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Hitoshi Nasu
Luke Nottage *Editors*

Asia-Pacific Disaster Management

Comparative and Socio-legal
Perspectives

 Springer

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Simon Butt • Hitoshi Nasu • Luke Nottage
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¹ See <http://blogs.usyd.edu.au/japaneselaw/2011/11/anniversaryconference.html> and (including the Final Program, Abstracts and Speaker bios) <http://sydney.edu.au/news/law/457.html?eventcategoryid=39&eventid=9063>.

the *Journal of Japanese Law*,² and organised a smaller follow-up seminar in Sendai on 9 February 2013.³

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This book is dedicated to over 18,000 people killed or missing as a result of Japan's catastrophic earthquake and tsunami in 2011, and to many thousands more who were injured or lost their homes or livelihoods, as well as all those affected by the consequent meltdown at the Fukushima Daiichi nuclear power plant. All proceeds from this book go to charities for disaster relief in Japan and other parts of the Asia-Pacific region.

Sydney, NSW, Australia
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 Sydney, NSW, Australia
 April 2013

Simon Butt
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² Their papers, along with several others related to Japan's 2011 disasters as well as a Preface, are published in Issue No. 34 and reproduced at: http://sydney.edu.au/law/anjel/content/anjel_research_pap.html.

³ See <http://www.law.tohoku.ac.jp/kenkyuukai/mitsui/>.

Abbreviations

'3/11'	Great East Japan (triple) disaster of 11 March 2011
AC	Alternating current
ADR	Alternative Dispute Resolution
AICF	Asbestos Injuries Compensation Fund (NSW)
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
AusAID	Australian Agency for International Development
BAKORNAS PB	Badan Koordinasi Nasional Penanggulangan Bencana (National Coordination Board for Disaster Management, Indonesia)
BORA	Bill of Rights Act 1990 (NZ)
BPK	Badan Pemeriksa Keuangan (Supreme Audit Agency, Indonesia)
BPKP	Badan Pengawasan Keuangan dan Pembangunan (Financial and Development Supervisory Board, Indonesia)
BRR	Badan Rehabilitasi dan Rekonstruksi (Rehabilitation and Reconstruction Agency, Indonesia)
BT	Great Christchurch Buildings Trust (New Zealand)
CBD	Central business district
CCDU	Christchurch Central Development Unit (New Zealand)
CCLEP	California Center for Environmental Law and Policy
CDEM	Civil Defence Emergency Management (NZ)
CERA	Canterbury Earthquake Recovery Authority (NZ)
COAG	Council of Australian Governments
CPC	Communist Party of China
CPT	Church Property Trustees (New Zealand)
CRPD	Convention on the Rights of Persons with Disabilities 2008

CSC	Convention on Supplementary Compensation 1997
dBA	A-weighted decibel
DDT	Dust Diseases Tribunal (NSW)
DMA	Disaster Management Authority (Badan Nasional Penanggulangan Bencana (BNPB))
DML	Disaster Management Law 2007 (Indonesia)
DPA	Disabled Persons Assembly
DPJ	Democratic Party of Japan
EQC	Earthquake Commission (NZ)
ESCAP	Economic and Social Council, Economic and Social Commission for Asia and the Pacific
EU	European Union
GAM	Gerakan Aceh Merdeka (Free Aceh Movement, Indonesia)
GDP	Gross Domestic Product
HDI	Human Development Index
HRA	Human Rights Act 1993 (NZ)
IAEA	International Atomic Energy Agency
IASC	Inter-Agency Standing Committee
ICCPR	International Covenant on Civil and Political Rights 1966
ICESCR	International Covenant on Economic, Social and Cultural Rights 1966
ICRC	International Committee of the Red Cross
IHDP	International Human Dimensions Program
ILC	International Law Commission
JAEC	Japan Atomic Energy Commission
JAPCO	Japan Atomic Power Company
JNES	Japan Nuclear Energy Safety Organization
JPY	Japanese Yen
KEPCO	Kansai Electric Power Company
KETRA	Katrina Emergency Tax Relief Act 2005 (US)
KPK	Komisi Pemberantasan Korupsi (Corruption Eradication Committee, Indonesia)
Ldn	Day-night average sound level
LDP	Liberal Democratic Party (Japan)
LNG	Liquefied Natural Gas
METI	Ministry of Economy, Trade and Industry (Japan)
MEXT	Ministry of Education, Culture, Sports, Science and Technology (Japan)
MHLW	Ministry of Health, Labour and Welfare (Japan)
MoUs	Memoranda of Understanding
mSv	Millisieverts

NDA	Nuclear Damages Act (Law No. 147 of 1961, Japan)
NDRC	National Disaster Reduction Committee (China)
NEDO	New Energy and Industrial Technology Development Organization (Japan)
NGOs	Non-governmental organisations
NHAs	Neighbourhood associations
NHK	Nippon Hoso Kyokai (Japan Broadcasting Corporation)
NICNAS	National Industrial Chemicals Notification and Assessment Scheme (Australia)
NISA	Nuclear and Industrial Safety Agency (Japan)
NPOs	Non-profit organisations
NRC	Nuclear Regulation Commission (US)
NSC	Nuclear Safety Commission (Japan)
NSW	New South Wales
NVNAD	Nippon Volunteer Network Active in Disaster
NZ	New Zealand
OECD	Organisation for Economic Co-operation and Development
OIC	Order in Council
PERD	Post-earthquake related deaths
PLA	People's Liberation Army (China)
PWA	Public Works Act 1981 (NZ)
RDC	Reconstruction Design Council (Japan)
RDMA _s	Regional Disaster Management Authorities (NZ)
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation 2006 (EU)
RMA	Resource Management Act 1991 (NZ)
RPS	Regional Policy Statement 1998 Canterbury (NZ)
SARS	Severe acute respiratory syndrome
Satlak PB	Satuan Pelaksana Penanggulangan Bencana (Provincial Coordinating Boards for Disaster Management, Indonesia)
TEPCO	Tokyo Electric Power Company
TNI	Indonesian National Armed Forces
UDHR	Universal Declaration of Human Rights
UDS	Urban Development Strategy (NZ)
UN	United Nations
UN-DESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNISDR	United Nations International Strategy for Disaster Reduction

UNOCHA

United Nations Office for the Coordination
of Humanitarian Affairs

US

United States of America

WHO

World Health Organization

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Chapter 1

Disaster Management: Socio-Legal and Asia-Pacific Perspectives

Luke Nottage, Hitoshi Nasu, and Simon Butt

1.1 Disasters

A disaster can be defined as ‘a serious disruption of the functioning of society, which poses a significant, widespread threat to human life, health, property or the environment, whether arising from accident, nature or human activity, whether developing suddenly or as a result of long-term processes, but excluding armed conflict’.¹ This is the view taken by the United Nations (UN) International Strategy for Disaster Reduction (UNISDR) as well as the Red Cross and Red Crescent societies.² Examining ‘emergency risk regulation’, Alemanno suggests that a disaster comprises:

a natural or man-made [or manufactured] hazard resulting in an event of substantial extent causing significant physical damage or destruction, loss of life, or drastic change to the natural environment . . .

Typically, one speaks of crisis or disaster when a threat is perceived against the core values or self-sustaining functions of a social system, which calls for urgent remedial action under conditions of uncertainty. Yet although the category of disaster at first may seem

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¹ Verchick (2010), p. 6.

² On the UNISDR, see <http://www.unisdr.org/>.

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unproblematic it is an elastic concept centered on the following common-place three-part characterization: sudden, significant and natural.³

Aldrich elaborates the latter point further, focusing on the role of ‘social capital’ or networking that fosters community resilience in recovery from large-scale catastrophes. He considers a disaster to be ‘an event that suspends normal activities and threatens or causes severe community-wide damage’.⁴

These international organisations and commentators, along with several others,⁵ note that the lines between ‘natural’ and ‘manufactured’ risks are becoming increasingly blurred. Examples include the ‘volcanic ash crisis’ that disrupted travel throughout Europe in 2010, and Japan’s devastating earthquake, tsunami and subsequent nuclear power plant meltdown in 2011 (outlined in Table 1 in this chapter).⁶ With Hurricane Katrina in 2005, much destruction in and around New Orleans ‘occurred precisely because of human attempts to subvert or artificially control nature’ (especially by constructing levees and waterways to allow development closer to the shoreline).⁷ Other research has suggested that construction of China’s colossal Zipingpu Dam may have helped trigger the 2008 Sichuan Earthquake.⁸ Drilling for natural gas was also the likely trigger for ‘Lusi’, the massive mud volcano that has displaced 13,000 families in Indonesia.⁹ Arguably, global warming was a contributing factor to the world’s most lethal disaster over the last decade: the 2003 heat wave throughout Europe, which resulted in 30,000–50,000 fatalities.¹⁰ Appendix B briefly outlines the timing and impact of recent catastrophes in Asia-Pacific jurisdictions.¹¹

This book mainly considers relatively *sudden* disasters or catastrophes, especially those with a significant *natural* cause. However, Japan’s recent experience with the Fukushima nuclear power plant suggests how a nuclear accident might

³ Alemanno (2011), p. xxi.

⁴ Aldrich (2012b), p. 3. After helpfully reviewing the intellectual history behind notions of ‘social capital’, Aldrich defines it as ‘the resources available through bonding, bridging, and linking social networks along with the norms and information transmitted through those connections’, focusing then on ‘the ways social capital accesses or alters public policies’ (p. 33).

⁵ For example Hutter (2010), p. 8. More broadly, the Organisation for Economic Cooperation and Development (OECD) highlights the growing complexity of contemporary ‘systemic’ risks: OECD (2003), pp. 49–52.

⁶ Alemanno (2011). On the ‘3/11’ or ‘triple disasters’ in Japan, see also Japan Times (2012), Birmingham and McNeill (2012) and Claremont (2013), in this volume.

⁷ Aldrich (2012b), p. 3. For an overview of the Hurricane Katrina devastation, see also pp. 130–134.

⁸ Verchick (2010), p. 38. Sichuan was also struck by a 7.0 magnitude earthquake on 20 April 2008, killing at least 196 people and injuring more than 11,000: Chan (2013). On disaster management in China generally, see also Bath (2013), in this volume.

⁹ See Butt (2013), in this volume.

¹⁰ Farber (2011), p. 2.

¹¹ That list focuses on ‘environmental disasters’, which destroy ‘important environmental amenities or [those] in which harm to human interests is mediated by an environmental change’: Farber (2011), p. 2.

Table 1 Disaster law—an overview

		Types of law		
Disaster management	Public law	Private law	International law	
Mitigation	<p>Constitution (for example local/central government powers,^a electoral law^b)</p> <p>Urban planning law (for example coastal settlements)</p> <p>Environmental law generally^c</p> <p>Safety regulation^f (for example seawalls, earthquake-resistance^g)</p> <p>Competition law (for example on bid-rigging for public works)</p> <p>Nuclear plant licensing laws^k</p>	<p>Tort law (indirectly)</p> <p>Product liability law^h (including private enforcement mechanisms)^j</p>	<p>Customary international law (for example state responsibility), treaties^d and soft law^e</p> <p>Trade agreements, Memoranda of Understanding (MoUs)ⁱ</p>	
Relief	<p>Constitution (for example on emergency measures or military deployments,^l local versus central government powers^m)</p> <p>Tax/NGO laws^p</p> <p>Quarantine or immigration laws</p> <p>Health and welfare laws</p> <p>Nuclear accident response laws</p> <p>Criminal law (for example against looters)</p>		<p>Human rights treaties (for example on children, women)ⁿ; 1994 Convention on Nuclear Safety^o</p> <p>MoUs or possible addenda to trade agreements (allowing temporary ingress of foreign products and personnel)</p> <p>WHO Laws^d</p> <p>Convention on Early Notification of a Nuclear Accident and the Convention on Assistance in Case of a Nuclear Accident or Radiological Emergency^r</p>	

(continued)

Table 1 (continued)

Disaster management	Types of law		
	Public law	Private law	International law
		Contract and consumer law (for example terminating existing contracts), ^s property law	
		Insolvency law ^t	
Recovery	Nuclear accident compensation laws ^u	Insurance law ^v	1960 Paris Convention and 1963 Vienna Convention ^w
	Government 'guidelines', compensation funds ^x	Tort law (against private parties and sometimes the state) ^y	
	Government support for Alternative Dispute Resolution ^z	Dispute resolution systems (for example Court mediation/litigation)	Hague conventions for cross-border litigation ^{aa}
	Zoning law, community-enhancing laws ^{cc} and other administrative law (for example privacy law ^{dd})	Consumer law (for example frauds, supply of credit, mortgages ^{bb})	

^aRheuben (2011). ^bRamseyer (2012). ^cTakahashi et al. (2013) and Kabashima (2013). ^dBirnie et al. (2009). On climate change measures, see also Saul et al. (2012). ^eFor example, the 'First Responder' guidelines regarding disposal of dead bodies: Johns (2012). ^fGenerally Nottage (2010). ^gNottage (2006). ^hOsaka (2012). ⁱFor example, regarding accident information, as with consumer product safety hazards recently: see Nottage (2009b); Nottage (2011). ^jKozuka (2013). ^kPardieck (2013). ^lAmes and Koguchi-Ames (2012) and Yates and Bergin (2011). ^mSee generally Samuels (2013), pp. 151–179. ⁿOffice of the UN High Commissioner for Human Rights and UN Development Programme (2007); compare with White and Grieve (2013), in this volume and de Guttry et al. (2012). ^oSee also Cook (2013), in this volume. ^pSee for example Avenell (2012); Kawato et al. (2012); Burch (2013), in this volume. ^qConstitution of the World Health Organisation and International Health Regulations 2005. ^rCook (2013), in this volume. ^sMorita (2013). ^tSteele and Chun (2013). ^uWeitzdörfer (2013), in this volume. ^vKozuka (2012, 2013). ^wCook (2013), in this volume. ^xMorita (2013). ^yWeitzdörfer (2013), in this volume. Tort and/or criminal sanctions may even sometimes be attached to individuals helping governments in disaster management, as with six scientists recently convicted of manslaughter for failing to predict an earthquake that struck L'Aquila (Italy) in 2009: cf. McGowan (2012). ^zRheuben (2013), in this volume; see also Foote (2013). ^{aa}See http://www.hcch.net/index_en.php. ^{bb}See for example Kabashima (2013). ^{cc}Aldrich (2012a, b). ^{dd}Impacting, for example, on the retention and sharing of health records, see in Japan for example Tohoku Medical Megabank Organization (undated) and Thia (2011). On privacy law in Japan, see generally Lawson (2006). In New Zealand recently, see White and Grieve (2013), in this volume.

escalate even without any natural event such as an earthquake or resultant tsunami. Human errors caused earlier nuclear plant accidents in Chernobyl in the Ukraine in 1986, and at Pennsylvania's Three Mile Island in the US in 1979.¹² Rheuben (2013), in this volume also compares these sudden disasters with slower-onset disasters—namely diseases and environmental pollution—caused by asbestos products particularly in Australia,¹³ to explore the different degrees to which governments become actively involved in responding to widespread harm.

One key research question addressed by several contributors to this volume is whether attitudes, preparedness and responses to disasters differ significantly depending on whether the disaster is more or less 'natural'. Japan certainly did extremely well in preparing and responding to the magnitude 9.0 earthquake that struck on 11 March 2011, and quite well regarding the consequent tsunami, but performed poorly in anticipating and dealing with the related accidents at the Fukushima nuclear power plant.¹⁴ Duus notes that during the Tokugawa shogunate era (1603–1868), measures to cope with fires paved the way for similar effective techniques to cope with other natural disasters such as earthquakes. The Meiji government subsequently extended these techniques nationwide as aspects of a modern centralised state—and a new 'imagined community' on a national scale.¹⁵

There is now evidence of the growing frequency and impact of natural disasters world-wide, particularly in the Asia-Pacific region, as well as heightened perceptions or fears of some types of disaster risks. One major cause of disasters is environmental degradation.¹⁶ For example, dam construction limits silting downstream, leaving fewer protective islands ('natural levees') to protect against storm surges and causing delta lands to subside.¹⁷ Buffers against tsunami are weakened by deforestation in coastal areas, and possibly also by dying reefs. Inland deforestation results in more landslides and wildfires. Adverse impact on the environment is exacerbated by climate change, which causes the sea level to rise as well as more

¹² See, respectively, Gerstein (2008), pp. 92–125; Chiles (2002), pp. 39–57. See also Rees (1994) and Perrow (1999).

¹³ In Japan, see Nottage (2006); and more generally Miyamoto et al. (2011).

¹⁴ See generally Anderson (2011) and Yasumura et al. (2012). This is not to say that preparedness and short-term responses regarding the 2011 tsunami, which reached heights of between 3.5 to 9.3 m when it hit Japan's coastline, have not been questioned. One concern is that some 500 schoolchildren were among over 18,000 killed or still missing. More generally, several victims' groups have pursued civil claims against officials for negligently failing to initiate safe evacuations, and the police were also prompted to investigate Jin Sato, mayor of Minamisanriku (a heavily-hit town), for the potential offence of criminal negligence causing death. See Samuels (2013), pp. 3 and 44. However, the Japanese government also highlights examples of very successful preparedness and evacuations from schools: see Government of Japan Public Relations Office (2013).

¹⁵ Duus (2012), pp. 180–181.

¹⁶ Verchick (2010), pp. 29–40.

¹⁷ In the Bengal Delta, a storm surge killed 138,000 in 1991. Cyclones killed around 1,000 in the Godavari delta in 1996, and 10,000 in 1999 in a neighbouring delta in India. See further Appendix B.

volatile temperature fluctuations. These are increasingly regarded as global ‘threat multipliers’ that worsen existing vulnerabilities and instability.¹⁸ Another cause, however, is partly ‘man-made’ in a different sense: population pressures.¹⁹ More people are living closer to rivers and shorelines, with growing urbanisation and industrialisation, and this leads to more severe impact from natural disasters even in developed countries like the US.²⁰

The literature on *risk assessment*, underpinned especially by disciplines such as engineering and the natural sciences, emphasises that ‘hazards’ combine with ‘inventories’ (of people, infrastructure and the physical environment) to generate ‘vulnerability’ and consequent losses. The latter can be direct (such as deaths, injuries and damage to facilities) as well as indirect (including foregone income or growth).²¹

Recent data shows that more people were affected by natural disasters worldwide between 1990 and 2010, compared to the two prior decades pre-1990, although the number of deaths (primarily from earthquakes) continues to fluctuate without showing such a clear upward trend. The World Bank suggests that one explanation is greater exposure to hazards, as half the world’s population now lives in cities (compared to 30 % in 1950). In addition, there has been better reporting of disasters. Both factors also probably underpin growing damages estimated from disasters since the 1990s, which have risen in spurts. The most devastating events are storms, earthquakes, and then floods. Damage costs tend to be higher in wealthier countries, reflecting higher-value physical infrastructure and indirect losses.²²

However, fatalities from disasters are particularly acute in developing countries, due to less effective infrastructure, emergency response and health care. The total impact also falls disproportionately on the poor *within* states, as well as on women, children and discriminated groups. This has been evident in the developing countries devastated by the Indian Ocean (or Asian ‘Boxing Day’) tsunami in 2004, Cyclone Nargis in Burma (Myanmar) in 2008, and the higher impact on certain schools and rural villages compared to metropolitan Chengdu following the

¹⁸ Farber (2011), pp. 15–19. See also Saul et al. (2012).

¹⁹ See also generally OECD (2003), pp. 38–42.

²⁰ A major problem following Hurricane Katrina, for example, was contamination resulting from fuels, chemicals and other products stockpiled in the severely flooded urban areas: Verchick (2010), pp. 132–135.

²¹ Kunreuther and Useem (2009), pp. 3–4. Recent preliminary research, however, indicates considerable resilience across disparate countries within Asia—namely China, Burma (Myanmar) and Iran—in rebuilding families after recent natural disasters: James (2013). On earthquake risks concerning Iran’s sole nuclear reactor, see also <http://www.smh.com.au/world/quake-too-close-to-irans-reactor-for-comfort-20130412-2hqoq.html>.

²² World Bank (2010), pp. 26–30. Earthquakes are the deadliest events globally—except in Africa, where droughts kill the most people. See also the growing impact of ‘natural’ and ‘technological’ disasters outlined in OECD (2003), pp. 33–37.

2008 earthquake in Sichuan.²³ Yet similar effects on vulnerable groups are evident in developed countries too, as highlighted in the aftermath of Hurricane Katrina and a week-long heat wave in Chicago that killed over 700 residents.²⁴ In Japan, the 2011 tsunami hit the elderly and infirm particularly heavily, given that the mostly rural Tohoku area tends to have a greater aged population than the rest of the country.²⁵

Some argue that contemporary elites sometimes take advantage of high-profile shocks, such as natural disasters but also terrorist attacks and economic crises, to impose drastic free-market ‘solutions’. This general theory of ‘disaster capitalism’²⁶ appears to be overstated, but some developers and (especially local) governments do seem to have profited from the 2004 Indian Ocean tsunami by clearing out coastal villages, for example, in some parts of Sri Lanka.²⁷

More generally, over 20 years ago Beck argued presciently that we increasingly live in a ‘risk society’ characterised by a peculiarly modern belief in rationality, calculability and science.²⁸ This creates new risks—viewed as the anticipation of catastrophe—and greater awareness of other risks, while heightening feelings of uncertainty as well as highlighting persistent limits in the human capacity to control risks. Such tensions have been exacerbated as risks become increasingly global—involving new technologies with regional or world-wide reach, as well as increasing interdependence between the local and the global—and as more opportunities emerge to ‘produce’ risks for political gains.²⁹ It does appear that contemporary societies encounter novel and greater risks, but also a new way of ‘understanding’ the world.³⁰

Typically adopting a more micro-level perspective, other theories of risk (and associated disasters) increasingly emphasise *risk perception*: the psychological and emotional factors associated with risk, which render more complex what was originally considered the more ‘objective’ field of *risk assessment*. From the

²³ Verchick (2010), pp. 111–116. On the tsunami, see also Aldrich (2012a, b), pp. 91–95; Jayasuriya and McCawley (2011). Focusing on Indonesia, see Samadhi (2013), in this volume and Butt (2013), in this volume. On disasters in China, see Bath (2013), in this volume.

²⁴ Farber (2011), pp. 21–23.

