on his action research in development aid. This principle encourages the researcher to reset the hegemonic structures and rearrange them in fundamental ways in local communities to create collaborative and sustainable development processes. Although this principle has been actively recreating the role of researcher in local development (Görgens and Ziervogel 2018), it also must be paid attention to to unintentional but severe side effects of this principle. After the interventive researcher leaves that local community, it can be often seen as revenge levelled upon the cheered-up marginalised people from the upset hegemonic people (Ohashi 2015). To find out the optimal method of researcher intervention, I have to wait for the results of my observations after I left in-community involvement and continued my involvement from afar.

Before reflecting from today, I will briefly review the process of 'workshops'. During four months after the first 'workshop' in April 2017, I could observe the above series of mutual consideration between the participants and the local authority staff. First of all, the residents participating showed their sense of crisis and ownership, resulting in the decision by some managerial staff and the mayor of the local authority to postpone the deadline of renewal. Then local participants started to

discuss the plan of facility repairs and management, leading to architectural staff of the local authority fundamentally rewriting their design blueprints three or four times as they worked out the appropriate ideas in accordance with the local-residents' propositions. This led to the participants starting anew to bring each other the needed materials, equipment, and working time for repair and renewal of the public spa and glasshouse, causing...

After these virtual cyclic interactions among the diverse resident-participants and the staff of local authority departments, I proposed that the more than 30 participants should be divided into working groups following their own interests and skills to bring about more flexible and swifter decision-making at the end of the 'workshop' in August. Upon gaining approval of all participants to this proposition, four working groups were organised at once with female participants who had led the discussions during the series of ''workshops' and real actions out of 'workshop' forming their core goals.

However, at the end of the first 'workshop' with working-group discussions, one of the elderly female participants suddenly requested a chance to speak. She claimed that it would be better to hold the discussion among all the participants together, even if each working group meeting was held beforehand. She said that we had to accept a certain amount of inefficiency in the discussion in exchange for giving more weight to the general meeting than the individual working groups. I was afraid of the risk of significant delay in decision making concerning repairs and renewal and could not understand why most of the participants accepted her claim. However, we decided to hold the general meeting again from the next 'workshop'.

After a year and a half's absence, I attended another regular meeting of the 'workshop' in Wakinosawa. In an unexpected turn of events, they had avoided any unforeseen accidents and the public spa and its glasshouse were successfully reopened at the end of April 2018. Additionally, the managing organisation had also been established by the participants of the 'workshop' by the end of 2017. I decided to attend the meeting of this organisation after ten months' absence because I heard a rumour that the style of discussion changed in such a way that a number of the female members seemed to be politically frustrated.

The style of the meeting had certainly changed. When I acted as facilitator of the 'workshop', everyone sat in a semicircle facing a whiteboard on which I wrote down the voices of all participants, the decisions, and the pending questions. However, in the meeting that I later attended, the ordinary members were sitting in rows facing the elderly male president and secretariat as if they were in a lecture hall. I was afraid that this would lead to a reduction, following standard 'workshop' theory (for example, Chambers 2014), of the role of those ordinary members who mostly consisted of women.

My concerns were unwarranted. Most of the female members had contested the various propositions of the elderly male secretariat and brought up alternatives one after another. After the end of this meeting, one elderly widow who managed a small general store said to me that she had noticed that she was only able to appreciate the 'community' once she was able to spend time participating in this 'inefficient' communicative space in which she and the other female participants were able to

talk freely, including with male leaders. It was important that they could talk without time constraints and on any theme; in short, the 'efficiency' of their discussion was only as much as allowing all participants to talk until they were satisfied. She also told me that she could call these 'inefficient' communicative spaces 'community'.

The controversial term 'community' she was referring to was the name of the renewed public spa ("community spa"), which, at the time of the proposition, the local authority named and submitted without any discussion with the residents. So, a number of the participants who had stubbornly opposed using the word 'community' finally assented to its use after considering the local authority staff's enthusiasm, which they repeatedly confirmed throughout the evolving process of the 'workshop'. As it were, not all of the organisation members had necessarily fully accepted the name and concept of 'community'. Of course, that elderly widow was one of these frustrated members.

I was surprised not only at the active dynamism of their discussion but also at her original sense-making of 'community'. For her, the most important achievement of the workshop was, ironically, the creation of an 'inefficient' communicative space among them. When I listened to this sense-making of her own, I recalled the initial proposition for the whole meeting. Then another woman said that we had to accept the relative 'inefficiency' of discussion in order to give more weight to the general meeting than working group meetings. I guess that by ensuring a certain 'inefficiency' in their communicative space, they were also assured of their own roles or positions within the communicative space and amidst these collaborative processes. In accordance with this norm, no members could be neglected or excluded just because they could not make any efficient propositions or engage in any efficient practices.

Based on these reflections, I can return to the original issue: How can I design an alternative strategy and set of practices for researcher intervention based on the principle 'putting the last first'? This principle can certainly provoke exclusion and oppression in a local community as a kind of revenge by relatively powerful actors following the exit of the researcher. This is especially true when 'the last' is put the first by paying attention to his or her latent or suppressed capacities, as in the example of the few female participants in this case who became a driving force for change. This revaluation itself has excluded and oppressed the marginalised members who comprise most of the local community, including former 'first' members, such as the small group leaders in this case. On the contrary, in the 'community' in which that elderly widow pointed out the 'inefficient' communicative space, no one is excluded from communication and collaboration simply because of their shortage of capacity. As Görgens and Ziervogel (2018) contrasted the principle of 'putting the last first' with the principle of 'no one left behind', I must not be overhasty in determining the superiority or efficacy of these two intervention principles. That is why I suggest combining the two into a new phrase: "putting no one behind." By substituting a more active verb for the passive "leave," I emphasise the interventional role of the researcher who has to simultaneously avoid creating unintended repercussions often engendered by a "put the last first" policy. I believe that "putting no one behind" is vital to creating literally communicative spaces and

collaborative processes with continuous reflection and rectified intervention by the researcher so as to mitigate any backlash effect that might occur from his or her own 'benevolent' participation.