²⁵ Anderson (2011). On the impact on women, see also Ito (2012). In New Zealand, see White and Grieve (2013), in this volume.

²⁶ Klein (2007).

²⁷ Verchick (2010), pp. 152–154. The aftermath of Japan’s triple disasters in 2011 may also suggest examples of ‘disaster developmentalism’. That is, there are concerns that the government is excessively prioritising larger established Japanese firms for remedial work projects, compared to smaller and more innovative firms (including foreign firms), especially regarding decontamination from the nuclear accident. See Tabuchi (2013).

²⁸ Beck (1992). The increasing awareness of the vulnerability of certain groups in disaster situations, and the human rights implications, can also be associated with a modernist worldview: see generally Tanase (2010), especially pp. 95–105.

²⁹ Beck (2009). But compare O’Malley (2008).

³⁰ Hutter (2010), pp. 4–11. See also for example Boin (2010), pp. 233–234. Bostrom and Cirkovic (2008).

1970s, decision scientists and psychologists began to demonstrate that individuals tended to be much more concerned about certain types of risks, especially those they were personally unfamiliar with or those involving new technologies. Such research has also increasingly shown that people perceive low-probability and high-consequence events very differently from experts, deploying various biases and heuristics (or rules of thumb) instead of the probabilistic assessments expected and advocated by disciplines such as economics.³¹ Five now widely-recognised phenomena are ‘availability’, ‘representativeness’, ‘confirmation bias’, ‘anchoring’ and ‘overconfidence’.³² Others include ‘hindsight bias’, the ‘conjunction fallacy’, the ‘affect heuristic’ and ‘scope neglect’.³³ Several of these, as well as other departures from economically rational behaviour, are related to people’s general intuitive tendency to react more strongly to losses than gains.³⁴

Such ‘subjective’ factors in decision-making by individuals complicate strategies for *risk management*, developed by economists and other policy analysts to reduce future losses from disasters and to facilitate recovery. Kunreuther and Useem therefore suggest various hybrid improvements for risk-management strategies, encompassing: risk forecasting, communication of risk information, the design of economic incentives, private–public partnerships, reinsurance and other financial instruments, resilience and sustainability (especially in developing

³¹ Kunreuther and Useem (2009), pp. 6–8.

³² Cleary (2009), p.70 (original emphasis):

- **Availability:** We tend to interpret any story through the lens of a superficially similar account. We recall unusual, emotionally charged events more easily and unconsciously adjust the specifics of the new case, and of our recollections, to make the two fit. This distortion often leads to our misjudging the probability of an event, as things that we can recall easily seem more likely.
- **Representativeness:** We judge the substantial similarity of events based on superficial, perhaps insignificant, resemblances. We also tend to see *patterns* in circumstances where none exist.
- **Confirmation bias:** We underpin an assumption by focusing on instances that confirm it, while ignoring those that don’t.
- **Anchoring:** We cling mentally to a number or “fact” that we have absorbed in a particular context, and employ it more generally across a presumed field, even when it is irrelevant or misleading in another context.
- **Overconfidence:** We tend to overestimate the probability of our success in actions that we plan.

³³ Yudkowsky (2008). He also outlines another bias, relevant to management of global catastrophic risks, which derives instead from the wider field of social psychology: ‘bystander apathy’, whereby larger numbers of people are *less* likely to act in emergencies.

³⁴ Kahneman (2011), especially pp. 282–286. This summarises ‘prospect theory’, premised not only on loss aversion, but also decision-making made relative to a reference point—such as one’s level of wealth, which may be subject to the ‘anchoring’ heuristic—and a principle of diminishing sensitivity to sensory dimensions as well as the evaluation of changes in wealth. According to this theory, in mixed gambles (where losses and gains are possible), loss aversion results in very conservative choices; but when faced with bad choices, comparing a sure loss to a larger but merely probable loss, diminishing sensitivity leads to risk-seeking behaviour.

countries), and building leadership for averting and responding to disasters before it is needed.³⁵ In a similar vein, noting the political tension implicit in a democratic system if economists and other public policy experts view risks differently to the general public, Kahneman also favours a compromise solution: 'Psychology should inform the design of risk policies that combine the experts' knowledge with the public's emotions and intuitions'.³⁶

1.2 Disaster Management

This volume takes a broad approach to 'disaster management', which we divide generally into:

1. Disaster mitigation (including prevention);
2. Relief (emergency and subsequent short-term responses); and
3. Recovery (longer-term post-disaster assistance, including compensation and reconstruction).³⁷

While useful for conceptual and practical purposes, these three aspects or phases are not completely independent. For example, a generous government-supported compensation scheme for a nuclear accident or liberal zoning rules in coastal areas can create incentives for nuclear plant operators not to take sufficient precautions to minimise risks of accidents, or citizens building too close to tsunami-prone coastlines. A more holistic view of disaster mitigation, relief and recovery may also help identify new possibilities for effective disaster management. For example, Leonard and Howitt urge more attention to certain recovery activities *before* a major event arises, just as policy-makers increasingly prepare in advance for relief efforts that can be implemented soon after a disaster strikes.³⁸ These *ex ante* measures could include identifying or revisiting regulations that might need to be suspended to allow rapid rebuilding, developing financial arrangements to allow better access to resources for recovery efforts, and measures to bolster neighbourhood-based leadership. Unlike disaster mitigation measures, such 'advance recovery' actions are not necessarily aimed at reducing the consequential harm from the hazard (or indeed its likelihood); instead, they aim 'to make whatever recovery *does* need to take place more efficient, rapid and effective'.³⁹

³⁵ Kunreuther and Useem (2009), pp. 13–17. On hazard information-sharing in the context of the Fukushima nuclear power plant disaster, see Aronson (2013).

³⁶ Kahneman (2011), p. 145.

³⁷ Compare also Alemanno (2011), p. xxii; Leonard and Howitt (2009), pp. 24–25; OECD (2003) and McCawley (2011).

³⁸ Leonard and Howitt (2009).

³⁹ Leonard and Howitt (2009), p. 26 (original emphasis). Another example may be a 'template' or general principles for establishing compensation funds or other relief and recovery measures: see Verchick (2010), pp. 178–182. A similar approach is urged, in decision-making more generally, by

In Chap. 2 of this volume, focusing primarily on relief and recovery in Japan, Reich examines patterns of ‘care, compensation and clean-up’ as well as how disasters can progress from ‘private’ to ‘public’, and ‘political’ issues.⁴⁰ Another key research question explored by several contributors is whether such patterns or stages vary significantly across countries. Rheuben in Chap. 5, for example, suggests that a more ‘hands-off’ approach to compensation issues may be taken by Australia and other jurisdictions that expose their government to less potential liability for allegedly not adequately preparing for or responding to disasters. Other chapters focus more on disaster mitigation and preparedness, such as Nasu on emerging risks from nanotechnology.

Generally, researchers and policy-makers are increasingly placing emphasis on such *ex ante* questions. In the US, for example, both Hurricane Katrina in 2005 and the 11 September 2001 terrorist attacks revealed that the government was alarmingly under-prepared for large-scale disasters, and that its structures remained heavily focused on *ex post* issues such as disaster relief.⁴¹

Disaster management in a broader sense has consequently become a burgeoning field in many developed countries, and more recently in parts of the developing world. Important research centres, often established after major natural disasters and increasingly interested in disaster mitigation or planning problems, are now found in the US (such as the Natural Hazards Centre at the University of Colorado, since 1976⁴²; and the Pacific Disasters Centre, affiliated with the University of Hawai‘i, since 2006),⁴³ Australia (the Centre for Disaster Studies at James Cook University, 1979),⁴⁴ Zambia (the African Centre for Disaster Studies, 2002),⁴⁵ and

Taleb (2012): given the possibility of ‘black swans’ (highly uncertain but dramatic occurrences) and other difficulties in predicting major adverse events, far more attention should be paid to mechanisms that facilitate dealing with their consequences. See also, on fostering resilience generally, Zolli and Healy (2012).

⁴⁰ Reich (1991). See also Reich (2013), in this volume.

⁴¹ Nolon and Rodriguez (2007), p. 1, adding that:

If there is an overarching philosophy of disaster mitigation and relief, it is essentially this: government ought to respond rapidly, compassionately and efficiently to minimize, and ultimately help compensate for, the injuries and other losses incurred by well-meaning citizens resulting from acts of God.

⁴² <http://www.colorado.edu/hazards/>. Collaborating with a Centre established in 2008 at the North Dakota State University: <http://www.ndsu.edu/cdsem/>.

⁴³ <http://www.pdc.org/iweb/history.jsp?subg=1> (first established in the early 1990s, after Hurricane Iriki devastated Kauai). The University has increasingly focused on tsunami research: <http://www.soc.hawaii.edu/uhtoday/research/tsunami/index.html>. See also the University of Southern California, at <http://www.tsunamiresearchcenter.com/>.

⁴⁴ <http://www.jcu.edu.au/cds/about/index.htm> (established after cyclones devastated Townsville in 1971 and Darwin in 1974.) On the latter, see Writer (2011), pp. 104–116.

⁴⁵ <http://acds.co.za/>.

India (the Jamsetji Tata Centre for Disaster Management, consolidated in 2006).⁴⁶ There are several journals dedicated to disaster studies,⁴⁷ as well as looser research networks such as the Law and Society Association's collaborative research network on the 'Jurisprudence of Disasters'.⁴⁸ Japan's catastrophes in 2011 have generated major international research conferences in Australia, the US as well as Japan.⁴⁹ International and national non-governmental organisations (NGOs) are also active in policy debates in this field.⁵⁰

In addition, nation-states increasingly have specialist agencies responsible generally for disaster management. In Australia, for example, the federal Attorney-General's Department has recently recognised that:

[M]any hazards and circumstances can give rise to the need for an emergency management response, whether it is bushfires, a terrorist attack or a pandemic. This approach is consistent with the National Security Statement 2008, which takes an all-hazards approach to national security.

In December 2009, COAG [the Council of Australian Governments] agreed to adopt a whole-of-nation resilience-based approach to disaster management, which recognises that a national, coordinated and cooperative effort is needed to enhance Australia's capacity to prepare for, withstand and recover from disasters. The National Emergency Management Committee subsequently developed the National Strategy for Disaster Resilience, which was adopted by COAG on 13 February 2011.

The purpose of the Strategy is to provide high-level guidance on disaster management to federal, state, territory and local governments, business and community leaders and the not-for-profit sector.⁵¹

⁴⁶ Partly in the wake of the 2004 Indian Ocean Tsunami: see generally <http://www.tiss.edu/TopMenuBar/academic/centres-of-schools/centres-of-school-of-habitat-studies/jamsetji-tata-centre-for-disaster-management>.

⁴⁷ See for example *Disasters* (since 1977), *International Journal of Mass Emergencies and Disasters* (since 1983), *Disaster Prevention and Management* (since 1994), *Australasian Journal of Disaster and Trauma Studies* (since 1997), and recently the *International Journal of Disaster Resilience in the Built Environment* (since 2010).

⁴⁸ Established from a seminar hosted by the headquarters for the Research Committee on the Sociology of Law, within the International Sociological Association: <http://jurisprudenceofdisasters.org/about-us/>.

⁴⁹ See Nottage (2013); as well as Cornell University conference on '3.11.12 Japan's Earthquake and Tsunami One Year Later' (http://eap.einaudi.cornell.edu/3-11-2012_conference) and the ACCEL conference on 'Climate change, catastrophic risk and disaster law' (<http://sydney.edu.au/news/law/457.html?eventid=9840>).

⁵⁰ In response to the Fukushima nuclear plant meltdown, for example, see Greenpeace (2012).

⁵¹ At <http://www.em.gov.au/AboutAGD/Ourorganisation/Pages/default.aspx>. The National Strategy can be found at <http://www.em.gov.au/Publications/Program%20publications/Pages/NationalStrategyforDisasterResilience.aspx>; and COAG (comprising leaders of federal, state and territory governments, as well as the President of the Australian Local Government Association), at <http://www.coag.gov.au/>. Eburn (2011) has urged greater leadership from the federal government. Comparing bushfire disaster management in Australia and the US, see also Burton (2013). On recent floods, particularly in Queensland, see Queensland Floods Commission of Inquiry (2012); and McGowan (2012), pointing out that damages from floods and cyclones exceeded Australian \$7.5 billion but Queensland's allocation of national funding for disaster mitigation was only Australian \$9 million. For other disasters in Australia, see generally Writer (2011).

Currently, the Attorney-General also serves as Minister for Emergency Management, and liaises with state and territory government counterparts and officials within Australia's federal system of government.⁵² The National Strategy has been developed by the Australia-New Zealand Emergency Management Committee, and centres on six principles aimed at 'consistent messaging about disaster resilience'.⁵³

- **Disasters will happen**

Natural disasters are inevitable, unpredictable and significantly impact communities and the economy.

- **Disaster resilience is your business**

Governments, businesses, not-for-profit, communities and individuals all have a role to play and to be prepared.

- **Connected communities are resilient communities**

Connected communities are ready to look after each other in times of crisis when immediate assistance may not be available.

- **Know your risk**

Every Australian should know how to prepare for any natural disaster.

- **Get ready - then act**

Reduce the effects of future disasters by knowing what to do.

- **Learn from experience**

We reduce the effects of future disasters by learning from past experiences.

As illustrated by the input into the 2011 Strategy from New Zealand, a particularly close economic and diplomatic partner,⁵⁴ Australia increasingly collaborates with other countries in making and implementing disaster management policy. The main avenue is the Australian Agency for International Development (AusAID), which almost doubled its grants for 'disaster risk reduction' in developing countries between 2009 and 2011.⁵⁵ AusAID emphasises the Asia-Pacific, and in December 2011 signed a Memorandum of Understanding with its counterpart in Japan to coordinate efforts in the region, including in the field of disaster management.⁵⁶

AusAID also established in 2008 the Australia–Indonesia Facility for Disaster Reduction, with the Indonesian government. The Facility has partnerships with the UN, the Association of South East Asian Nations (ASEAN) and the Asia Pacific Economic Cooperation (APEC) forum. All of these are more broadly engaged in

⁵² The Attorney-General is similar to a Minister of Justice found in many other Asia-Pacific jurisdictions. On the particular problems for disaster management faced by the US federal system of government, see for example Hunter (2009).

⁵³ Australian Government Attorney General's Office (2011) (emphasis in original). See also Bergin (2011).

⁵⁴ See generally Nottage (2009b).

⁵⁵ From Australian \$55 to \$111 million: AusAID (2012).

⁵⁶ Japan International Cooperation Agency (2011).

disaster management activities, along with other international bodies such as the World Bank and the World Health Organisation (WHO), as outlined in Appendix A.⁵⁷ AusAID also supports research for the UNISDR's biennial Global Assessment Report, as well as the University of New South Wales in a review of Community-Based Disaster Risk Management initiatives.⁵⁸

The Australian Strategic Policy Institute, established by the federal government in 2001, has also recently completed research into disaster management. A report published in February 2011 assessed various approaches for Australia to effectively finance disaster preparedness and recovery.⁵⁹ Another report published in December 2011 notes that Australia, Japan and the US are actively promoting disaster risk management as a key component of their Asia–Pacific relations and regional military engagement strategies.⁶⁰ Defence forces are increasingly involved in cross-border disaster relief operations and, in doing so, are also paying growing attention to longer-term recovery issues in the affected communities.

Similar government entities in other countries that are engaged in disaster management increasingly deal with their counterparts abroad, as well as international organisations (including NGOs) and researchers specialising in disaster studies. Collectively they have formed a significant 'epistemic community', not unlike those found in various areas of 'global business regulation'.⁶¹ The close links between (inter-)governmental bodies also provide a good example of contemporary 'trans-governmentalism'.⁶²

1.3 Socio-Legal Perspectives

1.3.1 *Social Sciences and the Humanities in Disaster Studies*

As an intellectual field, 'disaster studies' emerged not only from the natural sciences and applied disciplines like engineering, but also a range of social sciences—the focus of the present volume. Philosophers, for example, have long been challenged by natural disasters. Voltaire was deeply moved by the huge

⁵⁷ See AusAID (2012).

⁵⁸ AusAID (2012). Curiously, however, Australian government officials were not directly represented on the Steering Group of the OECD Futures Project on Emerging Systemic Risks—the Australian delegate was from the ANZ Bank: OECD (2003), p. 285.

⁵⁹ Mortimer et al. (2011).

⁶⁰ Yates and Bergin (2011). On the widely-reported 'Operation Tomodachi' in 2011 after Japan's triple disasters, involving primarily US military forces (numbering around 20,000) and Japanese forces (100,000—half Japan's total troop strength) but also some Australian input, see Ames and Koguchi-Ames (2012) and more broadly Samuels (2013), pp. 80–109.

⁶¹ See generally Braithwaite and Drahos (2000).

⁶² Slaughter (2001).

Lisbon earthquake and tsunami in 1755.⁶³ Williams James found a ‘moral equivalent of war’, in promoting more selfless and purposeful citizenship, in the responses of many residents and the broader community to the San Francisco earthquake of 1906. Large-scale disasters, such as the massive accidental explosion in Halifax harbour (in Canada) in 1917, also led to significant advances in the field of sociology.⁶⁴ They have also directly or indirectly influenced major works of literature, such as the account by a Nobel laureate of the impact from radiation caused by the atomic bombing of Hiroshima.⁶⁵ A rich genre of science fiction involves imagined future catastrophes, particularly those caused by new technologies, as described by Suter (2013), in this volume. Such literary works serve to frame the general public’s risk perceptions, but can also assist policy-makers in ‘scenario planning’ for disasters.⁶⁶

Disasters have also played major roles in developing more instrumentalist disciplines, such as logistics and medical science—often linked to the development of military capabilities for rapid deployment in response to emergencies.⁶⁷ More recently, especially as *ex ante* issues in disaster management attract more attention, economic analysis has become a major part of disaster research and policy-making. For example, Posner argues that catastrophic risks need to be dealt with through innovative applications of cost–benefit analysis, as well as a scientifically literate legal profession, enhanced international cooperation and a pragmatic attitude toward civil liberties.⁶⁸ In addressing ‘worst case scenarios’, Sunstein draws extensively on ‘behavioural economics’ to suggest ways in which experts might counter the heuristics and biases in risk perception and other ‘irrationalities’ in individuals’ decision-making, which have been increasingly highlighted by psychologists (as mentioned above).⁶⁹

However, such attempts to re-assert the advantages of cost–benefit analysis in disaster management are attracting growing concern. Some scholars have highlighted persistent ‘market failures’ in ecosystem services, due to ignorance, a

⁶³ Verchick (2010), pp. 1–2.

⁶⁴ Solnit (2009), pp. 49–57, 73–81.

⁶⁵ Oe (1995) (originally published in 1965, and translated into English in 1981). Following Japan’s 2011 disasters, see also, for example, Ehrlich (2013). The diffusion of e-publishing has also already resulted in a plethora of more impressionistic accounts, often freely downloadable to e-readers from websites such as Amazon.com.

⁶⁶ Verchick (2010), pp. 239–45. As Albert Einstein once remarked: ‘imagination is more important than knowledge’: Verchick (2010), p. 142.

⁶⁷ Such connections underpin the ‘militarisation’ of disaster preparedness and relief in recent years, including planning for climate change impact. See, for example, Bergin (2011) and Saul et al. (2012), pp. 220–221.

⁶⁸ Posner (2004). See also Posner (2008).

⁶⁹ Above, n 31 and ensuing text. One of his longstanding concerns is the ‘availability cascade’, whereby popular discussion of a risk becomes self-feeding and results in individuals overweighting its importance. See Sunstein (2007), and more generally Sunstein and Thaler (2008). In 2009, Sunstein was appointed head of the White House’s Office of Information and Regulatory Affairs, charged with advising US President Obama on risk regulation policy.

narrow view of economics and lack of service-based markets. More broadly, the economic analysis of catastrophes suffers from conceptual and practical problems associated with ‘monetisation’ (the attempted quantification of costs and benefits in monetary terms), setting appropriate discount rates for long-term risks in dealing with uncertainty.⁷⁰ Influenced also by insights from the environmental sciences, Verchick therefore advocates a more ‘precautionary approach’ to disaster risk management. One variant of this approach is the ‘feasibility principle’: providing the maximum level of protection that can be achieved by the available technology unless the cost of that protection would threaten the financial viability of a regulated industry. Another is ‘open-ended balancing’, where regulators ‘consider a variety of qualitative and quantitative factors without converting them into any universal currency . . . and without even assigning them relative weights’.⁷¹

Other scholars, such as Kahneman, have also recently invoked political theory to take issue with behavioural economists such as Sunstein who urge more ‘government by experts’.⁷² Even more so than Kahneman, Kahan strongly criticises Sunstein for elevating the experts of risk regulation above citizens without giving their ‘irrational’ risk perceptions sufficient credence, particularly given that such perceptions appear to be systematically linked to distinct worldviews or personal value preferences. Kahan argues that such perceptions deserve more respect in a liberal democracy that seeks to generate policy choices that are not simply dictated by the preferences of the majority of voters—let alone, decisions by unelected experts.⁷³

Another strand of empirically-informed political science, ‘social capital’ theory,⁷⁴ provides further challenges to conventional economic approaches to disaster risk management. Comparing sub-communities afflicted by the Indian Ocean Tsunami (2004), earthquakes in Tokyo (1923) and Kobe (1995), and Hurricane Katrina in New Orleans (2005), Aldrich shows that the most significant determinant of post-disaster recovery is the extent of community bonds, rather than income levels or degree of physical harm suffered.⁷⁵

⁷⁰ Verchick (2010), pp. 45–54, 205–208. See also Ackerman and Heinzerling (2004), especially pp. 117–152.

⁷¹ Verchick (2010), pp. 198–199.

⁷² Kahneman (2011).

⁷³ Kahan (2007). He also argues that Sunstein’s approach is deficient on an empirical basis, as well as normatively. Kahan’s empirical studies into perceptions of various risks, including nanotechnology, contradict Sunstein’s view that providing more information (for example via ‘objective’ experts) will result in less polarisation of views among the general public and therefore better (and more legitimate) policy choices. Instead, polarisation diminishes if the expert is readily associated with the individual’s distinct worldview. See, with further references, Nottage and Kozuka (2012), pp. 143–144.

⁷⁴ See also generally Leigh (2010).

⁷⁵ Aldrich (2012b) especially pp. 149–151. Communities enjoying higher social capital benefitted because it provided ‘informal insurance’, a means of overcoming collective action problems, and a way to enhance the ‘voice’ of survivors—reducing the probability of their leaving disaster zones. Conversely, this sometimes generated downsides for less connected or minority groups. For a general outline of the Kobe earthquake, see Aldrich (2012b) pp. 74–77.

1.3.2 *The Role of Law in Disaster Studies: The Poor Cousin?*

The discipline of law is a relative late-comer to the field of disaster studies. Yet various aspects of the legal system are obviously implicated in the approaches to disaster management taken by other social (and natural) sciences. Political science, for example, needs to take into account constitutional and administrative law principles and practices, including fundamental human rights. This corpus of domestic law is increasingly intertwined with obligations created by international law. Both can be mobilised, and increasingly are being mobilised, when preparing for and responding to disasters. Often this is a positive development, but sometimes the encroachment of the law—domestically⁷⁶ or internationally⁷⁷—can have adverse effects. For better or worse, the law also generally injects its own distinctive normative structures and values, such as institutional competence, reasonableness and due process, into the ways in which risks and other social realities are viewed and addressed.⁷⁸

Overall, Farber argues that ‘disaster law’ has emerged as a new overarching field that ‘provides a comprehensive look at how to handle risks rather than limiting itself to specific mechanisms such as compensation’, which has been a primary concern of tort and insurance law. He also points out that disaster law ‘involves public risks, which inherently affect multiple individuals and interests, rather than personal risks that can be managed purely through individual responses’. Because of these parallels, Farber argues that disaster law can benefit particularly from scholarship in environmental law, which emerged earlier (particularly in the 1970s) and which mostly ‘involves principles for determining the seriousness of risks and the extent to which society should invest in reducing those risks’.⁷⁹ Yet he suggests that environmental law ‘has the most to teach disaster law about management and prevention’, while disaster law helps to emphasise ‘issues of unequal risk exposure and . . . compensation as a supplement to risk mitigation’.⁸⁰

The legal dimensions to disaster management also implicate issues of *ex ante* regulatory design, including health and welfare laws as well as anti-discrimination law both at the domestic and international levels.⁸¹ Disaster law further highlights

⁷⁶ For a summary of recent conflicting views on the historical impact of US law in disaster management, see Nolon and Rodriguez (2007), pp. 4–5.

⁷⁷ See for example the spread of cholera via Nepalese soldiers brought in by the UN to assist with disaster recovery in Haiti after the 2010 earthquake, a situation ostensibly protected by its Status of Forces Agreement: McGeough (2013).

⁷⁸ For a ‘systems theory’ approach to this phenomenon, for example, see generally Teubner (1993). On this theory, the extra complexity created by the coupling of law with other social sub-systems (such as the political sphere or the scientific world) may help stabilise societies overall at a national level, but these interactions are seriously threatened by external forces such as globalisation: Teubner (2010).

⁷⁹ Farber (2011), p. 8.

⁸⁰ Farber (2011), p. 3. See also generally Farber et al. (2010).

⁸¹ Verchick (2010), pp. 166–189.

questions about how to regulate in emergency situations, another *ex ante* matter. In this volume, for example, Nasu adopts a security perspective to consider the management of potential disasters arising from or exacerbated by the use of new technologies, such as nanotechnology.

Overall, focusing on recent literature on Japanese law and disasters,⁸² Table 1 indicates the broad scope of contemporary ‘disaster law’—multiple fields of public, private and international law impacting on disaster mitigation, relief and recovery.

1.3.3 *Linking Law and Society*

To connect law with socio-economic or political behaviour, and to better explain and plan for disasters, a comparative perspective can be particularly useful. In the case of Japan, for example, three major theories are often deployed to tease out the linkage.⁸³ First, a ‘culturalist’ approach argues that ‘the Japanese don’t like law’: instead, they defer to Tokugawa-era cultural norms of harmony, and to social superiors including the government. This is an older theory, especially popular during the 1970s and 1980s among foreign commentators on Japanese law and society, but ‘neo-culturalist’ theories have experienced somewhat of a revival in recent years.⁸⁴

Following the 2011 earthquake and tsunami, it is hard to ignore the strength of cultural norms as major factors in socio-economic behaviour in Japan—although people everywhere do tend to respond surprisingly positively to disaster situations, especially in the short-term aftermath.⁸⁵ Admittedly, there are some indications of increases in theft and other crimes in the Tohoku region,⁸⁶ but these seem small relative to reports from some other countries in the aftermath of disasters.⁸⁷ There have also been far fewer requests for consultation with legal professionals than after the 1995 Kobe earthquake, despite the latter causing only around one third of fatalities as compared to the Tohoku disaster (with 15,883 dead and 2,681 still ‘missing’ as of 10 April 2013).⁸⁸ However, the Tohoku region is far more rural and has a notable paucity of legal professionals, making it more difficult to even learn about legal issues—let alone to find help in resolving them.⁸⁹

⁸² For a succinct recent overview of the myriad legal issues arising from the 2011 disasters, see also Yodoyabashi Yamagami Godo (2011).

⁸³ On general theories on law in Japan, with further references, see generally Abe and Nottage (2012).

⁸⁴ Nottage (2009a).

⁸⁵ Solnit (2009). See also Sun (2011) and Aldrich (2012b), pp. 51–52.

⁸⁶ Kozuka (2012).

⁸⁷ Generally, post-disaster crime rates also depend on the types of losses incurred: comparing the aftermath of the Kanto and Kobe earthquakes, for example, see Hirayama (2012).

⁸⁸ National Police Agency of Japan (2013). On consultations, see Ii (2013).

⁸⁹ Leflar et al. (2011), updated in Leflar et al. (2012).

A second theory, which gained favour among foreign commentators during the 1990s, argues that economic rather than cultural factors provide a better explanation for why and how Japanese citizens engage with the legal system. According to this view, ‘the Japanese do like law’. For example, Ramseyer and a few others argue that the accessibility and predictability of Japanese law allow individuals and others to bargain effectively in its shadow.⁹⁰ On this sort of ‘economic rationalist’ approach, the stoic and orderly responses to the disasters that were evident in Tohoku—and even urban Tokyo—might be explained not by a desire to maintain social harmony, but rather rational acceptance of having taken a gamble (in building nuclear power plants near seashores) which simply turned out badly on this occasion.⁹¹

However, it is difficult to describe this situation as involving informed consent—the key premise of economically efficient outcomes. There has been significant and longstanding opposition to nuclear power in Japan,⁹² amplified since 2011 by a growing awareness of the ways in which its nuclear power industry obscured the risks and costs involved. The general public has become decidedly more skeptical about nuclear power. Citizens became more favourable to a phase-out, or at least decisions over siting and operations that were driven more by seismological and engineering data rather than economic or political considerations.⁹³ They have also supported the Kan administration’s efforts to strengthen regulatory controls, diminishing scope for ‘capture’ by the industry.⁹⁴ These tendencies bode well for a much more cautious approach to constructing and operating nuclear power plants⁹⁵ and to reformulating energy policy more generally in Japan—with increased attention to the promotion of renewable energy sources.⁹⁶ Yet these changes have also taken place in a calm and gradual fashion—indeed, the public returned to power a more conservative Liberal Democratic Party government led by Shinzo Abe in the December 2012 general election. Political and perhaps cultural forces, not just economics, remain important to explain the interaction between law and society in post-disaster Japan.

Earlier empirical research by Aldrich had already shown how nuclear power plant selection in Japan was mainly determined not by economic conditions (such as how poor the host localities were), but rather by civil society characteristics

⁹⁰ Ramseyer and Nakazato (1999). For a critique of this simplistic genre of economic analysis of law in Japan, see Freedman and Nottage (2006).

⁹¹ See also Ramseyer (2012), ignoring broader cultural or social norms in favour of narrow material incentives to explain location decisions for nuclear power plants in Japan.

⁹² Opposition within France was significantly less and relatively short-lived, with the government maintaining ‘standard operating procedures of coercion and hard social control’ to build up a much greater dependence on nuclear power. See Aldrich (2008), p. 182.

⁹³ See Kingston (2012), pp. 194–197; Broinowski (2012).

⁹⁴ See Claremont (2013) and Weitzdörfer (2013), both in this volume.

⁹⁵ Compare with Ramseyer (2012), pp. 19, 21.

⁹⁶ See also Nasu (2013), in this volume. On renewable energy challenges in Asia more generally, see Sovacool and Duprady (2012).

(relative weakness in localities' 'social capital').⁹⁷ The industry maintained close links with regulators and failed to significantly improve its safety procedures, despite a series of smaller accidents.⁹⁸ Even after the 2011 nuclear meltdown, the operator of the Fukushima facility, Tokyo Electric Power Company (TEPCO), managed to stay alive thanks to extensive government support, benefitting TEPCO's shareholders and financial institutions at the expense of victims suffering loss from evacuations as well as health risks.⁹⁹ Because shareholders are also voters, understanding this outcome also requires insights from political theory. Some may be inclined to view these developments as supporting a third major theory often deployed to explain how law relates to society in Japan: 'elite management'. On this account, a coalition of big businesses, bureaucrats and conservative politicians tends to divert citizens away from engaging the legal system, especially the courts: 'the Japanese are made not to like law'.

However, the TEPCO bailout was crafted by the less conservative Democratic Party of Japan (DPJ), which furthermore had campaigned successfully in 2009 on a platform promising a fundamental re-organisation of the relationship between politicians and bureaucrats. The DPJ also made significant inroads into the nuclear industry, particularly regarding renewable energy sources, although opposition party and media pressure contributed significantly to the resignation of Prime Minister Naoto Kan (announced on 26 August 2011).¹⁰⁰ More generally, there is significant evidence for the emergence of more 'patterned pluralism' in Japanese politics over the last two decades or more, resulting in some significant changes to various regulatory regimes.¹⁰¹ The uncovering of building industry fraud relating to the earthquake-resistance of buildings around 2005,¹⁰² for example, led to prosecutions and re-regulation that helped limit harm from the 9.0 magnitude earthquake in 2011. Thus, it seems dangerous to generalise from the nuclear power sector case that 'elite management' remains as pervasive as ever in Japan, particularly given the continued influence wielded by the 'nuclear barons' in so many other countries.¹⁰³ At the same time, Japan's recent experiences with its triple

⁹⁷ Aldrich (2008). See also above, n 4.

⁹⁸ By contrast, partly due to greater options for securing energy supplies in the US, nuclear power industry there responded more positively to the 'existential threat' created by the Three Mile Island disaster in 1979—bringing in expertise from the US Navy to develop a much more pro-active approach to safety issues. See Rees (1994).

⁹⁹ Morita (2013). Compare for example OECD Nuclear Energy Agency (2012a).

¹⁰⁰ For a balanced account of Kan's leadership during the crisis, see Funabashi (2011), pp. 221–239; Kingston (2012), pp. 188–194; Samuels (2013), pp. 9–19. On the DPJ's ambitious reform agenda announced in 2009, see Nottage (2009c) and Funabashi (2011), pp. 232–234. See also Claremont (2013), in this volume.

¹⁰¹ One example comes from consumer credit markets: Kozuka and Nottage (2009). More generally, see for example Kingston (2013).

¹⁰² Nottage (2006).

¹⁰³ Compare Pringle and Spigelman (1981) with Broinowski (2012).

catastrophes highlight the need for detailed investigations of political dimensions impacting on law and socio-economic behaviour.¹⁰⁴

In a recent careful study of ‘disaster and change in Japan’ after the 3/11 catastrophes, for example, Samuels emphasises that crises world-wide tend to be constructed and manipulated by politicians and other influential stakeholders in society, using recurring narratives—usually to reinforce pre-existing agendas vis-à-vis their opponents. One common narrative of change in post-disaster situations calls for a ‘reverse course’: restoring ‘traditional values’ and critically reassessing modernity. Another urges a radical change of course, preferring a liberal or even possibly libertarian agenda. A third motif involves political and other leaders pressing for the society to ‘stay the course’. This third discourse has arguably proved strongest regarding security, energy policy and local government since 2011, although ‘staying the course’ in local-central government relationships may result in more enduring transformations in Japan—due to changes already underway in this field particularly over the last decade. Samuels also shows how all three narratives of change in Japan’s post-disaster context are accompanied by tropes centred on ‘leadership’, social ‘solidarity’ and ‘vulnerability’.¹⁰⁵

Parallels can usefully be drawn between Samuels’ three partly normative but partly descriptive accounts of change and, respectively, the ‘culturalist’, ‘economic rationalist’ and ‘elite management’ (or ‘patterned pluralism’) theories of how law does or should interact with society and politics in Japan, beyond the context of disasters. His analysis of how political and socio-economic forces have been playing out in Japan since 2011, including several parallels to events surrounding the earthquake that flattened Tokyo in 1923 as well as Hurricane Katrina in 2005, is also instructive when comparing developments in other parts of the Asia-Pacific region. Samuels is particularly cautious about the long-term impact of ‘disaster diplomacy’, in the light of US humanitarian relief efforts not only in countries afflicted by large cyclones like Bangladesh in 1991 and Burma (Myanmar) in 2008, but also in allied countries like Indonesia (after the 2004 tsunami) and Pakistan (after a devastating earthquake in 2005). Goodwill created by the Japanese assistance offered to China after the 2008 Sichuan earthquake also seemed to be swamped quite quickly by larger geopolitical forces.¹⁰⁶

¹⁰⁴ See for example Carpenter (2012) and Kingston (2013). See also generally Samuels (2013); Suzuki and Kaneko (2013). For an earlier analysis comparing state-society relationships in Japan, India and Turkey, see Ozerdem and Jacoby (2006).

¹⁰⁵ Samuels (2013), especially pp. 24–45, 180–200. As he remarks (p. 185): ‘As Karl Von Clausewitz might have framed it, 3/11 was simply the continuation of normal politics by additional means’, noting that Von Clausewitz had famously defined war as ‘the continuation of politics by other means’. For a sophisticated critique of Japanese modernity by a leading sociologist of law, see Tanase (2010).

¹⁰⁶ Samuels (2013), pp. 46–79. He also notes (at p. 17) that 163 countries and 43 international organizations offered help to Japan, with 29 (including China, Korea and Australia) sending rescue teams or medical personnel during the first weeks after the 3/11 tsunami. On the 1923 Tokyo earthquake, see also Aldrich (2012b), pp. 54–58.

1.4 Asia-Pacific Comparisons and International Developments

The Asia-Pacific region displays remarkable diversity in its political, socio-economic and legal institutions. These jurisdictions therefore offer a rich set of comparative reference points for teasing out the inter-relationships between law and society. Examining their preparedness and responses to catastrophes is a particularly promising field of research as the Asia-Pacific is considered the region most prone to natural disasters.¹⁰⁷ It also encompasses many developing countries, where vulnerability is particularly high, yet Asia is already an economic and geopolitical powerhouse.¹⁰⁸ Contributors to this volume therefore seek to add to the emerging field of comparative disaster studies by drawing lessons primarily from Japan, Indonesia, China, Australia, New Zealand and the US—in the context of broader developments in the region and internationally.

1.4.1 *Asia-Pacific Developments: Chapter Overviews*

The next six chapters of this book deal mainly with the 11 March 2011 triple disasters in Japan, focusing especially on the legal and institutional infrastructure in place at the time of the disaster or established in the aftermath. These chapters also explore various political, economic and cultural factors affecting the causes of the catastrophes and the government's responses.¹⁰⁹

In Chap. 2, Reich reflects upon the 2011 disasters from a public health perspective, considering the response (including protecting clean-up workers¹¹⁰), consequences for victims and families (including compensation and other forms of redress), and causes of the disaster. Reich doubts the National Diet of Japan's Fukushima Nuclear Accident Independent Investigation Commission Report's identification of 'reflexive obedience' and reluctance to question authority as cultural contributors to the cause of the disaster, finding instead the Report's

¹⁰⁷ Yates and Bergin (2011), p. 3 note that:

Between 1980 and 2009, 45% of all disasters worldwide occurred in the region, and between 2000 and 2008, 83% of global deaths from disasters occurred there, yet the region accounts for only 61% of the world's population. The Asia-Pacific suffered 42% of the world's economic losses from disasters . . .

See also James (2013).

¹⁰⁸ See generally Commonwealth of Australia (2012).

¹⁰⁹ More detailed abstracts of each chapter can be downloaded via <http://www.springer.com/> and <http://sydney.edu.au/law/caplus/publications.shtml>.

¹¹⁰ See also Wallace and Suzuki (2013) and Birmingham and McNeill (2012).

account of the ‘nuclear mindset’ to be more convincing. Reich also points to the lack of political trust in Japan’s leaders as an impediment to effective response.

Claremont (Chap. 3) provides a broader overview of the 2011 disasters (outlined also in Table 1), assessing government and non-government-led responses. Claremont argues that the Japanese Diet ‘failed to unite and lead’ but that the lack of strong political direction and swift government response was, at least to some extent, counterbalanced by effective volunteering networks and reforms made after previous disasters. These included the Kobe Earthquake of 1995, after which new building codes were enacted requiring better earthquake resistance, as well as improved early warning systems.

Weitzdörfer (Chap. 4) and Rheuben (Chap. 5) focus on liability for nuclear accidents. Weitzdörfer focuses on the *Nuclear Damages Act* and Japanese tort law. He considers potential legal hurdles such as difficulties proving causation, calculation of damages, whether soil decontamination can be ordered, and whether psychological harm or reputational loss to businesses could be compensated. Rheuben’s primary interest is the Japanese government assisting TEPCO with handling claims for compensation arising from the disaster. Of this he is critical. Rheuben argues that it is tantamount to the nationalisation of TEPCO, involving government interference in what are essentially private disputes governed by the *Nuclear Damages Act*. Even though the mechanism was designed largely to safeguard TEPCO’s solvency, Rheuben argues that the state may be seeking to use TEPCO to shield itself from liability for failing to prevent or mitigate the disaster.¹¹¹ He points out that this is quite different to the way that the state government of New South Wales in Australia handled mass tort claims for asbestos exposure, in the shadow of more limited scope for claims of state liability. Weitzdörfer considers the broader ramification of the Japanese government’s handling of the compensation disputes, arguing that the Japanese government’s scheme is usurping the role of the courts and imposing a form of retrospective taxation targeted at the nuclear power companies other than TEPCO. He suggests that this does not bode well for the separation of powers and the rule of law in Japan.

In Chap. 6, Nasu examines nanotechnology, which appears to be critical to many new sources of energy security for Japan—a concern also discussed by Claremont.¹¹² Nasu argues that even though the potential contribution of the nanotechnology sector is significant, the latter requires further regulation—particularly in respect of accident management. The legal framework for ensuring the safe use of engineered nanomaterials fails adequately to address the health and environmental hazards likely to occur if toxic engineered nanomaterials are dispersed in an accident. According to Nasu, in devising the regulations, much can be

¹¹¹ TEPCO has even been sued now by US Marines and others, in a class action filed in a District Court in California: Japan Times (2013). For analyses of compensation claims, see Feldman (2013); Rheuben and Nottage (2013).

¹¹² On post-3/11 energy security debates in Japan, see also Samuels (2013), pp. 110–150.

learnt from the failure of nuclear safety regulation to prevent the Fukushima nuclear power plant disaster. However, he emphasises that regulation must not stifle research. Unless scientists remain relatively free to experiment, they are unlikely to make the breakthroughs needed to make nanotechnology a more attractive research field for exploring alternative energy sources.

Suter (Chap. 7) examines the 2011 disaster from a novel angle—as portrayed in Japanese science fiction published after the disaster. She shows that some authors have sounded a ‘scientifically grounded alarm bell’ to the world ‘in the form of entertainment’. This has enabled them to reach a wide audience, providing a medium for criticism of disaster preparedness and response.

In Chap. 8, Samadhi shifts the focus of this book from Japan to Indonesia, and in particular to the Indonesian government’s handling of the 2004 Indian Ocean tsunami and the 2005 Nias earthquake. He examines the work of the government’s Rehabilitation and Reconstruction Agency, of which he was a senior member, and argues that the Agency was largely successful. Samadhi attributes this to various factors, including speedy initial recovery to establish a sense of normalcy; the grant to the Agency of substantial power (extending to directing other government agencies, both national and regional); cutting red tape; and building capacity to fill implementation gaps. All this, while ensuring that disaster reconstruction funding—much of which was obtained from foreign or international donors—was spent transparently and accountably, in a nation still often afflicted by widespread corruption.¹¹³ Samadhi further demonstrates that the Agency also addressed pre-existing socio-economic problems in both Aceh and Nias during rehabilitation and reconstruction, under the so-called ‘Build Back Better’ ideal that underpinned the Agency’s work.

Also writing about Indonesia, Butt (Chap. 9) examines Indonesia’s 2007 Disaster Management Law, enacted in response to the 2004 Indian Ocean tsunami. This Law shifted the paradigm of Indonesian disaster management from merely response to both preparedness and response. To this end, the Law established the Disaster Management Authority, and required the establishment of various regional authorities to assist in preparing communities for potential natural and other disasters and to provide assistance when disasters strike. While the Law is a significant advance, it is not yet close to being fully effective. Many regional governments have not yet established these authorities, and a limited budget and personnel mean that many risk assessments, contingency plans and evacuation drills have not been made or performed as required under the Law. Like Reich discussing Japan in Chap. 2, Butt also addresses quite critically some claims of cultural or attitudinal impediments to effective disaster management in Indonesia.¹¹⁴

¹¹³ Butt (2012).

¹¹⁴ Regarding Padang after its major earthquake in 2009. See also Bachelard (2013).

In Chap. 10, Bath adds perspectives on disaster management in China—a country, like Indonesia and Japan, which is particularly prone to a variety of natural disasters. Bath notes that significant progress has been made over the last 10 years in improving and shaping preparedness for, and responses to, emergencies in China. Like Indonesia, China enacted new disaster-related legislation in 2007: the Emergency Response Law of the People’s Republic of China. This Law sets out, in general terms, the overall legal framework for emergency prevention, preparation and handling. It also covers rehabilitation after natural disasters, calamitous accidents, public health incidents, and public security incidents. However, as Bath notes, much of the regulatory detail is contained in administrative regulations issued by various levels of government. The multitude of agencies involved, and inadequate coordination between them, impedes effective disaster management—not unlike the situation still in Indonesia.