15.2.4 Retrospective Sense-Making

Lastly, in this section, I explore the methods of overcoming the third defect of contemporary institutionalised 'workshops' mentioned above: that the scope and timeline of the 'workshop' or planning as a whole tends to be decided and limited to relatively short term (at most, fewer than five years). For this purpose, I must expand the scope and timeline of my own action research and repeatedly reflect on the results of collaborative research from the viewpoint of sustainability of the project.

As for the evaluation of this project, most of the stakeholders admitted to the difference of their own values or points of view while at the same time sharing a sort of 'sense,' as written above, of crisis and ownership. That is to say, with regard to the depopulation and aging of their local community and the fiscal tensions with their local authority, they all tended to value the sustainability of their project.

From the viewpoint of sustainability, some of the participants repeatedly raised the topic of the utilisation of buckwheat and firewood during the 'workshop'. Buckwheat has been cultivated in former rice fields around the public spa, as has been done in other marginal local communities whose mountainous fields are not necessarily particularly climatically or economically suitable for rice cultivation. Additionally, the merged local authority had established a public corporation for buckwheat cultivation under contract with local landowners. This public corporation continues to distribute the buckwheat harvest among local residents even today. So, some of the participants in the 'workshop' insisted repeatedly that after the renewal they would supply to visitors of the public spa Japanese noodles produced using the distributed buckwheat. They especially wanted to do this because buckwheat noodles were not offered in either of the two eating places near the public spa, and so almost all participants approved of the proposition with regard to not only its feasibility but also reducing the risk of competition for the peace of the local economy.

However, the public corporation did not agree with this favourable proposition because as a 'public' corporation, it was prohibited from selling its products to particular private organisations. It may be possible that before the municipal merger, the mayor and the president of the public corporation could tacitly permit the sale, but after the merger the newly established management organisation started to represent the wider community rather than just the inhabitants of the more limited local area. As a result of the disapproval of the public corporation, we were forced to abandon the plan to add specialised cooking facilities to the spa and postponed training staff on how to cook buckwheat noodles.

The second point relating to sustainability is the use of firewood, which is still common among the people of this local community because the land nearby contains notably good forests managed by the National Forestry Office. Most of the

inhabitants received distributions of firewood from that office directly into their own hands as a customary right to the forest. Additionally, because in this spa the hot water system needed an additional heat source, some of participants insisted on adopting the use of firewood instead of oil in order to lower expenditures. However, according to repeated calculations by sympathetic architectural staff of the local authority, both initial and running cost for firewood were estimated to be more expensive than oil. At that time, no participants, including me, had any alternative estimate, so we also abandoned the idea of adding a specialised boiler for the firewood.

One year passed from the opening of the renewed public spa. When I attended the meeting of the management organisation after my long absence, I heard of a newly planned 'workshop' for training voluntary members to cook buckwheat noodles. When I expressed my surprise at this turn of events, a retired man offhandedly replied that the public corporation changed its mind because of rumours that we could attract many customers exceeding prior expectations. I subsequently heard that the central government had suddenly changed the subsidy policy for buckwheat cultivation to strengthen the 'profitability' of agricultural corporations and that the public corporation was now urged to seek out new 'customers' rather than maintain the traditional form of 'distribution'.

At the same time, I also collected the data about expenditures for the year and recalculated the running cost of the fuel oil. I found that the actual value reached three times the estimate, probably because of the international rise in the price of oil and the increase of wastewater in accordance with the growth of customers. I do not believe that the discrepancy reflected anything bad about the architectural staff, who did not act with any malice. So, I sought out more extended stakeholders than the original members of the management organisation, and organised a new 'workshop' involving not only the management organisation and local authority but also the National Forestry Office, the forestry companies, the Prefectural Agriculture Agency, and my university colleagues specialising in energy engineering and agriculture economics. Through this new 'workshop', the NFO came up with a method to circumvent the regulations against the distribution of wood products to non-holders of the traditional customary right of use of the forests' wood. The newly established organisation and my colleagues and the organisation members also innovated an additional method of firewood usage for warming the glasshouse and melting snow around the parking lot. These evolving or emergent ideas have improved the feasibility of re-adoption of the firewood boiler. Additionally, these new ideas, like new cost estimates, should not be expected to hurt the pride of those architectural staff from the local authority.

In retrospect, with both the buckwheat and firewood we had literally 'inefficient' investments in the facilities and in time spent inquiring into their realisation. However, without the mutual trustful relationship among stakeholders, even if everyone would admit the superiority of buckwheat and firewood from the view-point of the sustainability of their project, they could not embark on and develop that plan. In the case of the buckwheat, without being able to predict the number of customers of the public spa, even if the central government policy changed, the

public corporation could not change its mind and request the management organisation to use buckwheat. At the same time, it must be paid attention to to the unexpectedly large number of customers that has been achieved by the flexible development of products and services such as the quick start of the 'workshop' for cooking training. Furthermore, this flexible development of products and services has been realised through participants' access to an unreserved and widely accessible communicative space and collaboration processes, and this openness should be read by the public corporation as 'publicness'.

In the case of firewood, I can imagine a very similar explanation. If the inhabitants and local authority staff had not shared their values on sustainability relating to this project, and if they had not established and maintained their communicative space, they would not have received and responded so well to my re-estimation of fuel expenditures and re-proposal of utilisation of firewood. So, in order to evaluate the collaborative process among stakeholders, it is needed to have a timeline which is not predetermined, but rather a meaningful retrospective timeline possibly involving previously latently opposed extended stakeholders if they are to share their values with each other.

15.3 For Adaptive Governance

This chapter, based on the concerns of action research, has described the process of creating a communicative space and processes in and for collaboration among stakeholders (including the researcher) for the development of a public project with the goal of realising a sustainable local community overcoming long-term severe depopulation and aging. The data was based on my own action research in a marginal local community in Japan beginning in 2017 in the context of a nation-wide revitalisation policy. I now conclude that it must be paid special attention to to the three issues for action research method 'workshop' indicated in previous research: (1) the purpose and 'the starting point' setting; (2) the positioning of the researcher within the hegemonic structures; and (3) the timing or reference points for reflection on the process.