Bath also argues that the vagueness of various disaster-related laws gives discretion to government to deal with the practical aspects of disaster management. One result is that other legal principles and government policies are often ignored. In particular, vulnerable groups—such women, minorities and people with disabilities—are not specifically considered in the development and implementation of disaster management plans. It has been left to NGOs and UN agencies to run projects specifically directed towards these and other vulnerable groups in earthquake recovery.

In Chap. 11, Toomey focuses on significant cases heard in New Zealand courts in the aftermath of the Christchurch earthquakes in 2010 and especially in 2011.¹¹⁵ These disputes mainly arose out of the application of the *Canterbury Earthquake Recovery Act 2011*, which sought to restore the greater Christchurch community’s social, economic, cultural and environmental well-being. Toomey discusses provisions of the Act that grant extensive powers to the government, including to ‘red-zone’ land if buildings upon it were made unsafe by the earthquake, to acquire red-zoned buildings, and to demolish them. She discusses an order to demolish part of the iconic Christchurch Cathedral, which was vigorously challenged before the courts.

White and Grieve (Chap. 12) discuss the needs of vulnerable groups—including disabled people, women, children, the elderly, ethnic minorities, and the impoverished—in respect of disaster management in New Zealand. They accept that at the height of catastrophe, internationally recognised human rights of vulnerable groups might be difficult to protect and fulfill, but stress that they must be fully respected during the recovery phase. After reviewing relevant New Zealand laws, White and Grieve call for greater legal certainty and for increased cooperation between government agencies. These appeals resonate with several other chapters in the book—particularly by Bath, Burch, Reich and Samadhi—which highlight the

¹¹⁵ For another general perspective ‘on the ground’, see Cropp (2011).

inadequate attention given to the rights of vulnerable groups in disaster management. The chapter also echoes calls made in others—such as chapters by Bath, Butt, Samadhi, Reich and Claremont—for more effective disaster management coordination between government agencies of various levels, and with NGOs and international donors.

In Chap. 13, Burch discusses functions the tax system can perform during disasters and their aftermaths. Using US tax policy documents prepared in contemplation of nuclear catastrophe during the Cold War and tax measures implemented in response to Hurricane Katrina in 2005, he argues that the tax system has significant potential to address systemic and economic issues, such as inflation, profiteering and insurance provision. However, Burch notes that using the tax system to target relief is difficult in practice. In particular, he notes that tax expenditure is not easily directed towards low-income persons who need it most and that tax deductions, although often used to create incentives to participate in relief efforts, primarily benefit those with high incomes.

In Chap. 14, Cook provides an overview of international nuclear law on safety, emergency response and nuclear liability, including its uptake among Asia-Pacific jurisdictions. She discusses the role of the International Atomic Energy Agency (IAEA), the 1996 Convention on Nuclear Safety and other key treaties, and the rights and obligations they impose. She also outlines some of the reform initiatives being discussed internationally since the Fukushima nuclear power plant disaster.

1.4.2 International and Regional Collaboration

More generally, there has been a growth in international as well as regional collaboration on disaster prevention and management—reflecting the growing scale, complexity and awareness of disasters, as mentioned above (Sects. 1.1 and 1.2). In 1989, at the end of the Cold War, the UN General Assembly initiated the International Decade for Natural Disaster Reduction.¹¹⁶ After a general campaign over the ensuing 10 years, the General Assembly endorsed the proposals put forward by the UN Secretary-General to establish the International Strategy for Disaster Reduction as an international framework for responding to challenges presented to the international community by the increasing incidence and scale of disasters. The General Assembly also agreed to an inter-agency task force and secretariat as the main instruments for the implementation of the Strategy.¹¹⁷ In the

¹¹⁶ GA Res 44/236 (22 December 1989).

¹¹⁷ GA Res 54/219 (22 December 1999). See also ‘Implementation of the International Strategy for Disaster Reduction’, UN Doc A/56/68-E/2001/63 (8 May 2001).

wake of the 2004 Indian Ocean tsunami, government officials around the world gathered together in Kobe and adopted the Hyogo Framework for Action, which is aimed at ‘[t]he substantial reduction of disaster losses, in lives and in the social, economic and environmental assets of communities and countries’.¹¹⁸ The Framework was later endorsed by the UN General Assembly and was implemented through the International Strategy for Disaster Reduction.¹¹⁹

At the regional level in the Asia-Pacific, soon after Cyclone Nargis hit Burma (Myanmar) in 2008, ASEAN effectively took the lead in coordinating and liaising with donor nations and organisations to deliver aid by establishing the ASEAN Humanitarian Task Force for the Victims of Cyclone Nargis. This success came after the rejection by the Burmese authorities of foreign humanitarian assistance and the subsequent controversy over the then French President Nicolas Sarkozy’s suggestion that the ‘responsibility to protect’ norm provided justification for military intervention to deliver aid.¹²⁰ Subsequently, ASEAN adopted the Agreement on Disaster Management and Emergency Response in July 2005, and the East Asian Summit issued a statement on disaster management in 2009 to enhance regional preparedness for natural disasters.¹²¹

It is important to appreciate that these international and regional initiatives to collaborate on disaster prevention and management are to be implemented within the established framework and rules of international law, including human rights law and environmental law. Traditionally, the rules of international law regulate only cross-border environmental degradation, based on the *Trail Smelter* principle that ‘no State has the right to use or permit the use of its territory in such a manner as to cause injury... in or to the territory of another or the properties or persons therein, when the case is of serious consequence and the injury is established by clear and convincing evidence’.¹²² However, international law has increasingly been penetrating the sovereign veil to set out general principles to guide sovereign states in regulating the management of potentially hazardous industries.¹²³ One prominent example is the development of international nuclear law which, as Cook examines (2013), in this volume, spans nuclear non-proliferation, nuclear security, nuclear safety, emergency preparedness and response, and liability for losses caused by nuclear accidents. As numerous reports concluded in the aftermath of

¹¹⁸ *Hyogo Framework for Action*, p. 8.

¹¹⁹ GA Res 60/195 (2 March 2006). See also Verchick (2010), pp. 184–185.

¹²⁰ Barber (2009).

¹²¹ ASEAN (2009). More generally on regional cooperation, see Ferris and Pletz (2013).

¹²² *Trail Smelter Case*, p. 1965. During the Fukushima nuclear disaster, this principle was a relevant consideration when the Japanese Government decided to release radiation-contaminated waste-water into the sea.

¹²³ Horbach and Bekker (2002).

the Fukushima nuclear disaster demonstrate,¹²⁴ Japanese nuclear regulation did not fully comply with the nuclear safety standards required under various instruments of international nuclear law.¹²⁵ Cook discusses some of the international initiatives that have been pursued to address lessons learned from the events at the Fukushima nuclear power plant, and shows that the nuclear disaster provided renewed impetus for promoting and strengthening the implementation of relevant international law instruments.

In the field of disaster prevention and management, international ‘soft law’ instruments also play an important guiding role. Examples include the 1992 Guiding Principles on Internal Displacement¹²⁶ and the 2006 Field Manual for First Responders on the Management of Dead Bodies After Disasters.¹²⁷ In November 2012, the International Law Commission’s Draft Articles on Natural Disaster Relief were also debated within the UN.¹²⁸ Although these soft law instruments are generally useful and effective, and should not be neglected, significant gaps still exist in relation to the prevention and mitigation of disasters, particularly those that are entirely or partially ‘manufactured’. Regulation often remains lax, for example, concerning potentially toxic materials—including products engineered through nanotechnology, as suggested by Nasu (2013), in this volume.

1.5 Conclusion

Natural disasters, often compounded by technological developments and involving cross-border effects, remain a major problem in the twenty-first century. Numerous complexities in how the general public and even experts perceive and assess risks create further challenges, especially in democratic systems. When it comes to crisis management, research and evaluation reports identify recurring failures, including the following attitudes and practices:¹²⁹

- It won’t happen here;
- We have a plan for that;
- We need more information;
- Communications break down (again);

¹²⁴ For example, The National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (2012), TEPCO (2012), Japan Atomic Energy Commission (JAEC) Advisory Committee on Nuclear Security (2011), JAEC Advisory Committee on Nuclear Security (2012), and International Atomic Energy Agency (2011). See also Table 1.

¹²⁵ Čavoški (2013). More broadly, see Greenpeace (2012).

¹²⁶ Internal Displacement Monitoring Centre (undated).

¹²⁷ Johns (2012).

¹²⁸ UN General Assembly (2012).

¹²⁹ Boin (2010), pp. 237–240.

- Fragmented command, limited control;
- Lack of resources;
- Underestimating the importance of media;
- Underestimating post-crisis challenges.

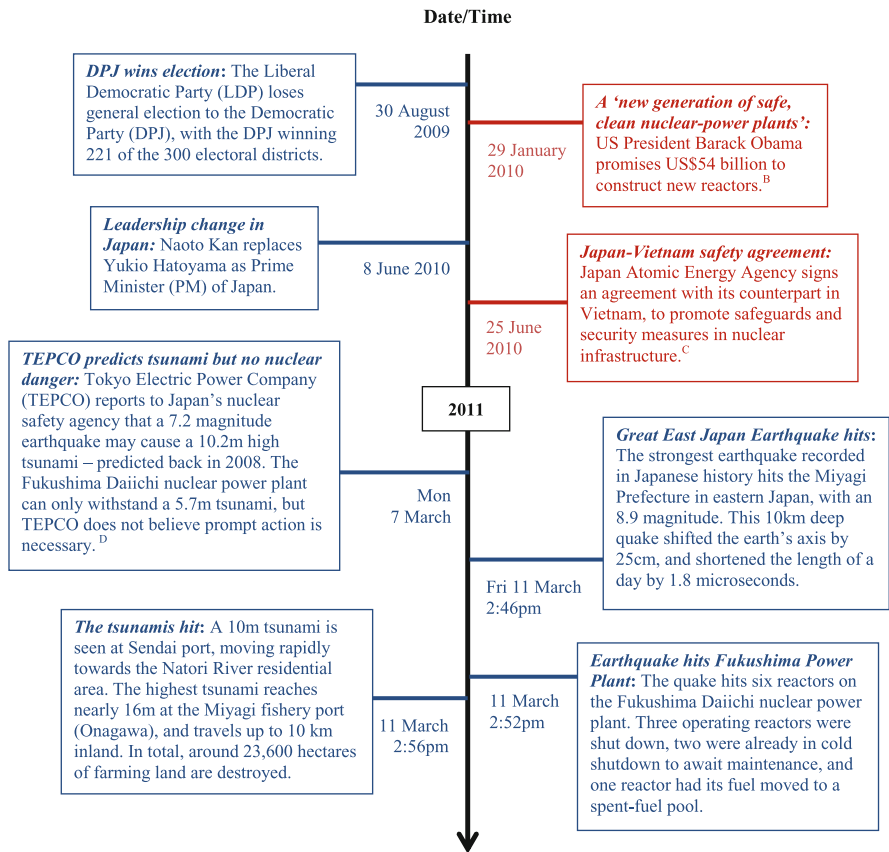
Japan's nuclear accident in 2011 is only one example in this pattern of poor disaster management, albeit a particularly large-scale and disturbing one. Problems tend to be even worse in developing countries, with more vulnerable populations, as demonstrated by the Indian Ocean tsunami in 2004. Nations in the Asia-Pacific region, with great diversity in socio-economic development and institutional frameworks, remain especially susceptible to natural disasters.

This book aims to contribute to understanding of how disasters unfold in this vibrant part of the world. In particular, it adds and urges greater attention to multiple legal issues that arise nowadays in the field of disaster management, which has already produced a strong epistemic community comprising (inter-) governmental bodies, NGOs and researchers across many social and natural sciences.

More generally, attitudes towards disasters historically include 'blaming', then 'coping', often 'dreaming' of a new order, followed by more focused 'learning', but ultimately often 'forgetting'. Duus adds that 'the Japanese are less apt to forget the ever-present risk of natural disasters than other societies', but this does not necessarily mean that everyone remembers how best to deal with the risk of disaster.¹³⁰ Hopefully this book will help us all not to forget the lessons from recent disasters in Japan and beyond, but rather to keep learning.

¹³⁰ Duus (2012), p. 186.

Appendix A: Timeline of Japan’s ‘3/11’ Triple Disasters— Domestic and International Dimensions^A

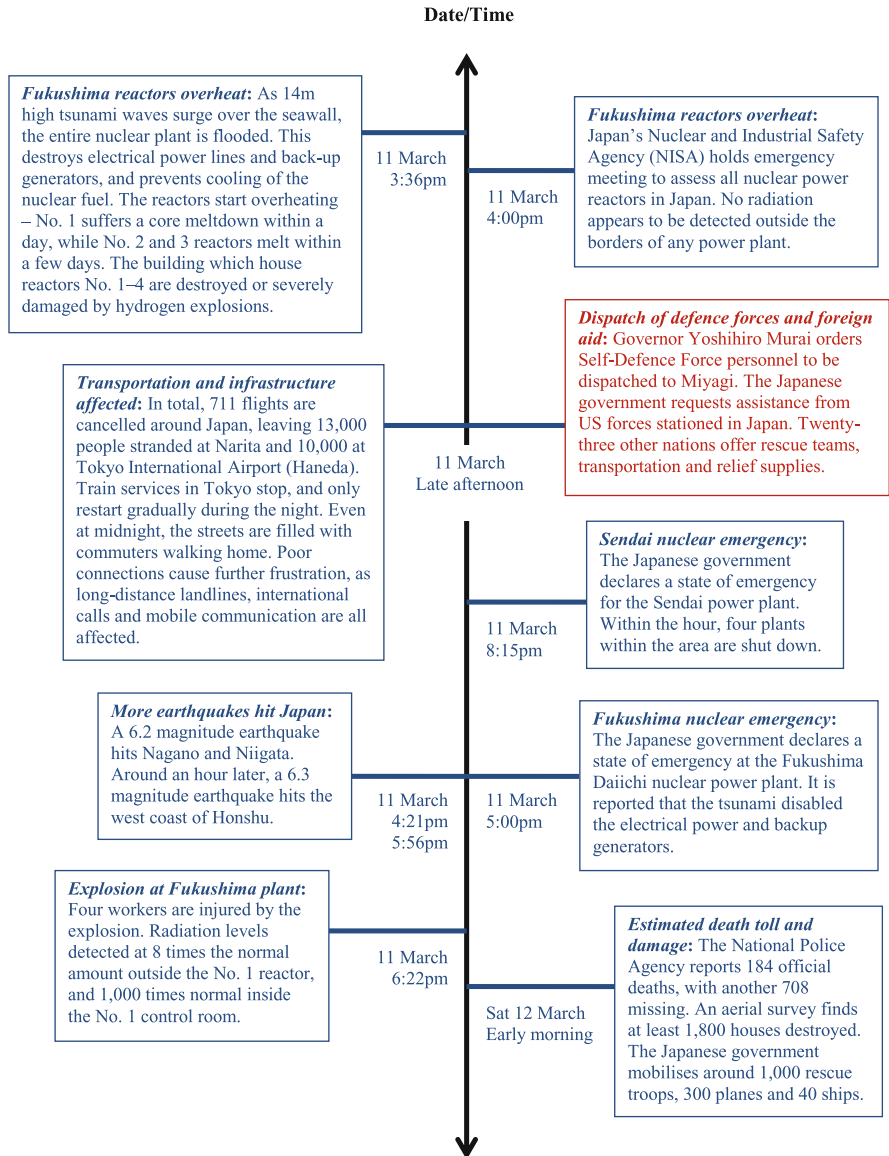


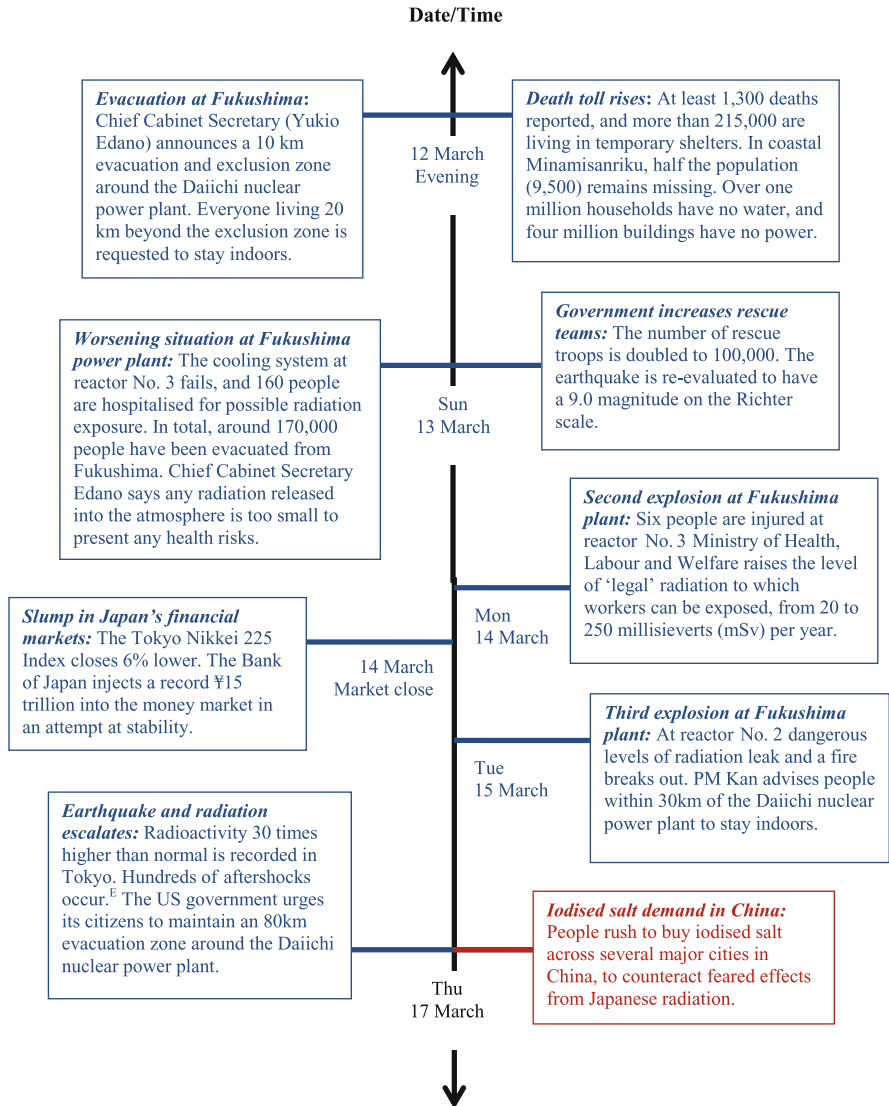
^A Main other sources: Broinowski (2012), BBC News (2011a), Carpenter (2012), CNN Wire (2011), Preceden (2011), Tanaka (2012), Kitazume (2011), The Telegraph (2011), Willacy (2013). International developments are noted in red font in this Timeline.

^B Doggett and Spetalnick (2010).

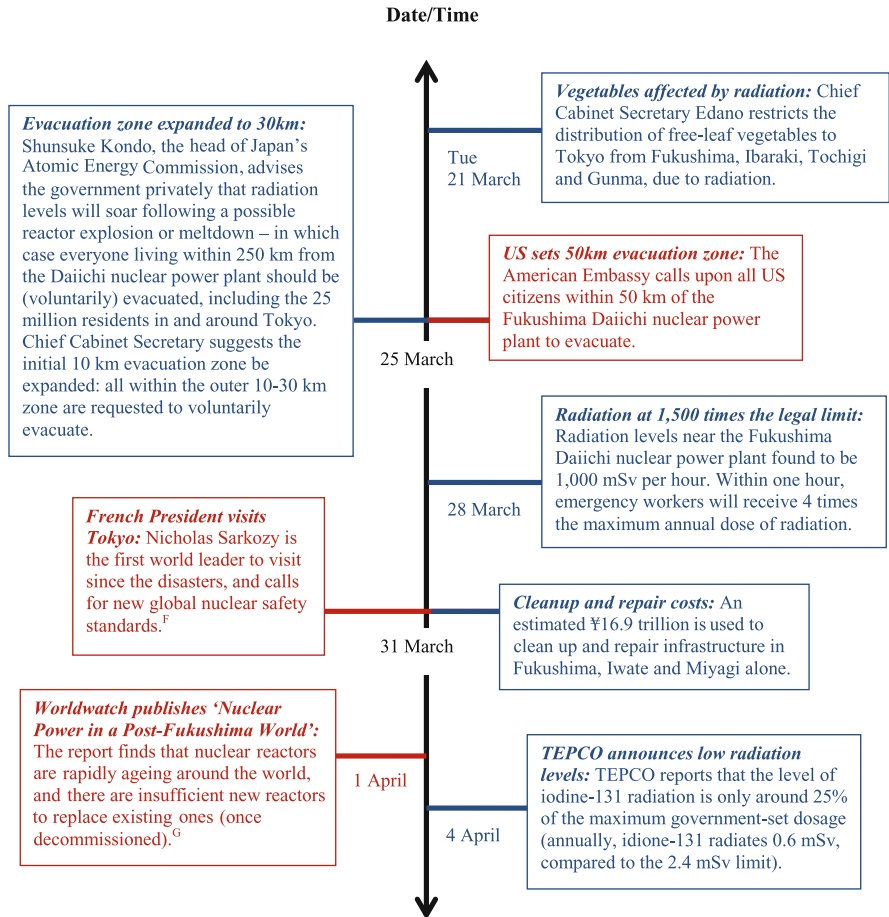
^C JAEA (undated).

^D Japan Atomic Industrial Forum (2011).