First, with reference to 'the starting point', although the bureaucrats and analysts of public policy tend to require and urge the sense of crisis and ownership onto inhabitants in consideration of the interminable fiscal difficulties, the government side must consider and give way to the inhabitants before demanding their participation in public affairs. An initial concession by the government should evoke a reaction from the inhabitants and set off a series of mutual consideration and concession, ultimately leading to the development of collaboration between them.

Secondly, it must be admitted that those actions and counteractions arise from within hegemonic structures or asymmetrical power balances between the government and the local participants. At the same time, the researcher must also recognise their superior position within these multilayered hegemonic structures. Besides, as researchers intervene in structures, they still tend to follow the deep-rooted principle of 'putting the last first' despite valid criticisms. It cannot be ignored that this

principle definitely has the potential to provoke secondary and tertiary exclusion (after the conclusion of the project) and subsequent oppression in the local community. So, for the purpose of creating communicative spaces and collaborative processes among all of the stakeholders, it is needed to adopt a different principle, for example, one of 'putting no one behind'.

Finally, the collaborative process tends to take much more time and lack the so-called 'efficiency' of a top-down approach in the short span, especially when following the principle of 'putting no one behind'. However, to the contrary, if the stakeholders are able to create a communicative space without excluding anyone because of his or her 'inefficiency' or 'uncooperative' ideas and propositions, and in accordance with the change in nationwide policy and the unexpected success, they can become active agents in amending the project plan and involve more extended stakeholders. In other words, my action research shows that stakeholders can reach the 'adaptive' (Miyauchi 2018) stage of collaboration through redundant processes in correspondence with unforeseen external change.

As mentioned in the introduction, these augmented complexities are the target of action research, and this chapter has shed light on the process of adaptation towards sustainable communication and collaboration among stakeholders. Certainly, the marginal local community cannot fully escape the depopulation phenomenon, but these stakeholders surely discovered their own 'community,' newly defined by, through, and because of their collaborative project.

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Empathy-Based Assistance and Its Transformative Role in the Adaptive and Recursive Pathways of Collaborative Governance

16

Naoyuki Mikami

Abstract

A considerable number of studies in collaborative and adaptive governance have emphasized the significance of leadership, but little is known about what kinds of leadership fit well with adaptive co-management of social-ecological systems when cultural and institutional contexts are taken into account. The chapter addresses this question based on the case study of an external coordinator engaging in a rural community in southern Hokkaido, Japan, where people are striving for the conservation of a scenic lake. In reference to the adaptive cycle framework of the transformation of social-ecological systems, the case study demonstrates two distinct aspects of participation in collaborative governance, namely, 'empathy-based' and 'target-and-goal-oriented.' Specifically, the former plays a significant role in the phases of *release* and *reorganization* by prompting narrative-based co-creation among actors. The evaluation of assistants' performance is generally inclined to concentrate on the realization of defined, short-term goals, whereas empathy-based engagement is more inconspicuous and difficult to grasp with conventional evaluation schemes. In fact, empathy-based engagement provides an essential foundation for target-and-goal-oriented intervention – which appears in the foreground and attracts our attention more than empathy-based engagement. It is thus important to mobilize resources that provide empathy-based interventions that can prompt narrative-based co-creation among actors, precisely at those stages where conserved institutions need disruption and challenge.

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16.1 Introduction

In the scholarship of adaptive governance, it has been argued that polycentric institutional arrangements and the diversity of response options, which help secure redundancy, are essential to cope with change and uncertainty and to strengthen the resilience of social-ecological systems (Folke et al. 2005). Transformability and shadow networks (Olsson et al. 2006), multilevel social learning process (Pahl-Wostl et al. 2007; Pahl-Wostl 2009), and evaluation incorporated systematically into the process (Plummer and Armitage 2007), to name a few, are some of the major prerequisites for taking advantage of such polycentricity, diversity, and redundancy, while effectively governing the processes of collaboration and consensus building among all stakeholders. Another condition to keeping such processes functioning flexibly is the presence of individuals with leadership, who can bridge among participants both inside and outside the community, can generate useful knowledge, and can orchestrate a shared vision among concerned parties (Folke et al. 2005; Olsson et al. 2006).

However, specific processes through which these conditions lead to adaptive arrangements obviously depend on cultural and institutional contexts. Based on approximately 20 case studies in local and regional environmental governance in Japan, Miyauchi (2017) argued that pluralism, including room for trial and error, is the fundamental requirement to keep a co-management process running, while remaining adaptable to change and uncertainty. This seems to correspond with the widespread emphasis of polycentricity, diversity, and redundancy in the literature of adaptive governance. He pointed out, on the other hand, "Flexible processes are hard to manage, and flexibility itself entails the risk of failing to deal with the situation properly and leading things in the wrong direction," (Miyauchi 2017: 22) suggesting that common goals, recurring evaluation, and learning are three staple "instruments" that make it possible to steer co-management processes, while securing pluralism at the same time. It is worthwhile to note that the establishment of common goals was on the top of the list here, for it has not been so frequently emphasized as evaluation or learning in discussing major conditions of adaptive governance. Miyauchi went on to argue that common goals should be provisional and flexible, being something temporarily agreeable among people involved at the time and always to be updated.

Although the reason why goal setting should be underlined has not been thoroughly explored, it is safe to assume that this conclusion reflects findings about Japanese contexts from the extensive case studies. In many Japanese rural areas, collaborative environmental governance among local actors can sometimes be quite challenging because the government and local authorities and limited stakeholders with vested interests are often influential in framing issues and setting the agenda. In

this sense, tentativeness and flexibility in goal setting, which will secure room for pluralistic values to coexist, should be prioritized in discussing prerequisites for adaptive co-management in Japan. Miyauchi further highlighted, as the fifth pillar of adaptive governance, the role of individuals who act as intermediaries among stakeholders and provide assistance for collaboration. This again is comparable to the emphasis on leadership or bridging roles in previous research, but their role and efficacy are still wide open as to how they can be adapted to Japanese contexts and remain flexible.

A considerable number of studies in collaborative and adaptive governance to date have emphasized the significance of leadership, but little is known about what sorts of leadership match other essentials for adaptive governance, with cultural and institutional contexts taken into account. In general, brokers coming from outside the community often play significant roles in helping goal setting, evaluation, and social learning to generate knowledge and networks for adaptive co-management. However, the kinds of assistance that they provide tend towards an imposition of dominant values as well as goals and visions derived from them, and evaluation and learning can merely reinforce these standards in a top-down manner. One pivotal question, therefore, is what kinds of assistance or leadership are well suited for flexible goal setting, so that pluralistic values are reflected, and multiplicity is assured, particularly in a paternalistic environment like Japanese rural communities.