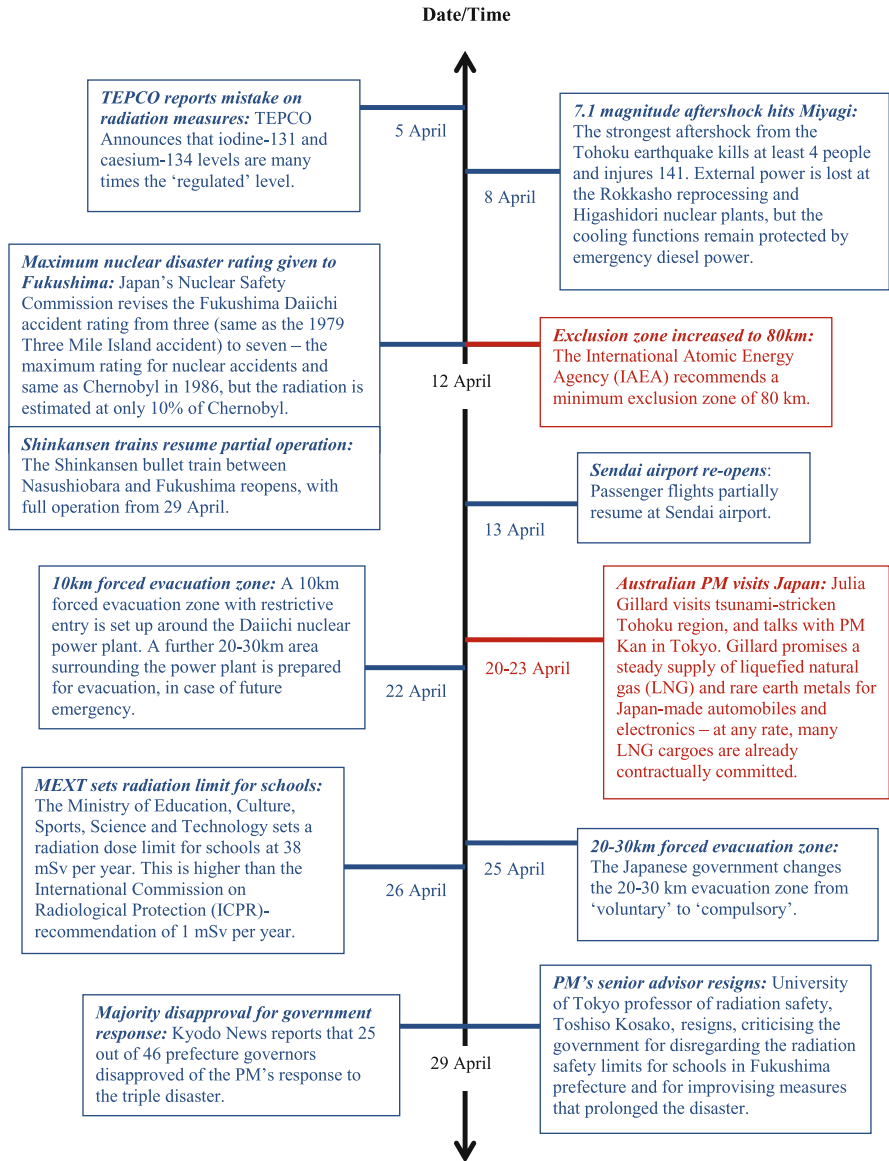


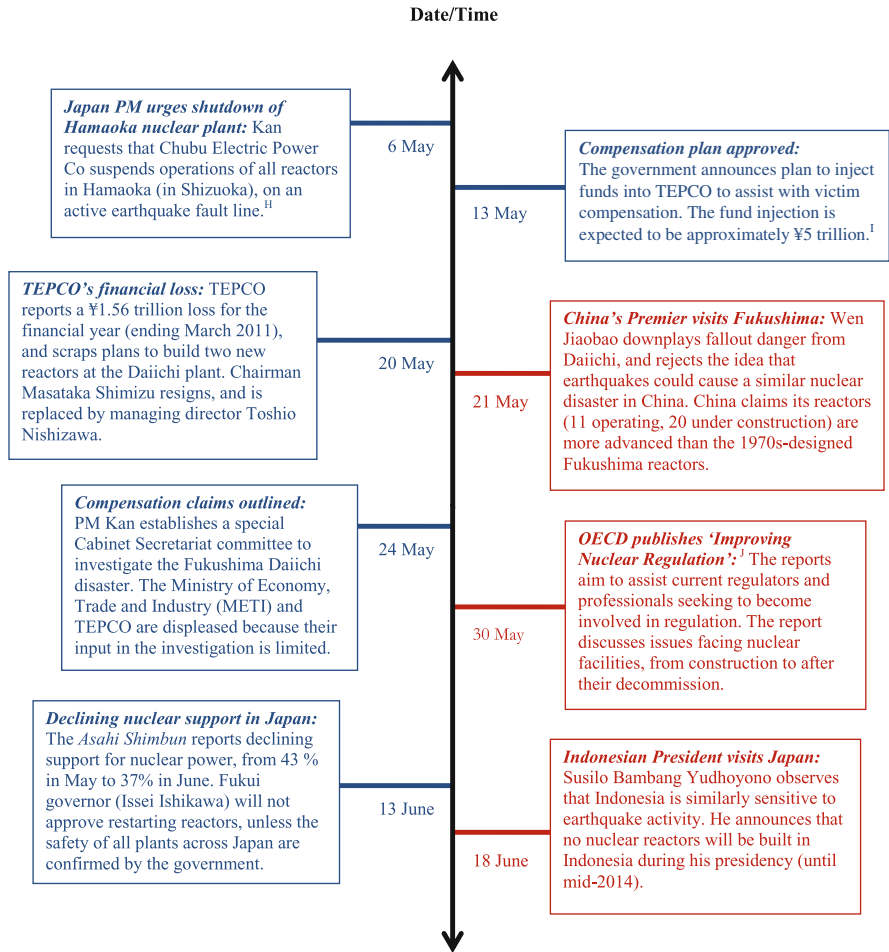
^E See interactive map at <http://www.bbc.co.uk/news/world-asia-pacific-12748215>. Accessed 29 April 2013.



^F Ridgwell (2011). A year later, during an election campaign where Francois Hollande (subsequently elected President) advocated a stricter policy stance on nuclear power in France, Sarkozy retracted his assertion of having also visited Fukushima: BBC News (2011b).

^G Schneider et al. (2011).

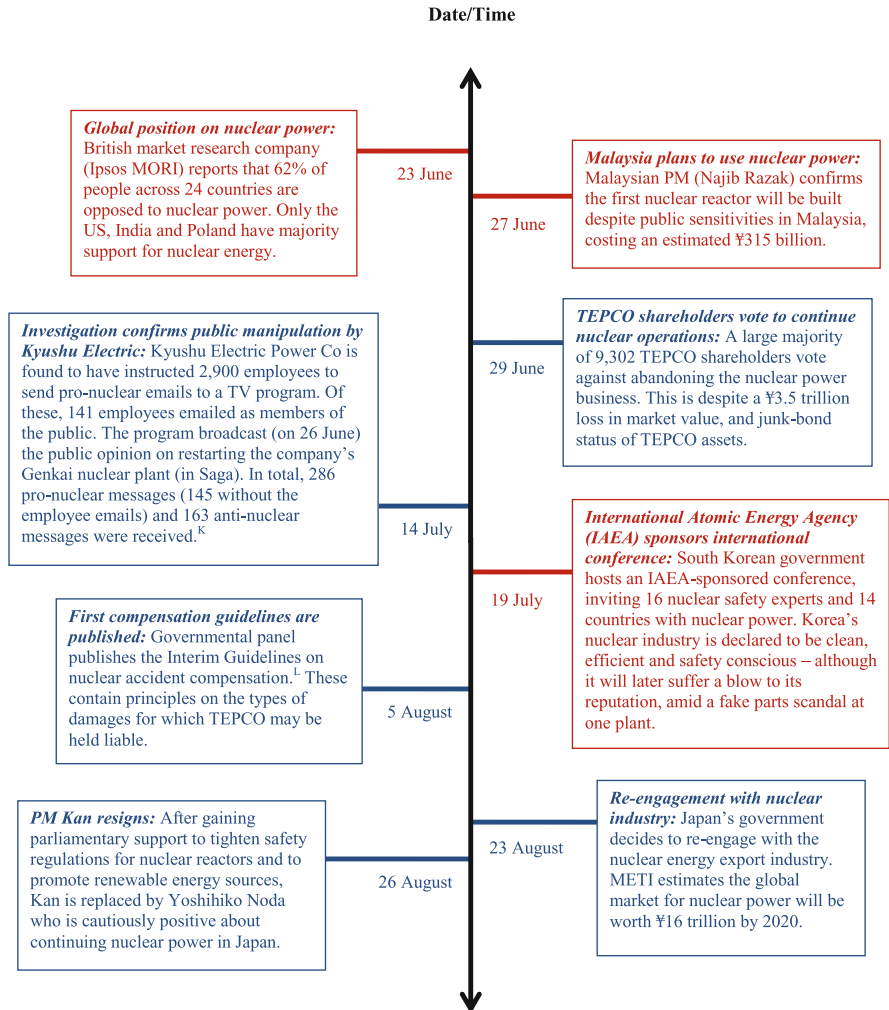




^H Fujita (2011).

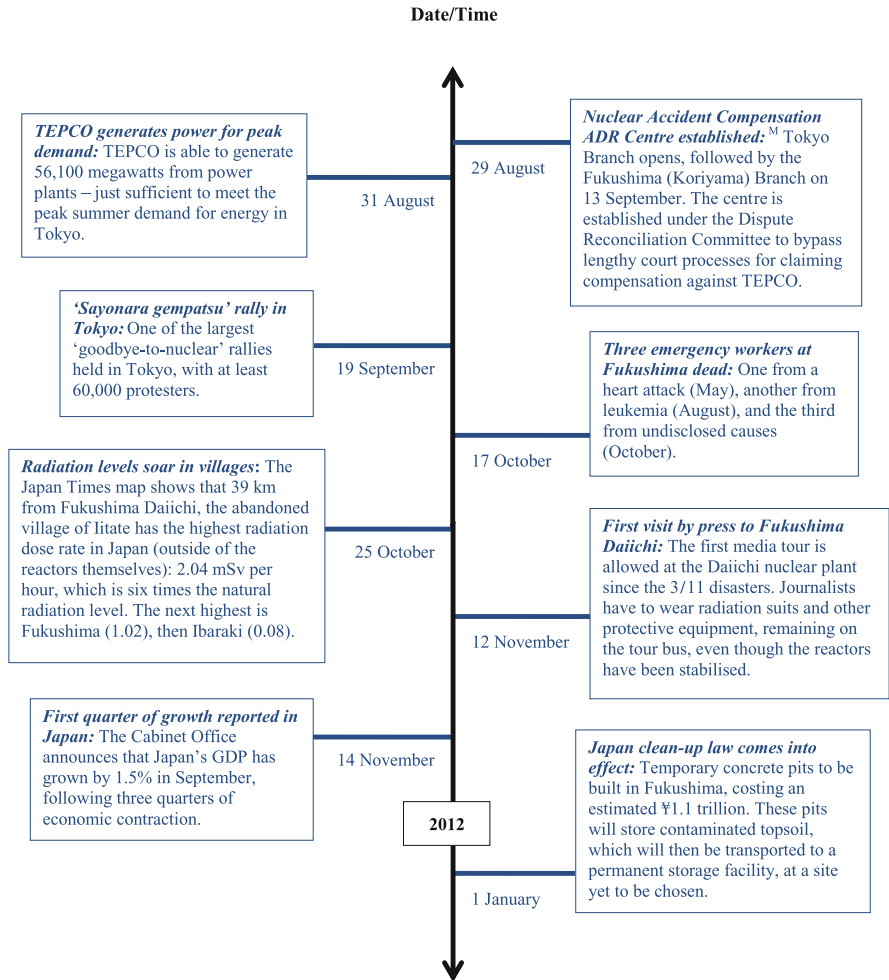
^I Reuters (2011).

^J OECD Nuclear Energy Agency (2011); OECD Nuclear Energy Agency (2012b).

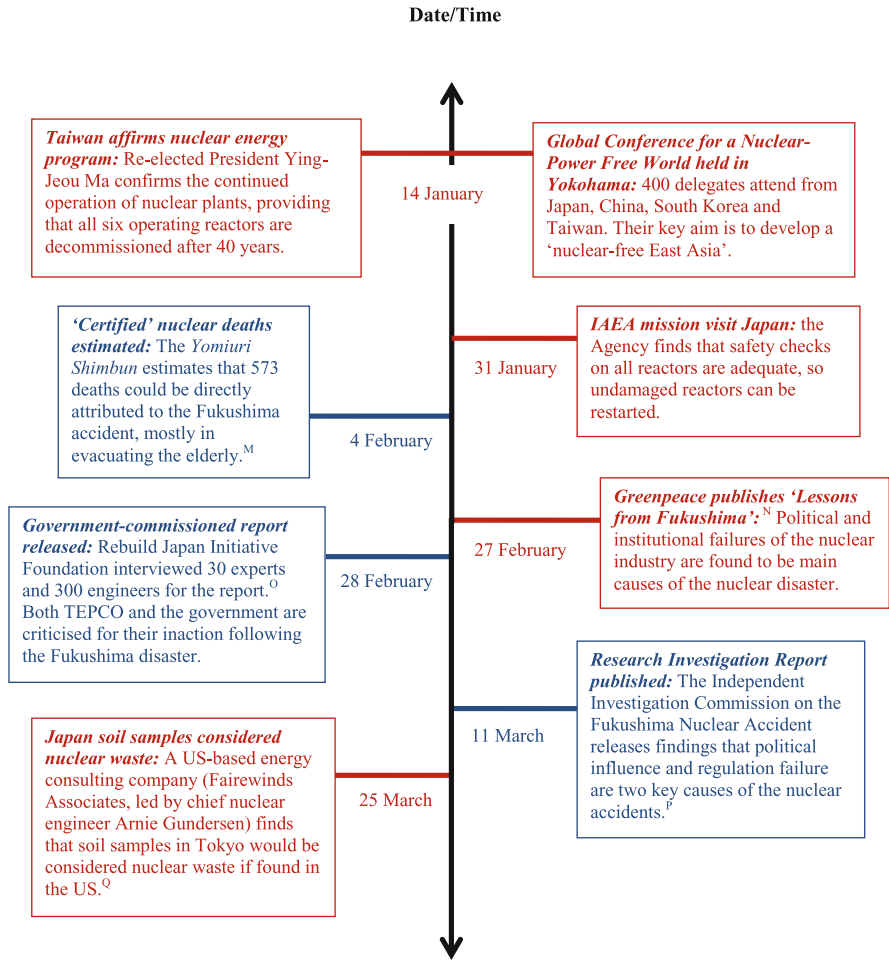


^KThe Asahi Shimbun (2011).

^LSee Rheuben (2013).



^M Japan Federation of Bar Associations (2012).



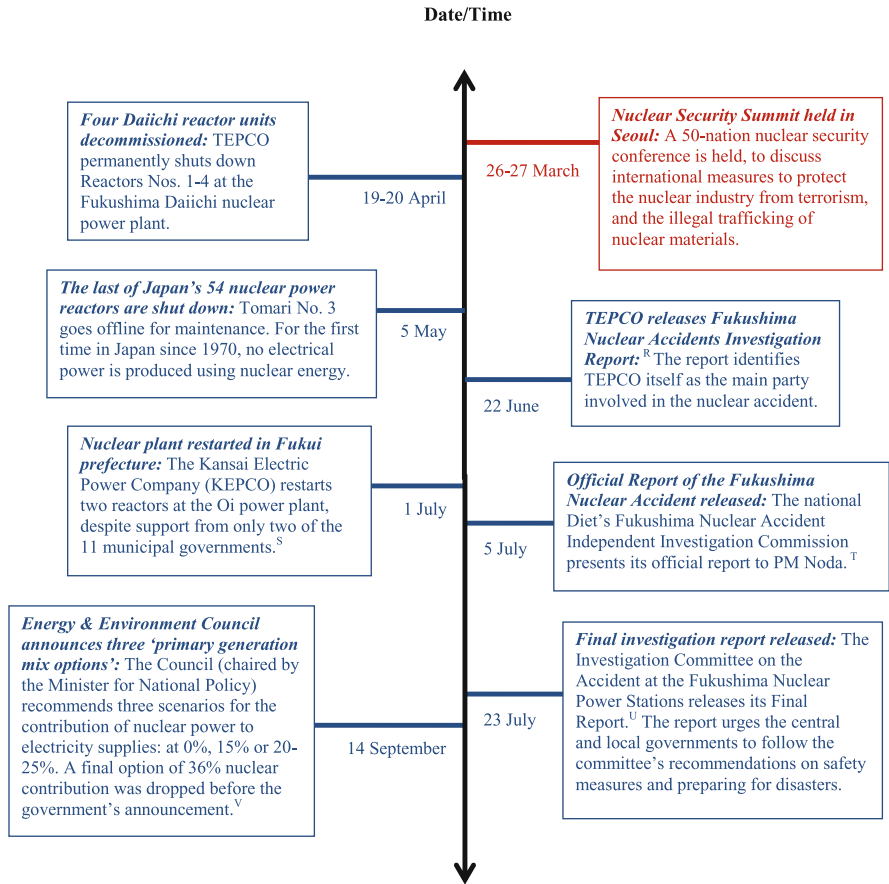
^MBeyond Nuclear (2012).

^NGreenpeace (2012).

^OAssociated Press (2012).

^P<http://rebuildjpn.org/fukushima/report/>. On these and other reports cited below, see further Reich, 2013 in this volume.

^QGundersen (2012).



^R TEPCO (2012).

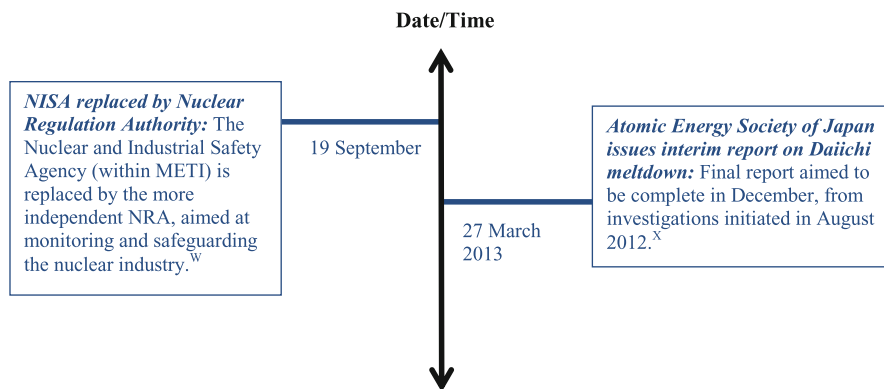
^S On 16 April 2013, the Osaka District Court declined to issue an injunction, sought by 260 anti-nuclear activists, to again shut down the reactors on safety grounds.

^T National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (2012).

For ongoing controversy on TEPCO's role in this parliamentary inquiry, see The Japan Times (2013a).

^U National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (2012).

^V World Nuclear Association (2013). See also Nasu (2013).



^w See Nagata (2013).

^x See The Japan Times (2013b).

Appendix B: Major Recent Disasters in Asia-Pacific Jurisdictions (and International Collaboration Initiatives)^a

Date	Nation(s)	Disaster/Event	Effects
28 March 1979	USA (Pennsylvania)	Three Mile Island nuclear power plant accident	Property loss of \$2.4 billion. Another \$1 billion needed for clean-up.
26 April 1986	USSR (Ukraine)	Chernobyl nuclear power plant meltdown	Deaths estimated between 4,000 ¹³¹ and 985,000. ¹³² Economic loss above \$235 billion, with \$18 billion alone needed to contain and decontaminate the plant. High production loss from 790,000 hectares of agricultural land and 700,000 hectares of forest.
17 October 1989	USA (California)	Loma Prieta (San Francisco) earthquake	67 deaths, 3,757 injured and 8,000 displaced. Property loss of \$6 billion, with 3,800 properties damaged.

(continued)

¹³¹ The Chernobyl Forum 2003–2005 (2005).

¹³² Yablokov et al. (2009).

Date	Nation(s)	Disaster/Event	Effects
(1990–1999)	(UN 'International Decade for Disaster Risk Reduction')		
16 July 1990	Philippines	Luzon earthquake	2,412 deaths with 321 missing, another 3,513 injured and 2,412 displaced. Economic loss of \$7 billion. ¹³³
29 April 1991	Bangladesh (Bay of Bengal)	Cyclone Gorky	More than 138,000 deaths, 10 million displaced. Economic loss of \$1.5 billion.
18 May 1991	China	East China floods	1,723 deaths, at least 8.3 million displaced. Economic loss of \$13.6 billion. ¹³⁴
13 September 1991	Japan	Typhoon Mireille	52 deaths, 700 injured. Economic loss of \$10 billion.
13 November 1991 to 2 May 1992	Vanuatu, Tuvalu, Samoan Islands, Cook Islands	South Pacific cyclone season	21 deaths, economic loss above \$300 million.
22 August 1992	USA (Bahamas)	Hurricane Andrew	65 deaths, 177,000 displaced. Economic loss of \$26.5 billion.
12 December 1992	Indonesia	Flores earthquake	2,500 deaths, 500 injured and 90,000 displaced. Economic loss above \$100 million.
April to October 1993	USA (Midwest)	Great Mississippi and Missouri floods	50 deaths, some areas flooded for almost 200 days. Economic loss of \$15 billion, destroying 100,000 properties and 15 million acres.
30 September 1993	India (Maharashtra)	Latur earthquake	20,000 deaths, 30,000 injured. Economic loss of \$280 million. ¹³⁵
17 January 1994	USA (California)	Northridge (Los Angeles) earthquake	60 deaths, 12,000 injured. Economic loss of \$20 billion.
(23–27 May 1994)	(First World Conference on Natural Disaster Reduction: 'Yokohama Strategy and Plan of Action for a Safer World') ¹³⁶		

(continued)

¹³³ International Recovery Platform (undated/a).

¹³⁴ UN Department of Humanitarian Affairs (1991).

¹³⁵ International Recovery Platform (undated/b).

¹³⁶ International Decade for Natural Disaster Reduction (1994).

Date	Nation(s)	Disaster/Event	Effects
July to August 1994	China, Vietnam, Thailand	East Asian Summer Drought	51 million faced water shortages, over 5 million hectares of land affected. Economic loss of \$13.8 billion.
17 January 1995	Japan (Hyogo)	(‘Great Hanshin’ or) Kobe earthquake	6,434 deaths, 30,000 injured and 300,000 displaced. Economic loss of \$102.5 billion, with 150,000 buildings destroyed.
30 July to 18 August 1995	Democratic People’s Republic of Korea	Flood, ‘Arduous March’ famine	Between 800,000 ¹³⁷ and 3 million deaths. ¹³⁸ Economic loss of \$15 billion.
6 November 1996	India (Godavari delta)	Hurricane 07B	1,059 deaths, economic loss at \$1.4 billion with 646,000 properties damaged.
October 1997–1998	Indonesia	Fires	An estimated 20 million affected by respiratory problems, with pre-mature deaths between 19,000 and 48,000. ¹³⁹ Nearly 10 million hectares burned, economic loss above \$17 billion.
June to September 1998	China	Yangtze River flood	At least 3,700 deaths, 15 million displaced. Around 25 million hectares of agricultural land flooded, property damage worth \$36 billion. Total economic loss of \$30 billion.
17 July 1998	Papua New Guinea	Earthquake, tidal wave, tsunami	2,200 deaths, 470 injured, 500 missing and 9,500 displaced.
21 September 1999	China (Taiwan)	Jiji (or ‘921’) earthquake	2,415 deaths, 29 missing and 11,300 injured. Economic loss of \$14.1 billion, with 53,700 properties damaged.

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¹³⁷ Goodkind and West (2011).¹³⁸ Noland et al. (2001).¹³⁹ Harrison et al. (2009).

Date	Nation(s)	Disaster/Event	Effects
22 September 1999	Japan (Kumamoto)	Typhoon Bart	51 deaths, 1,000 injured. Economic loss of \$5.2 billion.
29 October 1999	India	Odisha cyclone (or 'Cyclone 05B')	15,000 deaths estimated, 3,300 injured and 1.67 million displaced. Economic loss of \$4.5 billion.
(February 2000)	(UN Office for Disaster Risk Reduction established) ¹⁴⁰		
4 May 2000	USA (New Mexico)	Cerro Grande Fire	Destroyed 43,000 acres, 400 people displaced. Economic loss of \$1 billion.
26 January 2001	India	Gujarat earthquake	More than 20,000 deaths, 167,000 injured. Economic loss above \$5.5 billion, with 400,000 properties destroyed.
4 June 2001	USA (Texas)	Tropical Storm Alison	55 deaths, 30,000 displaced. Economic loss of \$9 billion.
January, October 2004	Australia, Japan	Asbestos products: fully banned	By 2006 in Japan, there were 5,013 cases of mesothelioma and other fatalities eligible under workers' compensation or the 2004 legislation. ¹⁴¹
23 February 2004	Vanuatu	Cyclone Ivy	4 deaths, 2,000 evacuations. Economic loss of \$3.8 billion with 11,000 properties damaged.
(May 2004)	(Asian Development Bank's 'Disaster and Emergency Assistance Policy', ¹⁴² Action Plan approved in May 2008) ¹⁴³		
28 August 2004	Japan (Nagasaki)	Typhoon Songda	41 deaths, 58 injured. Economic loss of \$9 billion.
25 September 2004	USA (Florida), Bahamas	Hurricane Jeanne	Around 3,600 deaths, 2,600 injured. Economic loss of \$7 billion.

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¹⁴⁰ <http://www.unisdr.org/who-we-are/history>: see for example <http://www.unisdr.org/who-we-are/international-strategy-for-disaster-reduction>.

¹⁴¹ Miyamoto (2011), p. 23. See also Nottage (2006). Comparing Australia, see Rheuben (2013), in this volume.

¹⁴² Asian Development Bank (2004).

¹⁴³ Asian Development Bank (2008).

Date	Nation(s)	Disaster/Event	Effects
23 October 2004	Japan	Chuetsu earthquake	40 deaths, 3,000 injured. Economic loss of \$28 billion.
26 December 2004 ¹⁴⁴	Indonesia, Thailand, India, Sri Lanka	(‘Indian Ocean’ or ‘Boxing Day’) tsunami	Almost 230,000 deaths, 1.7 million displaced, over \$10 billion in property damage.
	Indonesia		Almost 170,000 deaths, over 550,000 people displaced. Total economic loss of \$4.45 billion—60 % physical damage, 40 % from loss of income.
	Sri Lanka		More than 35,000 deaths, 500,000 displaced. Lost assets worth \$90 million, \$2.2 billion needed for reconstruction.
	India		More than 16,000 deaths, 650,000 displaced. Total economic loss of \$1.2 billion to \$575 million physical damage, \$649 economic loss.
	Thailand		More than 8,000 deaths. Total loss of \$2.2 billion to \$500 million physical damage, \$1.69 billion economic losses.
(18–22 January 2005)	<i>(UN World Conference on Disaster Reduction developed the ‘Hyogo Framework for Action’, through to 2015)</i> ¹⁴⁵		
(26 July 2005)	<i>(ASEAN Agreement on Disaster Management and Emergency Response 2005)</i>		

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¹⁴⁴ See Butt (2013) and Samadhi (2013), both in this volume.¹⁴⁵ UNISDR (undated).

Date	Nation(s)	Disaster/Event	Effects
29 August 2005 ¹⁴⁶	USA (Louisiana)	Hurricane Katrina–New Orleans flood	At least 1,800 deaths, with 828 in New Orleans alone (where nearly 80 % of the city was flooded). More than 2 million forced to evacuate, with 200,000 displaced. Storm damage alone of \$81.2 billion, with \$125 billion total economic loss.
(November 2005)	(APEC ‘Task Force for Emergency Preparedness’, elevated to the ‘Emergency Preparedness Working Group’ in 2010) ¹⁴⁷		
(27–29 September 2005)	(UN ‘Beijing Action for Disaster Risk Reduction in Asia’, to enhance regional co-operation under the UN Hyogo Framework)		
8 October 2005	India, Pakistan	Kashmir earthquake and landslide	79,000 deaths, 106,000 injured and 4 million displaced. ¹⁴⁸ Economic loss of \$5.5 billion, with over 32,000 properties destroyed.
(14 December 2005)	(ASEAN ‘Kuala Lumpur Declaration on the East Asia Summit’, with regional ‘natural disaster mitigation’ as one focus of the Summit) ¹⁴⁹		
(September 2006)	(World Bank ‘Global Facility for Disaster Reduction and Recovery’: ¹⁵⁰ ‘Partnership in Disaster Risk Reduction’ program with the UN International Strategy for Disaster Reduction) ¹⁵¹		
16 July 2007	Japan (Niigata)	Chuetsu-oki earthquake (and Kashiwazaki-Kariwa nuclear power plant shutdown)	11 deaths, 1,120 injured. Economic loss of \$12.5 billion, with \$5.53 billion alone needed to restore and fuel the power plant following shutdown.
12 November 2007	Papua New Guinea (Oro)	Cyclone Guba and flood	At least 200 deaths, ¹⁵² 9,500 displaced. ¹⁵³ Economic loss of \$71.4 million.

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¹⁴⁶ See generally Verchick (2010) and Aldrich (2012a, b).

¹⁴⁷ The Working Group’s publications are available at: <http://publications.apec.org/pub-view.php?frm=pubsubfora&id=1133&dcid=84>.

¹⁴⁸ Owen et al. (2008).

¹⁴⁹ *Kuala Lumpur Declaration on the East Asia Summit* signed on 14 December 2005 in Kuala Lumpur, Malaysia by the Heads of State/Government.

¹⁵⁰ World Bank (undated).

¹⁵¹ Global Facility for Disaster Reduction and Recovery (undated).

¹⁵² Australian Government Bureau of Meteorology (undated).

¹⁵³ International Federation of the Red Cross (2009).

Date	Nation(s)	Disaster/Event	Effects
15 November 2007	Bangladesh (Bay of Bengal)	Cyclone Sidr	Between 5,000 ¹⁵⁴ and 10,000 deaths, ¹⁵⁵ around 5,000 injured and 1 million displaced. Assets worth \$1.16 billion damaged, another \$517 million losses estimated.
5 February 2008	USA (South)	'Super Tuesday' tornado, flood and storm	57 deaths, 358 injured. ¹⁵⁶ Economic loss above \$1 billion, with \$500 million from tornado damage alone.
3 May 2008	Burma (Myanmar)	Cyclone Nargis	At least 133,500 deaths, 55,000 missing. Economic loss of \$10 billion.
12 May 2008¹⁵⁷	China	Sichuan earthquake	At least 75,500 deaths, of which 10,000 children were killed, and 365,000 injured. Almost 5 million displaced, and 1.4 million farmers fell into poverty. Economic loss of \$30 billion.
18 August 2008	India (Kosi River)	Bihar flood	2,400 deaths, 3,500 missing and 3 million displaced ¹⁵⁸ across 1,600 villages. Economic loss of \$135 million, with over 236,000 properties damaged. ¹⁵⁹
13 September 2008	USA (Texas), Cuba, Haiti	Hurricane Ike	195 deaths, 34 missing. Over 1 million displaced in Haiti and 3,500 in Texas. Economic loss of \$37.5 billion.
7 February 2009	Australia (Victoria)	'Black Saturday' bushfires	73 deaths, 414 injured and 7,562 displaced.

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¹⁵⁴ Rahman (2007).¹⁵⁵ CNN.com (2007).¹⁵⁶ US Department of Commerce (2009).¹⁵⁷ See Bath (2013), in this volume.¹⁵⁸ Reuters (2009).¹⁵⁹ Government of Bihar, World Bank Global Facility for Disaster Reduction & Recovery (2010).

Date	Nation(s)	Disaster/Event	Effects
July to November 2009	USA	California wildfires	Economic cost of \$4.6 billion, with 5,530 properties damaged. 2 deaths, 14 injured and 10,000 evacuations. Economic cost of \$1.1 billion, ¹⁶⁰ with at least 336,000 acres burned.
20 September 2009	Indonesia (Padang)	Sumatra earthquake	Around 1,200 deaths, ¹⁶¹ 2,900 injured. Cost of reconstruction estimated at \$745 million ¹⁶² with 150,000 buildings damaged or destroyed.
20 April 2010	USA (Louisiana)	BP Oil Spill (or 'Deepwater Horizon oil spill')	12 of the 126 crewmen killed, with 4.9 million barrels (780,000 m ³) spilled across 180,000 km ² . Economic loss above \$73.7 billion—including \$37.2 billion spill and cleanup expenses, ¹⁶³ \$34 billion lost tourism income ¹⁶⁴ and \$2.5 billion loss for fishing industry. ¹⁶⁵
26 July to September 2010	Pakistan (Indus River)	Floods	1,781 people, 2,966 injured. Economic loss of \$43 billion.
(9–13 August 2010)	<i>(Pacific Platform for Disaster Risk Management (PPDRM) recommendations, to enhance the PPDRM Framework for Action 2005–2015)</i> ¹⁶⁶		

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¹⁶⁰ Burton (2013) and National Climatic Data Center (2009).

¹⁶¹ Bachelard (2013).

¹⁶² International Federation of the Red Cross (2010).

¹⁶³ Fahey and Kahn (2012).

¹⁶⁴ Oxford Economics (2009).

¹⁶⁵ Walsh (2010).

¹⁶⁶ <http://www.unisdr.org/suva/activities>; see also SOPAC and UNISDR (2010).

Date	Nation(s)	Disaster/Event	Effects
December 2010 to 23 January 2011	Australia (Queensland)	Floods	38 dead, 6 missing, more than 2,500 evacuations. Economic loss estimates range from \$10–30 billion,¹⁶⁷ with \$4.76 billion of this from flood damage.¹⁶⁸
22 February 2011¹⁶⁹	New Zealand	Christchurch earthquake	185 deaths,¹⁷⁰ more than 1,500 injured. Economic loss of \$11.2 billion, with 100,000 properties damaged.¹⁷¹
11 March 2011¹⁷²	Japan	Tohoku (or Great East Japan) earthquake and tsunami, Fukushima nuclear power plant melt-down ('3/11' triple disasters)	15,881 deaths with 2,668 missing and 6,142 injured.¹⁷³ Economic loss of \$235 billion, with 130,000 properties destroyed.
25 July 2011 to 16 January 2012	Thailand	Floods	730 deaths, with almost 770,000 homes under water. Economic loss of \$45 billion.
25 October 2012	USA (Mid-Atlantic), Bahamas	Hurricane Sandy	285 deaths, 21 missing, more than 200,000 displaced. Economic loss above \$75 billion.
20 April 2013	China	Sichuan earthquake	160 deaths, at least 5,700 injured. ¹⁷⁴ More than 10,000 properties destroyed. ¹⁷⁵

Notes: Bolded lines indicate events focused on in this volume; italicised lines indicate international and regional collaboration initiatives; economic losses are estimates (in US dollars).¹⁷⁶

^aAll dollar amounts refer to US dollars unless indicated otherwise.

¹⁶⁷ ABC News (2011).

¹⁶⁸ Carbone and Hanson (2013).

¹⁶⁹ See Toomey (2013) and White and Grieve (2013), both in this volume.

¹⁷⁰ Fairfax NZ News (2012).

¹⁷¹ Vervaeck and Daniell (2011). See also Dennis (2013).

¹⁷² See Reich (2013), in this volume, Claremont (2013), in this volume, Suter (2013), in this volume, Weitzdörfer (2013), in this volume, and Cook (2013), in this volume.

¹⁷³ National Police Agency of Japan (2013).

¹⁷⁴ BBC News (2013).

¹⁷⁵ The Sydney Morning Herald (2013).

¹⁷⁶ Other main sources: Broinowski (2012) and Carpenter (2012), pp. 143–179; Cords (2008), Farber (2011), Farber et al. (2010), Jayasuriya and McCawley (2010), Miyamoto et al. (2011), O'Hare (2001), Samuels (2013), Tolan (2006), and Verchick (2010); World Bank (2010) and Yates and Bergin (2011).

References

- ABC News (2011) Flood costs tipped to top \$30b. ABC News, 18 January 2011. <http://www.abc.net.au/news/2011-01-18/flood-costs-tipped-to-top-30b/1909700>. Accessed 30 Apr 2013
- Abe M, Nottage L (2012) Japanese law. In: Smits J (ed) Encyclopedia of comparative law. Edward Elgar, Cheltenham, pp 462–479
- Ackerman F, Heinzerling L (2004) Priceless: on knowing the price of everything and the value of nothing. New Press, New York
- Aldrich DP (2008) Site fights: divisive facilities and civil society in Japan and the west. Cornell University Press, Ithaca
- Aldrich DP (2012a) Networks of power: institutions and local residents in post-Tohoku Japan. In: Kingston J (ed) Natural disaster and nuclear crisis in Japan: response and recovery after Japan's 3/11. Routledge, London, pp 127–139
- Aldrich DP (2012b) Building resilience: social capital in post-disaster recovery. The University of Chicago Press, Chicago
- Alemanno A (2011) Introduction. In: Alemanno A (ed) Governing disasters: the challenges of emergency risk regulation. Edward Elgar Publishing, Cheltenham, pp xix–xxxiv
- Ames C, Koguchi-Ames Y (2012) Friends in need: 'Operation Tomodachi' and the politics of US Military Disaster Relief in Japan. In: Kingston J (ed) Natural disaster and nuclear crisis in Japan: response and recovery after Japan's 3/11. Routledge, London, pp 207–220
- Anderson K (2011) The demographics of the triple disaster in Japan. East Asia Forum. <http://www.eastasiaforum.org/2011/05/05/the-demographics-of-the-triple-disaster-in-japan/>. Accessed 17 Apr 2013
- Aronson B (2013) Corporate governance lessons from TEPCO's crisis: improving internal information flow and public disclosure in insider-dominated systems. Paper presented at the 4th East Asian Law and Society Conference, Shanghai, 22–23 March 2013
- ASEAN (2009) East Asia Summit, Cha-am Hua Hin Statement on EAS Disaster Management, 25 October 2009. <http://www.dfat.gov.au/asean/eas/statement-disaster-management.pdf>. Accessed 29 Apr 2013
- Asian Development Bank (2004) Disaster and emergency assistance policy. <http://www.adb.org/documents/disaster-and-emergency-assistance-policy?ref=themes/governance/publications>. Accessed 30 Apr 2013
- Asian Development Bank (2008) Action plan for implementing ADB's disaster and emergency assistance policy. <http://www.adb.org/documents/action-plan-implementing-adb-s-disaster-and-emergency-assistance-policy?ref=themes/governance/publications>. Accessed 30 Apr 2013
- Associated Press (2012) Probe finds Japan kept quiet on risk of nuclear disaster. TheJournal.ie, 28 February 2012. <http://www.thejournal.ie/probe-finds-japan-kept-quiet-on-risk-of-nuclear-disaster-368016-Feb2012/>. Accessed 29 Apr 2013
- AusAID (2012) Australia–Indonesia facility for disaster reduction (AIFDR). <http://www.ausaid.gov.au/countries/eastasia/indonesia/Pages/humanitarian-init1.aspx>. Accessed 29 Apr 2013
- Australian Government Attorney General's Office (2011) National strategy for disaster resilience. <http://www.em.gov.au/Documents/1National%20Strategy%20for%20Disaster%20Resilience%20-%20pdf.PDF>. Accessed 25 Apr 2013
- Australian Government Bureau of Meteorology (undated) Tropical Cyclone Guba. <http://www.bom.gov.au/cyclone/history/guba.shtml>. Accessed 30 Apr 2013
- Avenell S (2012) From Kobe to Tohoku: the potential and peril of a volunteer infrastructure. In: Kingston J (ed) Natural disaster and nuclear crisis in Japan: response and recovery after Japan's 3/11. Routledge, London, pp 53–77
- Bath V (2013) The legal system in China and the handling of accidents and disasters. In: Butt S, Nasu H, Nottage L (eds) Asia-Pacific disaster management. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4

- Bachelard M (2013) City waits in denial for the big one: Padang's next disaster is due and its people are mostly unprepared. *The Sydney Morning Herald*, 29 March 2013. <http://www.smh.com.au/world/city-waits-in-denial-of-the-big-one-20130328-2gx6i.html>. Accessed 17 Apr 2013
- Barber R (2009) The responsibility to protect the survivors of natural disaster: cyclone Nargis – a case study. *J Confl Secur Law* 14:3
- BBC News (2011a) Timeline: Japan Power Plant Crisis. BBC, 13 March 2011. <http://www.bbc.co.uk/news/science-environment-12722719>. Accessed 17 Apr 2013
- BBC News (2011b) Japan quake: tremor timeline. BBC, 17 March 2011. <http://www.bbc.co.uk/news/world-asia-pacific-12748215>. Accessed 29 Apr 2013
- BBC News (2013) China quake kills scores in rural sichuan. BBC News, 20 April 2013. <http://www.bbc.co.uk/news/world-22228225>. Accessed 30 Apr 2013
- Beck U (1992) *Risk Society: towards a new modernity*. Theory, culture & society. Sage, London
- Beck U (2009) *World at risk*. Polity Press, Cambridge
- Bergin A (2011) King-hit: preparing for australia's disaster future. Australian Strategic Policy Institute – policy analysis 83. http://www.aspi.org.au/publications/publication_details.aspx?ContentID=299&pubtype=-291. Accessed 17 Apr 2013
- Beyond Nuclear (2012) Japanese authorities recognize 573 deaths related to Fukushima Daiichi Nuclear Catastrophe: as reported by the Yomiuri Shimibun. <http://www.beyondnuclear.org/home/2012/2/4/japanese-authorities-recognize-573-deaths-related-to-fukushi.html>. Accessed 29 Apr 2013
- Birmingham L, McNeill D (2012) *Strong in the rain: surviving Japan's Earthquake, Tsunami, and Fukushima Nuclear Disaster*, 1st edn. Palgrave Macmillan, New York
- Birnir P, Boyle A, Redgwell C (2009) *International law and the environment*, 3rd edn. Oxford University Press, Oxford
- Boin A (2010) Preparing for future crises: lessons from research. In: Hutter BM (ed) *Anticipating risks and organising risk regulation*. Cambridge University Press, Cambridge, pp 231–248
- Bostrom N, Cirkovic M (2008) Introduction. In: Bostrom N, Cirkovic M (eds) *Global catastrophic risks*. Oxford University Press, Oxford, pp 2–29
- Braithwaite J, Drahos P (2000) *Global business regulation*. Cambridge University Press, Cambridge
- Broinowski R (2012) *Fallout from Fukushima*. Scribe, Melbourne
- Burch M (2013) Tax policy and chaos: war, disaster, and the role of the tax system. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Burton L (2013) The comparative jurisprudence of wildfire mitigation: moral community, political culture, and policy learning. *Oñati Socio-Legal Series* [online] 3(2). http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2012287. Accessed 25 Apr 2013
- Butt S (2012) *Corruption and law in Indonesia*. Routledge, Abington
- Butt S (2013) Disaster management law in Indonesia: from response to preparedness? In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- CNN Wire (2011) Japan earthquake and tsunami: timeline. CNN, 13 March 2011, http://edition.cnn.com/2011/WORLD/asiapct/03/12/quake.tsunami.timeline/index.html?_s=PM:WORLD. Accessed 17 Apr 2013
- Carbone D, Hanson J (2013) Floods: 10 of the deadliest in Australian history. *Australian Geographic*, 29 January 2013. <http://www.australiangeographic.com.au/journal/the-worst-floods-in-australian-history.htm>. Accessed 30 Apr 2013
- Carpenter S (2012) *Japan's nuclear crisis: the routes to responsibility*. Palgrave Macmillan, New York
- Čavoški A (2013) Revisiting the convention on nuclear safety: lessons learned from the Fukushima Accident. *Asian J Int Law* 3(2):365–391