In what follows, the chapter will first situate this question in relation to previous work in adaptive co-management of socio-ecological systems, then present a case study about the role of an external coordinator intervening in a local community for the support of collaboration among stakeholders who were involved in the conservation of a lake area in Hokkaido. Drawing upon the case study, the chapter will finally exhibit two distinct aspects of external assistance in collaborative governance, namely, 'empathy-based' and 'target-and-goal-oriented,' and demonstrate the inconspicuous but foundational character of the former.

16.2 Adaptive Cycle and the Role of Transformative Individuals

The importance of leadership or assistance in a broad sense has been regarded as one of the central factors in successful collaborative governance. In constructing the analytical framework of collaborative governance in their seminal paper, Ansell and Gash (2008) pointed out facilitative leadership as one of the critical variables that determine the success of collaboration. Facilitative leadership is considered to be essential for setting and maintaining clear ground rules, building trust, facilitating dialogue, and exploring mutual gains. Emerson et al. (2012) also started their list of collaborative governance drivers with leadership, which was followed by consequential incentives, interdependence, and uncertainty. Likewise, the literature on adaptive governance, since its inception, has ranked leadership as an important element in the governance of social-ecological systems (Dietz et al. 2003; Folke et al. 2005).

Fig. 16.1 The adaptive cycle
(Source: Westley et al. 2013;
Holling 1986)
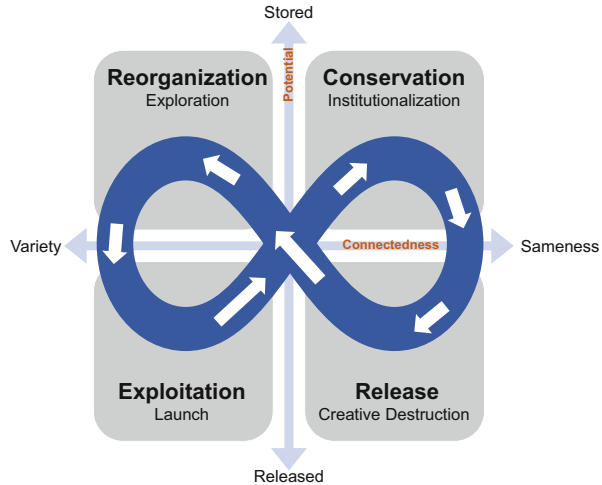
In discussing the role of individuals with leadership in the adaptive co-management of process, it is helpful to have a certain perspective about how an adaptive process develops, so that we can locate their performance in context. A reliable reference in this regard can be found in the adaptive cycle framework of resilient social systems (Westley et al. 2013), which was adapted from pioneering research on the adaptive cycle of ecosystem (Hollings 1986). The idea of the framework is to describe a process of transformation using an infinity loop driven by two factors: the degree to which the system is homogenous (sameness) or heterogeneous (variety), and the degree to which potential in the system is stored or released. These drivers constitute two coordinate axes that shape four phases of transformation and innovation of socio-ecological systems: *release*, *reorganization*, *exploitation*, and *conservation* (Fig. 16.1).

Release, or creative destruction, is a period when old ideas and routines are disrupted by internal or external disturbance(s) in a system, followed by *reorganization*, or exploration, for new ideas when key individuals play a role in bringing organizations together to create common interpretations, visions, and goals that provide a novel focal point for collective action. In this stage, there emerge new organizational forms and linkages between them, which provide transformative individuals with opportunities to broker partnerships and connect diverse ideas and resources strategically. After a variety of possibilities have been explored, the process moves on to the *exploitation* phase, or launch, when different ideas or options are reconfigured into a few viable alternatives, and new kinds of social, ecological, and other forms of capital are invested to support them. In the subsequent stage of *conservation*, or institutionalization, resources become highly committed to and embedded in selected solutions in an effort to establish the innovative changes that have been launched, with room for multiplicity and pluralism rapidly narrowing.

Based on this framework, Westley et al. further discuss the role of supporting and mediating individuals in different phases of this recursive pathway. In doing so, they

adopted the notion of institutional entrepreneurship instead of leadership on the ground that it is networks of individuals, rather than a single outstanding figure, that contribute to the navigation of transformation, and institutional entrepreneurship can better describe the disaggregated and diffuse nature of individual agencies in play. They highlighted three distinct phases with different opportunity contexts while identifying the strategies and skills that institutional entrepreneurs (IEs) apply in each of them (Westley et al. 2013: 6–10), including:

(1) *Conservation* to *release*: In the face of established institutional structures that have become resistant to change and novelty, IEs try to disrupt and challenge existing institutions to acquire room for innovation. Using cultural skills such as visioning, marketing, framing, motivating, and defining, IEs in this phase encourage stakeholder participation for sensemaking. (2) *Release* to *reorganization* to *exploitation*: IEs encourage the proliferation of ideas and the recombination of resources in novel forms and work on resource mobilization through leveraging and brokering. Skills employed at this stage are mostly ones related to leveraging and brokering, like identifying windows of opportunity, building network and partnership, and connecting ideas and resources. (3) *Exploitation* to *conservation*: This is the phase when economic, social, and ecological resources are leveraged to support best ideas constructed through the preceding stages and to integrate them into the existing institutional context. IEs in this step of the recursive pathway mainly exercise political-interactional skills such as incentivizing, coalition forming, bargaining, mobilizing, and leveraging resources.

Incidentally, this formulation may well be interpreted in the similar vein as the steps of transition discussed since the early stages of theoretical development of adaptive governance. It has been argued that the transformation of socio-ecological systems consists of two phases, a preparation phase and a transition phase, with a window of opportunity linking them in between (Olsson et al. 2006). The preparation and transition phases roughly correspond to '*conservation* to *release*' and '*exploitation* to *conservation*,' respectively, whereas the second phase of "*release* to *reorganization* to *exploitation*" represents a window of opportunity, which stimulates the emergence of networks and promotes new forms of governance (Folke et al. 2005). These earlier studies did not explicitly specify the sorts of leadership instrumental in each of the three stages, although they stressed the importance of leadership throughout the entire process in general terms.