- Chan (2013) HK opposes Sichuan quake aid over corruption fears. Yahoo! News, 24 April 2013. <http://news.yahoo.com/hk-opposes-sichuan-quake-aid-over-corruption-fears-093655973-finance.html>. Accessed 25 Apr 2013
- Chiles J (2002) *Inviting disaster: lessons from the edge of technology*. Harper Collins, New York
- Claremont Y (2013) Disaster in Japan: a case study. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Cleary S (2009) Cognitive constraints and behavioral biases. In: Kunreuther H, Useem M (eds) *Learning from catastrophes: strategies for reaction and response*. Wharton School Publishing, Upper Saddle River, pp 64–82
- CNN.com (2007) Survivors grieve for cyclone dead, 19 November 2007. <http://edition.cnn.com/2007/WORLD/asiapcf/11/19/bangladesh.cyclone/>. Accessed 5 May 2013
- Commonwealth of Australia (2012) *Australia in the Asian Century White Paper*. <http://asiancentury.dpmc.gov.au/white-paper>. Accessed 29 Apr 2013
- Cook H (2013) International nuclear law – nuclear safety, emergency response and nuclear liability. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Cords D (2008) Charitable contributions for disaster relief: rationalising tax consequences and victim benefits. *Catholic Univ Law Rev* 57:427
- Cropp A (2011) *Shaken, not stirred: family survival in a quake zone*. Wily, Christchurch
- de Guttery A, Gestri M, Venturini G (eds) (2012) *International disaster response law*. TMC Asser/Springer, The Hague
- Dennis A (2013) Two years after quake disaster, scarred city is on road to recovery. *The Sydney Morning Herald*, 22 February 2013. <http://www.smh.com.au/travel/travel-news/two-years-after-quake-disaster-scarred-city-is-on-road-to-recovery-20130221-2eu7z.html>. Accessed 30 Apr 2013
- Doggett T, Spetalnick M (2010) Obama seeks to boost nuclear power in new budget. *Reuters*, 29 January 2010. <http://www.reuters.com/article/2010/01/29/us-nuclear-loans-idUSTRE60S3IC20100129>. Accessed 29 Apr 2013
- Duus P (2012) Dealing with disaster. In: Kingston J (ed) *Natural disaster and nuclear crisis in Japan: response and recovery after Japan's 3/11*. Routledge, London, pp 175–187
- Eburn M (2011) Responding to catastrophic natural disasters and the need for Commonwealth Legislation. *Canberra Law Rev* 10(3):81–102
- Ehrlich G (2013) *Facing the wave: a journey in the wake of the Tsunami*. Pantheon Books, New York
- Fahey J, Kahn C (2012) BP begins to put spill behind it with settlement. *Boston.com*, 3 March 2012. http://www.boston.com/news/nation/articles/2012/03/03/bp_begins_to_put_spill_behind_it_with_settlement/. Accessed 30 Apr 2013
- Fairfax NZ News (2012) February earthquake toll hits 185. *Stuff.co.nz*, 9 February 2012. <http://www.stuff.co.nz/national/6394084/February-earthquake-toll-hits-185>. Accessed 30 Apr 2013
- Farber DA (2011) Environmental disasters: an introduction. *UC Berkeley Public Law Research Paper* 1898401. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1898401. Accessed 17 Apr 2013
- Farber DA, Chen J, Verchick RRM, Sun LG (2010) *Disaster law and policy*. Aspen Elective Series, 2nd edn. Aspen, Frederick
- Feldman E (2013) Fukushima: catastrophe, compensation, and justice in Japan. *DePaul Law Rev* 62:335
- Ferris E, Pletz D (2013) *In the neighborhood: the growing role of regional organizations in disaster risk management*. The Brookings Institution, Washington, DC
- Foot D (2013) Japan's ADR system for resolving nuclear power-related damage disputes (in press)
- Freedman C, Nottage L (2006) You say tomato, I say tomahto, let's call the whole thing off: The Chicago School of Law and Economics Comes to Japan. *Centre for Japanese Economic*

- Studies Research Papers 2006–4. http://www.econ.mq.edu.au/Econ_docs/cjes/research_papers/2006-4_Freedman_Nottage.pdf. Accessed 18 Apr 2013
- Fujita A (2011) Japan PM wants another nuclear plant closed over quake fears. ABC News, 6 May 2011. <http://abcnews.go.com/International/japan-nuclear-plant-suspended-quake-fears/story?id=13544978#UXeN3LU3KwA>. Accessed 29 Apr 2013
- Funabashi Y (2011) Postmortem of a crisis in governance. In: Funabashi Y, Takenaka H (eds) *Lessons from the disaster: risk management and the compound crisis presented by the great east Japan earthquake*. The Japan Times, Tokyo, pp 217–251
- Gerstein M (2008) *Flirting with disaster*. Union Square Press, New York
- Global Facility for Disaster Reduction and Recovery (undated) Global and regional partnerships – track I. <https://www.gfdrr.org/node/41>. Accessed 30 Apr 2013
- Goodkind D, West L (2011) The North Korean famine and its demographic impact. *Popul Dev Rev* 27:219–238
- Government of Bihar, World Bank Global Facility for Disaster Reduction & Recovery (2010) Kosi floods 2008: needs assessment report. http://www.gfdrr.org/sites/gfdrr.org/files/publication/GFDRR_India_PDNA_2010_EN.pdf. Accessed 30 Apr 2013
- Government of Japan Public Relations Office (2013) Highlighting Japan: lessons from disasters. http://www.gov-online.go.jp/eng/publicity/book/hlj/html/201303/201303_02.html. Accessed 25 Apr 2013
- Gundersen A (2012) Tokyo soil samples would be considered nuclear waste in the US. *Fairewinds Energy Education*, 25 March 2012. <http://www.fairewinds.com/content/tokyo-soil-samples-would-be-considered-nuclear-waste-us>. Accessed 29 Apr 2013
- Greenpeace (ed) (2012) *Lessons from Fukushima: catalysing an energy revolution*. <http://www.greenpeace.org/international/en/publications/Campaign-reports/Nuclear-reports/Lessons-from-Fukushima/>. Accessed 17 Apr 2013
- Harrison M, Page S, Limin S (2009) The global impact of Indonesian forest fires. *Biologist* 56 (3):156–163
- Hirayama M (2012) Comparative study on crime phenomena after the two great earthquakes in Japan: the Hanshin-Awaji Great Earthquake in 1995 and the Kanto Great Earthquake in 1923. Paper presented at the International Law and Society Conference, Honolulu, 6 July 2012
- Horbach N, Bekker P (2002) The concept of sovereignty within nuclear energy law. In: Kreijen G et al (eds) *State, sovereignty, and international governance*. Oxford University Press, Oxford, pp 427–461
- Hunter N (2009) *The law of emergencies: public health and disaster management*. Butterworth-Heinemann, Burlington
- Hutter BM (2010) Anticipating risks and organising risk regulation: current dilemmas. In: Hutter BM (ed) *Anticipating risks and organising risk regulation*. Cambridge University Press, Cambridge, pp 2–22
- Ii T (2013) Recovery from disaster: multi-disciplinary analysis. Paper presented at the 4th East Asian Law and Society Conference, Shanghai, 22–23 March 2013
- Ito K (2012) Situation facing women after the Great East Japan Earthquake. *LAWASIA Update* June: 22–23
- Internal Displacement Monitoring Centre (undated) Guiding principles on internal displacement. <http://www.internal-displacement.org/guidingprinciples>. Accessed 16 Apr 2013
- International Atomic Energy Agency (2011) IAEA international fact finding expert mission of the nuclear accident following the Great East Japan earthquake and tsunami: mission report. http://www-pub.iaea.org/mtcd/meetings/pdfplus/2011/cn200/documentation/cn200_final-fukushima-mission_report.pdf. Accessed 16 Aug 2012
- International Decade for Natural Disaster Reduction (1994) *Yokohama strategy and plan of action for a safer world: guidelines for natural disaster prevention, preparedness and mitigation*. http://www.preventionweb.net/files/8241_doc6841contenido1.pdf. Accessed 29 Apr 2013
- International Federation of the Red Cross (2009) Papua New Guinea: Cyclone Guba. Final Report, 29 May 2009. <http://www.ifrc.org/docs/appeals/07/MDRPG002FR.pdf>. Accessed 30 Apr 2013

- International Federation of the Red Cross (2010) Indonesia: West Sumatra Earthquakes. Operations Update, 19 February 2010. <http://www.ifrc.org/docs/appeals/09/mdrid00410-4mthcons.pdf/>. Accessed 30 Apr 2013
- International Recovery Platform (undated/a) Luzon Earthquake, 1990. http://www.recoveryplatform.org/countries_and_disasters/disaster/21/luzon_earthquake_1990. Accessed 29 Apr 2013
- International Recovery Platform (undated/b) Latur Earthquake, 1993. http://www.recoveryplatform.org/countries_and_disasters/disaster/22/latur_earthquake_1993. Accessed 29 Apr 2013
- Japan Atomic Energy Agency (JAEA) (undated) JAEA-VARANS memorandum on cooperation in the field of infrastructure development on safeguards and nuclear security for nuclear non-proliferation. http://www.jaea.go.jp/04/np/etc/2010-06-25/index_en.html. Accessed 29 Apr 2013
- James H (2013) New families arise from Asia's disasters. East Asia Forum (20 April 2013). <http://www.eastasiaforum.org/2013/04/20/new-families-arise-from-asias-disasters/>. Accessed 27 Aug 2013
- Japan Atomic Energy Commission (JAEC) Advisory Committee on Nuclear Security (2011) Fundamental approaches to ensuring nuclear security. Report to the Atomic Energy Commission. <http://www.aec.go.jp/jicst/NC/senmon/bougo/kettei110905.pdf>. Accessed 16 Aug 2012
- Japan Atomic Energy Commission (JAEC) Advisory Committee on Nuclear Security (2012) Strengthening of Japan's nuclear security measures. Report to the Atomic Energy Commission. <http://www.aec.go.jp/jicst/NC/senmon/bougo/kettei120309.pdf>. Accessed 16 Aug 2012
- Japan Atomic Industrial Forum (2011) Earthquake Report – JAIF. Report No. 24, 4 October 2011. http://www.jaif.or.jp/english/news_images/pdf/ENGNEWS01_1317702304P.pdf. Accessed 29 Apr 2013
- Japan Federation of Bar Associations (2012) The JFBA brief note – aiming for effective utilization of the dispute settlement center for nuclear disaster compensation. http://www.nichibenren.or.jp/en/meetings/year/2012/120101_2.html. Accessed 29 Apr 2013
- Japan International Cooperation Agency (2011) Joint statement on the New AusAID-JICA partnership for international development cooperation. 12 December 2011. <http://www.jica.go.jp/english/news/press/2011/111212.html>. Accessed 29 Apr 2013
- Japan Times (2012) Special report – 3.11 one year on: a chronicle of Japan's road to recovery. The Japan Times, Tokyo
- Japan Times (2013) U.S. Service Members are suing Tokyo Electric Power Co. for more than \$2 billion (17 March 2013). <http://www.japantimes.co.jp/news/2013/03/17/national/u-s-military-personnel-suing-tepco/>. Accessed 17 Apr 2013
- Jayasuriya S, McCawley P (2010) *The Asian Tsunami: aid and reconstruction after a disaster*. Elgar, Cheltenham
- Johns F (2012) *Non-legality in international law: unruly law*. Cambridge University Press, Cambridge
- Kabashima H (2013) Current issues in legal policy for recovery from the aftermath: one year after the 3.11 Tōhoku Earthquake and Tsunami. *J Jpn Law* 34:7–22. http://sydney.edu.au/law/anjel/content/anjel_research_pap.html. Accessed 17 Apr 2013
- Kahan D (2007) The cognitively illiberal state. *Stanford Law Rev* 60:104
- Kahneman D (2011) *Thinking, fast and slow*, 1st edn. Farrar, Straus and Giroux, New York
- Kawato Y, Pekkanen R, Tsujinaka Y (2012) Civil society and the triple disasters: revealed strengths and weaknesses. In: Kingston J (ed) *Natural disaster and nuclear crisis in Japan: response and recovery after Japan's 3/11*. Routledge, London, pp 78–93
- Kingston J (2012) The politics of natural disaster, nuclear crisis and recovery. In: Kingston J (ed) *Natural disaster and nuclear crisis in Japan: response and recovery after Japan's 3/11*. Routledge, London, pp 188–206
- Kingston J (2013) *Contemporary Japan: history, politics, and social change since the 1980s*, 2nd edn. Wiley, Chichester

- Kitazume T (ed) (2011) Special report 3.11 – a chronicle of events following the great East Japan Earthquake. The Japan Times, Tokyo
- Klein N (2007) *The shock doctrine: the rise of disaster capitalism*, 1st edn. Metropolitan Books/Henry Holt, New York
- Kozuka S, Nottage L (2009) The myth of the cautious consumer: law, culture, economics and politics in the rise and partial fall of unsecured lending in Japan. In: Niemi-Kiesilainen J, Ramsay I, Whitford W (eds) *Consumer credit, debt and bankruptcy: national and international dimensions*. Hart Publishing, Oxford, pp 199–224; Sydney Law School Research Paper No. 09/50. <http://ssrn.com/abstract=1413464>. Accessed 27 Aug 2013
- Kozuka S (2012) Insurance law issues due to the Great East Japan Earthquake of 2011 (Part One). *J Jpn Law* 32:1–11. http://sydney.edu.au/law/anjel/content/anjel_research_pap.html. Accessed 17 Apr 2013
- Kozuka S (2013) Insurance law issues due to the Great East Japan Earthquake of 2011 (Part Two). *J Jpn Law* 34:87–94. http://sydney.edu.au/law/anjel/content/anjel_research_pap.html. Accessed 17 Apr 2013
- Kunreuther H, Useem M (2009) Principles and challenges for reducing risks from disasters. In: Kunreuther H, Useem M (eds) *Learning from catastrophes: strategies for reaction and response*. Wharton School Publishing, Upper Saddle River, pp 1–17
- Lawson C (2006) Japan's new privacy act in context. *Univ New South Wales Law J* 29(2):88
- Leflar R, Hirata A, Murayama M, Ota S (2012) Human flotsam, legal fallout: Japan's tsunami and Nuclear Meltdown. *J Jpn Law* 34(17):71–86. http://sydney.edu.au/law/anjel/documents/2013/ZJapanR_34_09_Leflar_etal.pdf. Accessed 29 Apr 2013
- Leigh A (2010) *Disconnected*. University of New South Wales Press, Sydney
- Leonard H, Howitt A (2009) Acting in time against disasters: a comprehensive risk management perspective. In: Kunreuther H, Useem M (eds) *Learning from catastrophes: strategies for reaction and response*. Wharton School Publishing, Upper Saddle River, pp 18–40
- McCawley P (2011) Great East Japan Earthquake: five stages of planning. Asian Development Bank Institute blog, 17 March:<http://www.adbi.org/news/2011/2003/2017/4489.great.east.japan.earthquake/>. Accessed 9 May 2013
- McGeough P (2013) UN fails to get its hands clean in Haiti. *Sydney Morning Herald*, 3 March 2013. <http://www.smh.com.au/opinion/politics/un-fails-to-get-its-hands-clean-in-haiti-20130302-2fctp.html>. Accessed 29 Apr 2013
- McGowan J (2012) Blame Game the Enemy of Good Policy When Disaster Strikes. *The Conversation* blog, 26 October:<https://theconversation.com/blame-game-the-enemy-of-good-policy-when-disaster-strikes-10337>. Accessed 9 May 2013
- Miyamoto K (2011) An exploration of measures against industrial asbestos accidents. In: Miyamoto K, Morinaga K, Mori H (eds) *Asbestos disaster: lessons from Japan's experience*. Springer, Tokyo, pp 19–46
- Miyamoto K, Morinaga K, Mori H (eds) (2011) *Asbestos disaster: lessons from Japan's experience*. Springer, Tokyo
- Morita H (2013) Rescuing victims and rescuing TEPCO: a legal and political analysis of the TEPCO Bailout. *J Jpn Law* 34:23–42. http://sydney.edu.au/law/anjel/content/anjel_research_pap.html. Accessed 17 Apr 2013
- Mortimer E, Bergin A, Carter R (2011) Sharing risk: financing Australia's Disaster Resilience. Australian Strategic Policy Institute – Special Report 37. http://www.aspi.org.au/publications/publication_details.aspx?ContentID=280
- Nagata K (2013) NRA gets strict, must prove credibility. *The Japan Times*, 9 March 2013. <http://www.japantimes.co.jp/news/2013/03/09/national/nra-gets-strict-must-prove-credibility/>. Accessed 29 Apr 2013
- Nasu H (2013) Managing future disasters: Japan's energy security and nanotechnology regulation. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4

- National Climatic Data Center (2009) Wildfires – September 2009. <http://www.ncdc.noaa.gov/sotc/fire/2009/9>. Accessed 17 Apr 2013
- National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (2012) Official report of The Fukushima Nuclear Accident Independent Investigation Commission. The National Diet of Japan, Tokyo. http://www.nirs.org/fukushima/naic_report.pdf. Accessed 2 May 2013
- National Police Agency of Japan (2013) Damage Situation and Police Countermeasures Associated with 2011 Tohoku District – Off the Pacific Ocean Earthquake: April 10, 2013. http://www.npa.go.jp/archive/keibi/biki/higaijokyo_e.pdf. Accessed 29 Apr 2013
- Noland M, Robinson S, Wang T (2001) Famine in North Korea: causes and cures. *Econ Dev Cult Change* 49(4):741–67
- Nolon JR, Rodriguez DB (2007) Introduction. In: Nolon JR, Rodriguez DB (eds) *Losing ground: a nation on edge*. Environmental Law Institute, Washington, DC, pp 1–24
- Nottage L (2006) The ABCs of product safety re-regulation in Japan: asbestos, buildings, consumer electrical goods, and Schindler’s lifts. *Griffith Law Rev* 15(2):242–286
- Nottage L (2009a) The cultural (re)turn in Japanese law studies. *Victoria Univ Wellington Law Rev* 39(4):755–777
- Nottage L (2009b) Asia-Pacific regional architecture and consumer product safety regulation for a post-FTA Era (November, 19 2009). Sydney Law School Research Paper No. 09/125. <http://ssrn.com/Abstract=1509810>. Accessed 17 Apr 2013
- Nottage N (2009c) The New DPJ Government in Japan: implications for law reform. *Japanese Law and the Asia-Pacific: Japanese Law in Asia-Pacific Socio-Economic Context*, 1 September 2009. http://blogs.usyd.edu.au/japaneselaw/2009/09/the_new_dpj_government.html. Accessed 29 Apr 2013
- Nottage L (2010) Product safety. In: Howells G, Ramsay I, Wilhelmsson T (eds) *Handbook of international consumer law and policy*. Edward Elgar, Cheltenham, pp 256–294
- Nottage (2013) Preface: Japanese Law after the 3–11 disasters, and ANJEL’s Anniversary Conference on Asia-Pacific Disaster Management. *J Jpn Law* 34:1–5. Also at http://sydney.edu.au/law/anjel/documents/2013/ZJapanR_34_05_PrefaceNottage.pdf. Accessed 25 Apr 2013
- Nottage L (2011) Suppliers’ duties to report product-related accidents under the new ‘Australian Consumer Law’: a comparative critique. *Commercial Law Q* 25(2):3–14; Sydney Law School Research Paper No. 10/41. <http://ssrn.com/abstract=1600502>. Accessed 27 Aug 2013
- Nottage L, Kozuka S (2012) Lessons from product safety regulation for reforming consumer credit markets in Japan and beyond. *Sydney Law Rev* 34(1):129–161
- Oe K (1995) *Hiroshima notes*. Marion Boyars, New York
- O’Hare G (2001) Hurricane 07b in the Godavari Delta, Andhra Pradesh, India: vulnerability, mitigation and the spatial impact. *Geographical J* 167:23–38
- O’Malley P (2008) Governmentality and risk. Sydney Law School Research Paper 09/98: <http://ssrn.com/abstract=1478289>. Accessed 8 Apr 2013
- OECD (2003) *Emerging risks in the 21st century: an agenda for action*. Organisation for Economic Cooperation and Development, Paris
- OECD Nuclear Energy Agency (2011) *Improving nuclear regulation: NEA regulatory guidance booklets volumes 1–14*. <http://www.oecd-nea.org/nsd/docs/2011/cnra-r2011-10.pdf>. Accessed 29 Apr 2013
- OECD Nuclear Energy Agency (2012a) *Japan’s compensation system for nuclear damages: as related to the TEPCO Fukushima Daiichi Nuclear Accident*. Organisation for Economic Co-Operation and Development, Paris
- OECD Nuclear Energy Agency (2012b) *Main benefits from 30 years of joint projects in nuclear safety*, 5 April 2012. <http://www.oecd-nea.org/nsd/reports/2012/nea7073-30-years-joint-safety-projects.pdf>. Accessed 29 Apr 2013
- Office of the UN High Commissioner for Human Rights and UN Development Programme (2007) *Integrating human rights in natural disaster management in the Pacific: Workshop report*. <http://>

- www.undppc.org.fj/_resources/article/files/Workshop_report_on_Integrating_HumanRights_in_natural_Disaster_Management.pdf. Accessed 10 Apr 2013
- Osaka E (2012) Corporate liability, government liability, and the Fukushima nuclear disaster. *Pac Rim Law Policy J* 21:433
- Owen L, Kamp U, Khattak G, Harp E, Keefer D, Bauer M (2008) Landslides triggered by the 8 October 2005 Kashmir Earthquake. *Geomorphology* 94:1–9. http://webcentral.uc.edu/eprof/media/attachment/eprofmediafile_386.pdf. Accessed 30 Apr 2013
- Oxford Economics (2009) Potential impact of the Gulf Oil Spill on Tourism. http://www.ustravel.org/sites/default/files/page/2009/11/Gulf_Oil_Spill_Analysis_Oxford_Economics_710.pdf. Accessed 30 Apr 2013
- Ozderdem A, Jacoby T (2006) *Disaster management and civil society: earthquake relief in Japan, Turkey, India*. I.B. Tauris, London
- Pardieck A (2013) Layers of the law: a look at the role of law in Japan today. *Pac Rim Law Policy* 22(3):599
- Perrow C (1999) *Normal accidents: living with high-risk technologies*. Princeton paperbacks. Princeton University Press, Princeton
- Posner RA (2004) *Catastrophe: risk and response*. Oxford University Press, Oxford
- Posner RA (2008) Public policy toward catastrophe. In: Bostrom N, Cirkovic M (eds) *Global catastrophic risks*. Oxford University Press, Oxford, pp 184–201
- Preceden (2011) Timeline of Japan's great 2011 disasters and rescue operations. <http://www.preceden.com/timelines/12614-timeline-of-japan-s-great-2011-disasters-and-rescue-operations>. Accessed 17 Apr 2013
- Pringle P, Spigelman JJ (1981) *The nuclear barons*, 1st edn. Holt, Rinehart and Winston, New York
- Queensland Floods Commission of Inquiry (2012) Final report. <http://www.floodcommission.qld.gov.au/publications/final-report>. Accessed 25 Apr 2013
- Rahman P (2007) Cyclone Death Toll Up to 3,100 in Bangladesh, May Rise. *National Geographic*, 19 November 2007. <http://news.nationalgeographic.com/news/2007/11/071119-AP-bangladesh-cyclone.html>. Accessed 5 May 2013
- Ramseyer JM (2012) Why power companies build nuclear reactors on fault lines: the case of Japan. *Theor Inquiries Law* 13(2). <http://ssrn.com/abstract=1874869>. Accessed 17 Apr 2013
- Ramseyer JM, Nakazato M (1999) *Japanese law: an economic approach*. Studies in law and economics. University of Chicago Press, Chicago
- Rees JV (1994) *Hostages of each other: the transformation of nuclear safety since three mile Island*. University of Chicago Press, Chicago
- Reich M (1991) *Toxic politics: responding to chemical disasters*. Cornell University Press, Ithaca
- Reich M (2013) A public health perspective on reconstructing post-disaster Japan. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Reuters (2009) Three Million Displaced in Bihar Floods. Reuters, 31 August 2009. <http://in.reuters.com/article/2008/08/31/idINIndia-35254220080831>. Accessed 30 Apr 2013
- Reuters (2011) Japan approves Tepco nuclear claims plan, reactor leaks
- Reuters, 13 May 2011. <http://www.reuters.com/article/2011/05/13/us-japan-nuclear-tepcoiduSTRE74B1O720110513>
- Rheuben J (2011) Guest Blog: Japan's regions – could the Tohoku Earthquake lead to local government reform? *Japanese Law and the Asia-Pacific: Japanese Law in Asia-Pacific Socio-Economic Context*, 30 April 2011. http://blogs.usyd.edu.au/japaneselaw/2011/04/guest_blog_japans_regions_coul.html. Accessed 29 Apr 2013
- Rheuben J, Nottage L (2013) Now that the (radioactive) dust has settled: resolution of claims from the Fukushima nuclear disaster. *Asian Dispute Rev* (in press)
- Rheuben J (2013) Government liability for regulatory failure in the Fukushima disaster: an Australian comparison. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4