In the Japanese context discussed above, it seems that "*conservation* to *release*" as well as "*release* to *reorganization* to *exploitation*" are particularly important with regard to leadership or institutional entrepreneurship assisting collaboration; these phases require more room for innovation and flexible resource mobilization to prepare promising options that can be the target of investment in the subsequent stages of institutionalization. Based on a case study about an external coordinator's intervention in a community in Hokkaido, the following sections will explore how an intermediary actor can exercise leadership, or institutional entrepreneurship, while maintaining flexibility and redundancy for adaptive co-management.

16.3   Case: Adaptive Assistance of Collaborative Governance in a Local Community

16.3.1 Rural Community Supporters and Collaborative Environmental Governance

Over the past couple of decades, Japan has implemented policies to introduce human resources for the support of rural development, and "From subsidies (*hojokin* 補助 金) to subsidiary agents (*hojo-nin* 補助人)" is a slogan that symbolizes this trend (Odagiri 2014: 135–74; Zushi 2014). It is a reaction to the situation where existing mechanisms of human support in rural areas weakened mainly due to the shrinking and aging population, and the focus of necessary support has clearly shifted from the introduction of new facilities or technologies to the cultivation of collaboration among actors in order to effectively maintain and utilize existing resources. The Chuetsu Earthquake in 2004, which caused severe damage in parts of Niigata Prefecture, triggered the introduction of such human resources into rural areas, and similar human resources have played a significant role in the reconstruction of worst-hit areas of the Great East Japan Earthquake in 2011 as well (Zushi and Nishikido 2016).

   In the field of environmental policy, there has been a program called Environmental Partnership Office (EPO), implemented since 2004. The program is designed so that the Ministry of the Environment (MOE) entrusts to civil society organizations in each of eight districts across Japan to assist key local actors in collaboratively tackling challenges in environmental issues. The staff members of each district EPO engage with local communities as external resource persons to bridge different people and their knowledge for the purpose of promoting collaborative environmental governance; hence, the program can be regarded in a way as the environmental policy version of the introduction of assistants. The rest of this section describes the case of an EPO staff member and their colleagues who worked for several years on the assistance of collaboration among stakeholders involved in the conservation of Onuma Lake, in the southwest of Hokkaido.[1]

16.3.2 Lake Onuma and Its Water Pollution

Onuma is located in Nanae Town in the middle of Oshima Peninsula, in the southwest of Hokkaido. It is a naturally dammed lake formed by the past eruptions of a nearby volcano, Hokkaido Komagatake, blocking the flow of a river and creating more than 120 small islands (Fig. 16.2). The complex terrain created by volcanic activity and the landscape characterized by beech (*Fagus crenata* Blume) forests have long attracted visitors. Toward the end of the nineteenth century, when

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[1]A major part of the case study and discussion derived from it is adapted from the author's contribution to a related book in Japanese (Mikami 2017).

Fig. 16.2   Lake Onuma and Mt. Hokkaido Komagatake in late winter

Japan had just started its modern nation building, there were already a few Japanese-style hotels targeted mainly at foreign travelers, with boat tours around the small islands fascinating them. After the railway was opened at the beginning of the twentieth century, the prefectural government launched a plan to develop the area as a prefectural natural park, and it became a quasi-national park[2] in 1958 under the new national park system revised after World War II, attracting a lot of tourists as one of most picturesque sights in Southern Hokkaido.

However, the scenic spot has faced a decrease in the number of tourists after the collapse of the bubble economy in the 1990s, with the number of tourists visiting the town declining since 1991. In the background, water quality deterioration of the lake has been a major issue since the 1980s; eutrophication has caused *aoko*, the overgrowth of cyanobacteria. According to ongoing water quality inspections by the authorities, water quality has almost always exceeded safe environmental standards since 1980. People in the tourism and fishing industries as well as the authorities have long been concerned about the pollution.

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[2] A quasi-national park is the official translation of *kokutei-koen* (国定公園), which the Minister of the Environment designates as a prominent natural landscape comparable to those found in national parks. Prefectural governments are responsible for the administrative management of quasi-national parks whereas the MOE manages national parks.

Although it is not easy to determine the cause of eutrophication in closed waters, a study suggested that, in the total pollutants flowing into Onuma from its catchment area, about 50% of nitrogen and 45% of phosphorus were derived from livestock, and that as much as about 80% of both nitrogen and phosphorus were estimated as agricultural-related loads (Tanaka 2005). Located in Japan's most important agricultural region, Hokkaido, Nanae Town boasts a robust livestock industry along with neighboring towns and cities; in particular, beef cattle production around Onuma has expanded remarkably. For instance, a major livestock corporation operating in the area, has increased the number of beef cattle tenfold to 14,000 over the last three decades.

The environmental impact from livestock farming is a widespread issue throughout the country. Due to the increasing scale of the industry and labor shortage in it, it has become more and more difficult to utilize manure as compost, and water pollution and malodor caused by livestock waste have spread in many places. In 1999, a national law was enacted for the purpose of promoting proper management and disposal of domestic animal excrement. In Onuma, measures have been taken to prevent the outflow of livestock wastewater and to promote the reduction and utilization of livestock waste to farmland. The local community tried to remove the nutrient salt by creating retention and retarding basins and planting reeds along major streams flowing into Onuma, with some positive effects having been obtained. However, the situation has long been far from total restoration of water quality, and there has been distrust and tension between the parties concerned, including people in the fisheries, livestock farming, and tourism industries, over causes of and effective solutions to the pollution.

16.3.3 Listening to Key Actors and Identifying the Problem

In response to this situation, a staff member of the EPO Hokkaido set about playing a coordinating role among the key actors of Onuma, and it represents an example of transformative agency in adaptive environmental governance. The intervention was carried out as a part of EPO Hokkaido's project to develop examples of good practice in "local collaboration for a sustainable society." In the project, the staff members of EPO Hokkaido were sent to a few sites picked up from across Hokkaido, where people were facing challenges in collaborative environmental governance, and Onuma was chosen as one of these sites.

The staff member started her activity as coordinator of the EPO project in Onuma in the spring of 2009 and, at first, listened intensively to key local actors such as administrative officials, fishers, dairy farmers, nature guides, and researchers who have tackled the water quality problem in Onuma. In the first couple of months, she interviewed about ten people and was overwhelmed by "a confrontational mood that was hard to ameliorate because the people inside were really serious about the

regeneration of Onuma and were against each other."[3] She continued interviews with stakeholders to grasp the factors underlying the conflict over the water pollution and sorted out the causes of pollution such as "decline in filtration function by forest," "sediment influx," "domestic wastewater," "livestock manure," "pond smelts," and "motorboats" and linked these factors with organizations and persons directly related to them. As a result, it became obvious that most stakeholders, in some way or other, were responsible for water pollution as well as involved in efforts to improve it. She also noticed that the parties concerned did not sufficiently understand what others were doing; for example, local livestock industry members were more likely to be regarded as a major factor of water pollution, but other stakeholders do not necessarily understand the mitigation efforts taken by livestock farmers, and vice versa. It gradually became clear that a major problem underlying the water-pollution problem was insufficient engagement, dialogue, and mutual understanding among the concerned parties.

16.3.4 Ramsar Convention Introduced as Means

At the same time, the coordinator came to think it quite challenging to promote dialogue only inside the community, where major stakeholders had fallen into a state of mutual distrust, and she thought it effective to introduce a trigger from the outside world. After a few months of searching for a potential source of external stimulus, she came up with the idea that the registration to the Ramsar Convention might be a means for prompting constructive dialogue. The Convention is an intergovernmental treaty for conserving and promoting wise uses of wetlands and their resources by registering important wetlands based on a set of criteria in terms of the uniqueness of wetland types or biodiversity; as of October 2018, there are 52 registered wetlands in Japan. One day, the coordinator spoke to an expert whom she had known well, and she asked him for advice whether there was any possibility of registering Onuma as a Ramsar site. The expert, known as an authority in wetland research and nature conservation, was serving as chair of an MOE committee to recommend the Ramsar Convention registration candidate sites in Japan. He said that Onuma could be a potential Ramsar site and advised her to be ready for future opportunities by gathering and organizing supporting materials that were to be required in the official review process for registration.

Apart from this local move, the National Biodiversity Strategy formulated by the Japanese government in 2010 specified the target of registering six new wetlands in the country by the time of the COP 11 (the Eleventh Meeting of the Conference of the Parties) of the Ramsar Convention in 2012. Based on this target, the MOE began work on registering one site in Hokkaido, and after consultation with the expert committee, in September 2010, the MOE added Onuma to the list of national

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[3]The coordinator's comments in this chapter are quoted from the author's interviews conducted four times in Sapporo from April 2014 to July 2016.

candidate sites for Ramsar wetlands. While there is no clear evidence that the conversation between the expert and the coordinator in 2009 had any concrete impact on the MOE's decision, at the same time, it might well be assumed that the coordinator's idea of utilizing the Ramsar Convention as a means to promote constructive dialogue in Onuma was a contributing factor toward realizing the nomination.

Internationally, registration under the Ramsar Convention is possible if any of nine key criteria is met. Onuma was listed on the MOE's list of potential sites because of its unique landscape with the small islands in the lake and surrounding beech forest. In addition to meeting the international criteria, there are two more requirements for registration within Japan; that is, the guarantee of conservation by domestic legislation and explicit approval by the host community. In the case of Onuma, which is a quasi-national park, conservation status is already legally secured; thus, it was crucial whether the people in Nanae Town would agree to the plan. After the MOE policy to add Onuma as one of the Japanese candidate sites for Ramsar registration at the Ramsar COP 11 in 2012 became clear, the EPO coordinator then assisted the MOE and town officials as well as other key actors with the local consensus building process, which advanced fairly smoothly, and, in August 2011, the mayor of the town, on behalf of the residents, officially informed the MOE of the local wish to register Onuma under the Ramsar Convention.

In parallel with this process, the coordinator continued to visit and listen to key local actors. At that time, she traveled for a few hours from Sapporo, the prefectural capital where the EPO head office is based, to Onuma once or twice a month, repeatedly visiting one of the leaders of local dairy farmers, and she was gradually accepted by him and could talk about the significance of the Ramsar registration. At the same time, she and her colleagues also helped local stakeholders design the organizational framework for conservation after the registration. Rather than building a new facility such as a visitor center, the parties involved sought to launch a forum where existing actors in the area could participate and discuss issues regarding the conservation and wise uses of Onuma. It was quite difficult to reach consensus, particularly about who should be the regular members of this new forum, but with the advice and assistance of the EPO coordinator and her colleagues, they finally reached an effective conclusion. In the spring of 2012, local citizens, together with local authorities, set up the Onuma Ramsar Council, which was composed of twelve representatives from different local stakeholder groups such as tourism, fisheries, nature conservation, and neighborhood associations.

16.3.5 Ramsar Registration and Its Aftermath

The registration of Onuma under the Ramsar Convention was officially decided at the COP11 held in Romania in July 2012, and, in the following month, a commemorative ceremony was held in the town. A nature guide who runs a small hotel on the lakeside was elected as chair of the Onuma Ramsar Council. Now that Onuma was registered under the convention, the opportunity to mobilize outside resources, such

Fig. 16.3 An observation tour on Lake Onuma

as grants for environmental conservation and education, greatly expanded. The Ramsar Council embarked on new projects with the support of charity funds, including the publication of a nature observation guidebook of the area, an environmental learning program for schoolchildren, and exchange programs with other registered wetlands (Fig. 16.3). These projects clearly took advantage of the chair's expertise as a nature guide based on his experience over more than a couple of decades.

At the same time, stakeholder dialogue was still far from smooth or constructive, with their disagreement over the causes of water pollution persisting. In the council meetings, arguments often occurred, and the chair often had to personally take the brunt of criticism such that he finally found the situation unbearable and stepped down after about a year and a half in office. For some members of the local community, there was an impression that the move toward the registration was a bit too sudden in the first place, although the general attitude of the town was quite positive about the registration itself. The Ramsar Convention did not necessarily turn out as an effective "means" for engendering constructive dialogue in the community.

In this situation, the coordinator once again started to engage in Onuma, where a newly elected chair was trying to reconstruct the council. She started to visit key actors and listened to them as she did when she first began to engage with the community 5 years ago without any specific short-term goals or predetermined outcomes. She visited and talked to the key actors in and around the Ramsar Council,

sometimes listening to and discussing with them for a few hours about what lay underneath the arguments in the council meetings and what they thought about the future of the community. The coordinators' involvement in Onuma, from the beginning, was not predicated on the goal of registration under the Ramsar Convention, but rather on the understanding of local issues by engaging with key actors, including fishers and farmers. Such an approach was highly appreciated by local stakeholders, and later in the process of the Ramsar registration, as some key officials of local authority and the MOE noted, she provided a "buffer" between local authorities and people in the community, "helping people understand the significance of the Ramsar registration."

With the assistance of the coordinator and her colleagues, the new chair started to take the initiative in involving women and young people, who had rarely participated in the council or in past discussions on the conservation of Onuma. The council launched new projects such as the development of restaurant menus using local agricultural products and the training of younger tour guides. The council also became a member of the official conference for the conservation of Onuma, which had been composed exclusively of public bodies and industry stakeholders. On behalf of the council, the chair participated in the discussions on the revision of the town's Onuma Conservation Plan and succeeded in adding a new clause on the promotion of community engagement, partnership, and learning, which the council are trying to advocate using the Ramsar Convention. Regarding the problem of eutrophication of the lake, environmental standards for chemical oxygen demand (COD) was achieved for two consecutive years in 2011 and 2012 although this situation returned to one of COD impairment in 2013, and there has not been dramatic improvement since. Nonetheless, the Ramsar registration and the activities of the council certainly have been creating an atmosphere of collaboration with the new moves emerging.

16.4 Analysis and Discussion: Empathy-Based Assistance of Collaborative Governance

Looking back on the EPO coordinator's engagement in Onuma, the following several stages can be observed in terms of the adaptive and recursive pathways of collaborative governance referred to in Sect. 16.2. In the first stage, which can be regarded as a *conservation* to *release* phase, she was sent to Onuma as part of EPO Hokkaido's project on "local collaboration for a sustainable society," and she came to deeply understand that there was a chronic conflict among parties concerned over the causes of water pollution, thinking about how it was possible to help promote collaborative governance. She started her engagement with the community by visiting and listening to local key actors involved in the issue and tried to untangle it. She found out that one of the major challenges was the absence of a forum where local people could trust that they had continuous dialogue on the issue.

The next stage can be thought of as a r*elease* to *reorganization* to *exploitation* phase when the coordinator found it crucial to introduce a stimulus from the outside

of the community to break the deadlock. After having searched for some time, she came up with the Ramsar Convention as a "means" for promoting collaboration and dialogue among conflicting stakeholders. She communicated this idea to an external expert who was influential in selecting candidate Ramsar sites in Japan. In this phase, the coordinator was connecting ideas and resources and tried to identify a window of opportunity which stimulates the transformation of governance.

The idea of Ramsar registration started to move ahead after a while, seemingly, as a result of the intermediary work of the expert. This represented the opening of a window of opportunity, leading to the third stage of *exploitation* to *conservation*, generally when selected ideas are implemented and integrated into existing institutional settings. In this phase, the coordinator and her colleagues worked to mobilize resources to realize the registration and help the local community set up the Ramsar Council.

The registration of Onuma under the Ramsar Convention was a transformation of governance in that key actors sat at the new table of the Ramsar Council in service to the environmental restoration of Onuma, but dialogue among them was less than smooth and fruitful at the beginning. The fact that the coordinator then tried to challenge the situation by having direct dialogue with key actors to break the deadlock demonstrates that adaptive transformation went into another cycle and looped back to the first phase: *conservation* to *release*. Positive moves under the new chair of the council might be interpreted as *reorganization* and *exploitation,* which led to the amendment of the conservation plan of Onuma as another institutionalization.

Getting back to the point raised earlier in Sect. 16.2, let us now consider what is essential for assistants' roles played in the phases of *conservation* to *release* and *release* to *reorganization* to *exploitation.* A glance at past works in Japanese environmental sociology, which most of the editors and contributors of this volume specialize in, will probably provide useful perspectives to discuss this question, for a not inconsiderable amount of the literature has discussed how researchers as external resource persons are able to engage with communities in order to assist collaborative environmental governance. To put it simply, previous research in this regard can be summarized in two approaches. The first is to deepen understanding of and empathy with local people without judging their activities from external values, and the second is to comprehend an overall picture of the core issues in the community and thence to help launch concrete projects that address the issues, often subsidized with outside grants and having clear, short-term targets.

In theory, we can distinguish these two approaches by naming the former 'empathy-based' engagement,[4] and the latter 'target-and-goal-oriented' one, while these are often intermingled with each other in the real-world settings. For example, some environmental sociologists demonstrate both of them simultaneously by

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[4]The word 'empathy-based' is meant as a working equivalence to the idea of '*yorisoi-gata* 寄りそい型' in Japanese, while 'target-and-goal-oriented' more directly corresponds to '*mokuhyo-shiko* 目標志向,' both of which the author originally developed in Mikami (2017).

settling in local communities as 'residential researchers' (Sato et al. 2018), taking full advantage of their professional skills to listen empathetically to local people while assisting in promoting collaboration among key actors (Chino 2009; Kikuchi 2008; Sato 2008). Others start from the empathetic aspect and gradually expand their activities with strategic targets such as 'regional revitalization' in the medium or long terms (Suzuki 2014).

Although the distinction between empathy-based and target-and-goal-oriented engagement might be less than explicit, it can nevertheless serve as a framework for discussing the assistance of collaborative governance in general as well as environmental sociologists' engagement with practice; that is to say, there can be two types of assistance of collaborative governance: empathy-based and target-and-goal-oriented. In the reconstruction process from the Chuetsu Earthquake in 2004, it was found that plenty of 'incremental assistance,' by sharing time and experience with anxious residents to deeply understand their needs, was indispensable before becoming ready to start 'multiplication assistance,' which often involved subsidized projects from outside the community (Inagaki et al. 2014). 'Incremental assistance' can be said to correspond to the empathy-based and 'multiplication assistance' to the target-and-goal-oriented assistance, respectively.

Apart from collaborative local governance, research and practice in social work also suggest the potential of an empathy-based approach in which welfare specialists dare to show an 'attitude of ignorance,' listening to their clients as a way to break away from the fixed framework of what the "problems" are (Arai 2014). Instead of providing professional analysis or intervention, what specialists are supposed to do here, particularly at an early stage of their support, is to stay with clients and listen empathetically to what they say, waiting for 'alternative narratives' to emerge. This narrative approach to social support suggests the significance of a kind of empathy-based approach as a crucial and underlying kind of support.

The importance of narrative cannot be overemphasized when discussing the nature of empathy-based support. Exploring the possibility of support without active interventions, Arai (2014) emphasizes the importance of listening to clients' little voices and renouncing suppressive frameworks that experts tend to impose on them, and this approach resonates with the emphasis on listening to people in environmental sociologists' engagement with local collaborative governance. What experts or external supporters are doing here can be better grasped using the notion of knowledge 'co-creation' (Mauser et al. 2013) rather than 'support' or 'assistance' in that they suspend their expert ways of thinking, listen carefully to what clients, residents, or stakeholders say, and try to co-design and -produce ways forward based upon their narratives. It is safe to say that narrative-based co-creation is an integral part of empathy-based engagement.

The question here is in what circumstances such narrative-based co-creation or empathy-based engagement is particularly helpful and when it is supposed to make way for more target-and-goal-oriented forms of engagement. To discuss this point, let us revisit the case of Onuma in terms of empathy-based and target-and-goal-oriented engagement. In the first phase of the EPO coordinator's intervention, *conservation* to *release*, it is obvious that empathy-based engagement was

predominant as she visited and listened to local people repeatedly without introducing or imposing any predefined targets. It was after this process of narrative-based co-creation that she finally put together the entire picture of issues regarding water pollution and found out that one of the major challenges was the absence of a table for dialogue. The next phase of r*elease* to *reorganization* to *exploitation* can be characterized as the mixture of empathy-based and target-and-goal-oriented approaches. The coordinator was still open about short-term targets and searching for a stimulus that would prompt key actors to launch a table for discussion, finally finding out the Ramsar Convention as a solution. After a window of opportunity opened in the next phase of *exploitation* to *conservation* – i.e., the promotion of Ramsar registration – the role of coordinator and her colleagues shifted toward more target-and-goal-oriented engagement, concentrating on the short-term goal of successful registration. However, after the Ramsar registration was realized, the situation came back to the original phase of *conservation* to *release*, when the coordinator applied empathy-based approaches again to help find a way for the Ramsar Council to get out of deadlock.[5]

According to the case study, empathy-based engagement involves things like visiting key actors in the community, spending time together, and listening carefully to their narratives, although it is not necessarily possible to formulate its components in a systematic way. The coordinator visited some of the key actors' workplaces and listened empathetically to them sometimes for several hours, and she says she participated in events that other local actors organized and spent time together and gradually develop a trustful relationship with them. It can be regarded as a very inefficient approach in one sense, particularly if we look at things only in terms of the target-and-goal-oriented perspective, where it is paramount to achieve a predetermined goal in a limited amount of time.

Looking back at the processes of her intervention in and engagement with Onuma, the coordinator clearly explained her intention why she started with what we call empathy-based support. She said, "In order for an outsider to be involved in a community, it is necessary to carefully identify key local actors and understand their mutual relationships." This was her firm belief before she had started to engage in Onuma, but she said that her experience in the stricken area of the Great East Japan Earthquake had made her belief stronger. She visited an affected area in Miyagi Prefecture as a volunteer every month from May 2011 to the beginning of 2013, and participated in the earthquake disaster reconstruction, while she worked on Onuma as a staff member of EPO Hokkaido. What particularly made an unfavorable

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[5]The EPOs' staff themselves have conceptualized their methodology of intermediary support as 'banso shien 伴走支援', i.e., accompanying support, in which "supporters think together with local clients through trial and error and prompt them to think and act spontaneously, in order to promote transformations for the attainment of goals by adhering to the process" (Mizobuchi 2018, p. 30). Building upon their experience in a number of EPO projects across the country, they further formulated their roles in supporting collaborative governance in local communities as 'change agents' such as catalysts, solution givers, process helpers, and resource linkers, in reference to Sato and Shimaoka (2014).

impression on her was that some of the supporters who were "experienced" in post-disaster reconstruction acted so confidently that they imposed their past "successful" experiences and seemed to do more harm than good, disrupting personal relationship in the community, for example. Having observed the reality of support in the local community, "I came to think that it is a very 'risky' enterprise to engage in a local community."

From what has been discussed in this section, it follows that the empathy-based and target-and-goal-oriented phases do not link with each other in a simple, linear manner of starting from the former and shifting toward the latter if things proceed well. Let us recall the fact that, after the Ramsar registration, discussion in the newly established council was less than smooth or constructive, and the coordinator searched anew for a breakthrough with empathy-based intervention. This response may well be partly interpreted as a reflection of her experience in the Great East Japan disaster area, but more generally speaking, it demonstrates that there can be a stage where empathy-based engagement is required after target-and-goal-oriented intervention has finished its role as the adaptive cycle starts over from the *conservation* to *release* stage.

Once a window of opportunity opens up and a clear goal is established, target-and-goal-oriented engagement comes forward to mobilize and leverage political and economic resources toward the short-term target, and the outcomes of such target-and-goal-oriented assistance are often quite visible. Therefore, the evaluation of the effectiveness of assistants' performance is often inclined to concentrate only on this phase. On the contrary, empathy-based support is more inconspicuous and difficult to grasp with objective, explicit measures of evaluation, but narrative-based co-creation derived from it provides an essential foundation for target-and-goal-oriented intervention. The two forms of support are interrelated with each other, and we should particularly give notice to the empathy-based aspect of engagement as a subtle but necessary basis for target-and-goal-oriented support that usually appears in the foreground and attracts our attention. In practice, it is important to mobilize resources to provide empathy-based interventions that can prompt narrative-based co-creation, especially at the stage where elements of the conserved system need disruption and challenge.

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