- Ridgwell H (2011) France calls for global nuclear safety standards. *Voice of America*, 31 March 2011. <http://www.voanews.com/content/sarkozy-calls-for-global-nuclear-safety-standard-by-years-end-118977029/137317.html>. Accessed 29 Apr 2013
- Samadhi TN (2013) BRR Aceh-Nias: post-disaster reconstruction governance. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Saul B, Sherwood S, McAdam J, Stephens T, Slezak J (2012) *Climate change and Australia: warming to the global challenge*. Federation Press, Sydney
- Samuels R (2013) 3.11: Disaster and change in Japan. Cornell University Press, New York
- Schneider M, Froggatt A, Thomas S (2011) Post-Fukushima World: 25 years after the chernobyl accident. Worldwatch Institute, April 2011. http://www.worldwatch.org/system/files/pdf/WorldNuclearIndustryStatusReport2011_%20FINAL.pdf. Accessed 29 Apr 2013
- Secretariat of the Pacific Community (SOPAC); United Nations Office for Disaster Risk Reduction (UNISDR) (2010) Mid-term review: Pacific regional DRM framework for action. <http://www.preventionweb.net/english/professional/publications/v.php?id=18874&pid:184>. Accessed 30 Apr 2013
- Slaughter A-M (2001) The accountability of government networks. *Indiana J Global Legal Stud* 8(2):347
- Solnit R (2009) *A paradise built in hell: the extraordinary communities that arise in disasters*. Viking, New York
- Sovacool B, Duprady I (2012) *Energy access, poverty, and development: the governance of small-scale renewable energy in developing Asia*. Ashgate Studies in Environmental Policy and Practice. World Scientific, Singapore
- Steele S, Chun J (2013) Insolvency law responses to a national crisis: Great East Japan Earthquake and guidelines for individual debtor out-of-court workouts. *J Jpn Law* 34:43–70. http://sydney.edu.au/law/anjel/content/anjel_research_pap.html. Accessed 17 Apr 2013
- Sun LG (2011) Disaster mythology and the law. *Cornell Law Rev* 96:1131
- Sunstein CR (2007) *Worst-case scenarios*. Harvard University Press, Cambridge
- Suter R (2013) The March 2011 Tohoku disaster in Japanese science fiction. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Suzuki I, Kaneko Y (2013) *Japan's disaster governance: how was the 3.11 crisis managed?* Springer, New York
- Tabuchi H (2013) In Japan, a painfully slow sweep. *The New York Times*, 7 January 2013. http://www.nytimes.com/2013/01/08/business/japans-cleanup-after-a-nuclear-accident-is-denounced.html?_r=0. Accessed 25 Apr 2013
- Takahashi T et al (eds) (2013) *Shinsai-Genpatsu Jiko to Kankyo-Ho [Environmental law and disasters and nuclear power plant accidents]*. Minjiho Kenkyukai, Tokyo
- Taleb N (2012) *Antifragile: things that gain from disorder*, 1st edn. Random House, New York
- Tanaka S (2012), Accident at the Fukushima Daiichi Nuclear Power Stations of TEPCO – Outline & Lessons Learned. *Proc Jpn Acad Ser Phys Biol Sci* 99(9):471. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3511977/>. Accessed 17 April 2013
- Tanase T (2010) Law and the community: a critical assessment of American Liberalism and Japanese modernity (trans: Nottage L, Wolff L). Edward Elgar, Cheltenham
- TEPCO (2012) Fukushima Nuclear Accidents Investigation Report (20 June 2012). http://www.tepco.co.jp/en/press/corp-com/release/2012/1205638_1870.html. Accessed 17 Apr 2013
- Teubner G (1993) Law as an autopoietic system (trans: Bankowska A, Adler R). Blackwell, Oxford
- Teubner G (2010) Constitutionalising polycontexturality. *Soc Legal Stud* 19:17–38
- Thaler R, Sunstein C (2008) *Nudge: improving decisions about health, wealth and happiness*. Yale University Press, New Haven
- The Asahi Shimbun (2011) 141 Kyushu Electric Employees Sent Pro-nuclear Mail. *The Asahi Shimbun* 15 July 2011. <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201107154675>. Accessed 29 Apr 2013

- The Chernobyl Forum 2003–2005 (2005) <http://www.iaea.org/Publications/Booklets/Chernobyl/chernobyl.pdf>. Accessed 17 Apr 2013
- The Japan Times (2013a) Tepco's investigation obstruction. The Japan Times, 14 February 2013. <http://www.japantimes.co.jp/opinion/2013/02/14/editorials/tepcos-investigation-obstruction/>. Accessed 29 Apr 2013
- The Japan Times (2013b) Nuclear group blames overconfidence for crisis. The Japan Times, 28 March 2013. <http://www.japantimes.co.jp/news/2013/03/28/national/nuclear-group-blames-overconfidence-for-crisis/>. Accessed 29 Apr 2013
- The Sydney Morning Herald (2013) Sichuan rocked again by massive earthquake. The Sydney Morning Herald, 21 April 2013. <http://www.smh.com.au/world/sichuan-rocked-again-by-massive-earthquake-20130420-2i71z.html>. Accessed 30 Apr 2013
- The Telegraph (2011) Japan earthquake: Timeline of the disaster, from tsunami to nuclear crisis. 15 Mar 2011. <http://www.telegraph.co.uk/news/worldnews/asia/japan/8382734/Japan-earthquake-timeline-of-the-disaster-from-tsunami-to-nuclear-crisis.html>. Accessed 17 Apr 2013
- Thia T (2011) Digital medical records provide critical backup. ZDNet.com, 24 March 2011. <http://www.zdnet.com/digital-medical-records-provide-critical-backup-2062208013/>. Accessed 29 Apr 2013
- Tohoku Medical Megabank Organization (undated) Medical support for disaster-stricken areas. <http://www.megabank.tohoku.ac.jp/english/guidance/activities01.html>. Accessed 29 Apr 2013
- Tolan P (2006) Tax and insurance consequences of major disasters: weathering the storm. *Nova Law Revi* 31. <http://ssrn.com/abstract=996121>. Accessed 17 Apr 2013
- Toomey E (2013) The slow road to recovery: a city rebuilds under the Canterbury Earthquake Recovery Act 2011. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- UN Department of Humanitarian Affairs (1991) China – Floods Jun 1991 UNDR0 Situation Reports 1–9. Relief Web. <http://reliefweb.int/report/china/china-floods-jun-1991-undro-situation-reports-1-9>. Accessed 29 Apr 2013
- UN General Assembly (2012) Natural disaster relief draft articles need clearer parameters, argue delegates as Legal Committee Continues Review of International Law Commission Report. <http://www.un.org/News/Press/docs/2012/gal3447.doc.htm>. Accessed 16 Apr 2013
- UNISDR (undated) Hyogo Framework for Action (HFA). <http://www.unisdr.org/we/coordinate/hfa>. Accessed 30 Apr 2013
- US Department of Commerce (2009) Super Tuesday Tornado Outbreak of February 5–6, 2008. http://www.nws.noaa.gov/os/assessments/pdfs/super_tuesday.pdf. Accessed 30 Apr 2013
- Verchick RRM (2010) *Facing catastrophe: environmental action for a post-Katrina world*. Harvard University Press, Cambridge
- Vervaeck A, Daniell J (2011) Christchurch Earthquake 2011 – March 6 & 7 Update. Earthquake Report, 7 March 2011. <http://earthquake-report.com/2011/03/07/christchurch-earthquake-2011-march-6-7-update/>. Accessed 30 Apr 2013
- Wallace R, Suzuki T (2013) The Kamikaze Crew of the Fukushima Nuclear Power Plant. The Weekend Australian Magazine. (9 March 2013). <http://www.theaustralian.com.au/news/features/the-kamikaze-crew-of-the-fukushima-nuclear-power-plant/story-e6frg8h6-1226592636155>. Accessed 17 Apr 2013
- Walsh B (2010) With oil spill (and blame) spreading, Obama will visit Gulf. Time, 1 May 2010. <http://www.time.com/time/health/article/0,8599,1986323,00.html#ixzz2PUBcYqKJ>. Accessed 30 Apr 2013
- Weitzdörfer J (2013) Liability for nuclear damages under Japanese law: key legal problems arising from the Fukushima Daiichi nuclear accident. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- White M, Grieve A (2013) Human rights and dignity: lessons from the Canterbury rebuild and recovery effort. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Willacy M (2013) *Fukushima*. Pan Macmillan Australia, Sydney

- World Bank (2010) Natural hazards, unnatural disasters: the economics of effective prevention. World Bank, Washington, DC
- World Bank (undated) Disaster risk management. [http://web.worldbank.org/WBSITE/EXTERNAL/ TOPICS/EXTURBANDEVELOPMENT/EXTDISMGMT/0,,menuPK:341021~pagePK:149018~ piPK:149093~theSitePK:341015,00.html](http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTURBANDEVELOPMENT/EXTDISMGMT/0,,menuPK:341021~pagePK:149018~piPK:149093~theSitePK:341015,00.html). Accessed 30 Apr 2013
- World Nuclear Association (2013) Nuclear power in Japan. [http://www.world-nuclear.org/info/ Country-Profiles/Countries-G-N/Japan/#.UXe1LrU3KwA](http://www.world-nuclear.org/info/Country-Profiles/Countries-G-N/Japan/#.UXe1LrU3KwA). Accessed 29 Apr 2013
- Writer L (2011) The Australian Book of Disasters. Pier 9, Murdoch Books Australia, Millers Point
- Yablokov A, Nesterenko V, Nesterenko A (2009) Chernobyl: consequences of the catastrophe for people and the environment. Annals New York Academy of Sciences, vol 1181. Blackwell, London
- Yasumura S, Goto A, Yamazaki S, Reich M (2012) Excess mortality among relocated elderly after Fukushima Nuclear Disaster. Public Health: <http://dx.doi.org/10.1016/j.puhe.2012.1010.1019>
- Yates A, Bergin A (2011) More than good deeds: disaster risk management and Australian, Japanese and US Defence Forces. Australian Strategic Policy Institute – Special Report 43: http://www.aspi.org.au/publications/publication_details.aspx?ContentID=322&pubtype=-321. Accessed 17 Apr 2013
- Yodoyabashi Yamagami Godo (ed) (2011) Shinsai No Horitsu Sodan Q&A [Disaster-related legal consultations: Q&A]. Minjiho Kenkyukai, Tokyo
- Yudkowsky E (2008) Cognitive biases potentially affecting judgment of global risks. In: Bostrom N, Cirkovic M (eds) Global catastrophic risks. Oxford University Press, Oxford, pp 91–119
- Zolli A, Healy A (2012) Resilience. Headline, London

Documents and Materials

- Constitution of the World Health Organisation*, 22 July 1946, 14 UNTS 185 (entered into force 7 April 1948)
- Convention on Nuclear Safety*, 17 June 1994, 1963 UNTS 293 (entered into force 24 October 1994)
- International Health Regulations, revised 23 May 2005, WHA Res 58.3 (entered into force 15 July 2007)
- Trail Smelter Case (United States v Canada)* (1941) III Reports of International Arbitral Awards 1905, p. 1965 (Trail Smelter Case)
- Agreement on Disaster Management and Emergency Response*, 26 July 2005 (entered into force 24 December 2009)
- Hyogo Framework for Action 2005–2015: Final Report of the World Conference on Disaster Reduction*, UN Doc A/CONF.206/6 (16 March 2005) (*Hyogo Framework for Action*)

Chapter 2

A Public Health Perspective on Reconstructing Post-Disaster Japan

Michael R. Reich

2.1 Introduction

Sometimes, as a result of disasters, it is possible to view things happening underneath the surface in society. This was a key finding of my research on pollution problems when I lived in Japan in the early 1970s. At that time, I co-authored a book on Japan's environmental crisis, with the title of *Island of Dreams (Yume no shima)*—as a metaphor for Japan's dream of development and of the environmental disasters that resulted.¹ A similar phenomenon is unfolding now in Japan. Processes that are normally hidden from the public and kept out of public debate are being exposed to light. In this way, disasters can create an opportunity for change.

The Great East Japan Earthquake of 11 March 2011 and its associated disasters (the tsunami and nuclear catastrophes) have thus created an opportunity for reconstructing and reinventing Japan. Of course, this is easy to say and difficult to do, and represents a major challenge for Japan. The triple disasters of earthquake, tsunami, and nuclear accident may represent a major historical turning point for Japan, an end to the post-war era and the beginning of a new historical period. What that period will be and how it will evolve, however, are still being determined and shaped.

This chapter is a revised combination of three lectures given in Japanese: (1) Keynote Address to the Tohoku Public Health Association Annual Meeting in Fukushima City on 22 July 2011, (2) a lecture at the Japan Medical Association Symposium on Health Policy on 11 March 2012, and (3) Keynote Address for Risho University's 140th Anniversary Symposium in Tokyo on 13 October 2012. The author appreciates helpful comments from Dr. Aya Goto, Associate Professor of Public Health at Fukushima Prefecture Medical University.

¹ Huddle and Reich (1975).

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In this period of potential transition, Japan is in the midst of major reflection on the triple disasters. It is a time for reflection both on how things could have been done better in addressing the catastrophes that occurred, and also how Japan could evolve in the future. In this period of reflection, the public health perspective has a special role, as I suggest in this chapter.

The question of how Japan has performed in responding to the recent disasters is being debated both inside and outside Japan, and many questions are being raised. Teams of international experts have visited Japan, and are reviewing public and private records. New facts are being discovered and revealed to the public, and the stories of what happened are being revised and rewritten, as a result of comprehensive investigations. This process will continue for a long time.

This chapter reflects on the Great East Japan Earthquake through an analysis of three issues, starting with responses, moving then to consequences, and finally considering causes. First, I propose six public health principles for considering responses to the disasters and the reconstruction of Japan. Second, I examine the consequences of the disasters, especially for the victims and their struggle for redress. Third, I explore debates over fundamental causes of the nuclear power disaster. These reflections provide a broader context for other chapters in this book and also contribute to Japan's ongoing deliberations about its recent past and future paths.

2.2 Reflections on Responses

2.2.1 *Principle #1: Provide Comprehensive Redress to the Victims*

The first principle is that people who have suffered from loss should receive comprehensive redress and their lives should be made whole again. In addition, those who caused the loss should be held responsible. Of course, this is not a simple or easy objective to achieve; in fact, it is very difficult for a complex disaster like the Great East Japan Earthquake. Unfortunately, the lives of the victims cannot be returned to their pre-disaster condition. In this circumstance, what does 'comprehensive redress' mean?

Forty years ago, when I studied the victims of Japan's pollution disasters, I learned that their struggle to obtain redress often lasted for decades. When I later returned to study Japan's disasters from a comparative perspective, I framed the experience of the victims as a 'double victimisation'—they were victimised first by the pollution, and they were then victimised by the social process of seeking redress.² In the end, the victims could not return to their original pre-disaster circumstances, and it was impossible for them to achieve 'comprehensive redress'.

² Reich (1991).

Let's hope the same does not happen for the victims of the 3/11 disasters. But it is important to recognise that assistance for them is not just an economic problem; redress cannot simply be turned into providing monetary compensation. There are also health losses, community losses, and emotional and spiritual losses. In that broader sense, 'comprehensive redress' will be very difficult to achieve.

2.2.2 Principle #2: Protect the Health of the Workers

The second principle is to protect the occupational health and safety of the workers doing the clean-up work at the nuclear power plants. They have been exposed to the highest levels of radiation and to the most mental and physical stress. Many of the workers at the Daiichi and Daini Fukushima power plants are local residents who lost family, friends, homes, and neighbourhoods, while working around the clock in the early phase of the disaster to try to bring the nuclear disaster under control.

One worker wrote as follows about the early days of the disaster, in an email that became public in a *Wall Street Journal* blog:

I myself have had to stay in the disaster management headquarters the entire time ever since the earthquake occurred, and have been fighting alongside my colleagues without any sleep or rest. Personally, my entire hometown, Namie-machi, which is located along the coast, was washed away by the tsunami. My parents were washed away by the tsunami and I still don't know where they are. Normally I would rush to their house as soon as I could. But I can't even enter the area because it is under an evacuation order. The Self-Defense Forces are not conducting a search there. I'm engaged in extremely tough work under this kind of mental condition. . .I can't take this any more!³

We have also been shocked by the stories about contract workers at the Fukushima nuclear plant. According to news reports, day labourers were hired in other parts of Japan and brought to Fukushima at high hourly wages and without adequate preparation for the work they were instructed to do.⁴ The nuclear power industry in Japan has a history of employing non-regular contract workers for more dangerous jobs.

According to a report of data published by Japan's Nuclear and Industrial Safety Agency in 2009, Fukushima Daiichi had 1,108 regular employees and 9,195 contract labourers.⁵ The agency also reported radiation exposure for these two groups as follows:

- 5–10 millisieverts (mSv): 671 contract labourers versus 36 regular employees;
- 10–15 mSv: 220 contract labourers versus 2 regular employees;
- 15–20 mSv: 35 contract labourers and no regular employees.

³ Japan Real Time (2011).

⁴ Jobin (2011).

⁵ Ministry of Economy, Trade and Industry (2010).

On 14 March 2011, Japan's Ministry of Health, Labour and Welfare raised the maximum dose allowable for workers to 250 mSv a year, up from the previous standard of 100 mSv over 5 years (either 20 mSv a year for 5 years or 50 mSv for 2 years), justified on the grounds of a state of emergency.⁶

Protecting the health of workers doing the clean-up at the Fukushima nuclear power plant is critical. What kind of health protection are they receiving? What will be the future costs in terms of illness and perhaps death? Unfortunately, some of the labour unions are caught in a conflict of interest, between the desire to protect their jobs and the desire to protect their health. Some labour unions even asked to increase the allowable limit of radiation exposure, so that they could continue to work.

2.2.3 Principle #3: Build Up Social Capital as the Basis of Community Reconstruction

In 1995, Professor Robert Putnam wrote a classic article called 'Bowling Alone: America's Declining Social Capital'.⁷ That article started a social science boom on social capital research. Recently, a number of research studies have been published on the relationship between social capital and disasters, not just in the US, but around the world, including India, Africa, and Japan. Researcher Daniel Aldrich, for example, has examined the role of social capital in the aftermath of Hurricane Katrina in New Orleans (in Louisiana, US). His research has shown the role of 'social capital' in explaining how well different communities perform in recovery from disasters. In other words, developing and protecting social capital is important to rebuilding communities.

Aldrich conducted a comparative study of post-disaster recovery processes in New Orleans (after Hurricane Katrina), in Tamil Nadu, India (after the 2004 tsunami), and in Kobe, Japan (after the 1995 earthquake), and came to this conclusion:⁸ 'Communities with more trust, civic engagement, and stronger networks can better bounce back after a crisis than fragmented, isolated ones ...'. Aldrich showed that social capital can be measured through three proxies:

- The level of trust (in fellow citizens and in government officials);
- The propensity to expend time and energy on civic duties (such as voting in local, regional, and national elections); and
- The ability of citizens to mobilise cooperatively (through demonstrations, neighbourhood clean-up days, and other collective action).

⁶ Ministry of Health, Labour and Welfare (2011).

⁷ Putnam (1995).

⁸ Aldrich (2010).

According to the cross-national research by Aldrich, social capital helps the recovery process in three ways:

- Social ties can serve as ‘informal insurance’ that provides people with information, financial help, and physical assistance, especially when formal institutions (both public and private) are not functioning;
- Groups with greater levels of social capital can overcome the barriers to collective action and mobilise more effectively as a group to raise and distribute resources and advance the processes of recovery;
- Social capital increases the likelihood that people will decide to stay in the community and participate in rebuilding, and not exercise their option of ‘exit’ when confronted with the difficult challenges of recovery (in part because of the availability of ‘voice’ and collective action).⁹

What are the implications of this research for the Great East Japan Earthquake? Aldrich’s research suggests that the Japanese government needs to actively promote the creation and protection of social capital as a way of helping recovery in the communities affected by all three disasters—earthquake, tsunami, and nuclear accident. In other words, the Japanese government needs to give emphasis to social relationships, collective action, and community spirit in its recovery policies. For example, temporary housing may not work for the elderly if it breaks up their informal interactions and cuts them off from one another. Another example, splitting up a community into different evacuation centres may harm the existing social bonds and create obstacles to recovery. All levels of government (national, prefectural, and local) need to find creative ways to strengthen the bonds of social capital that remain after the disasters.

2.2.4 Principle #4: Create Real Preparedness for Real Disasters

Public health generally believes that it is better to prevent problems rather than to treat problems. What does this mean for the victims of disasters? In thinking about prevention policies, it is useful to consider two different categories: disaster prevention (*shinsai bosai*) and crisis management (*kiki kanri*). In the case of the Great East Japan Earthquake, disaster prevention policies were well implemented for the earthquake. Similarly, in the Tohoku region, where there is strong awareness about the dangers of tsunami, good efforts were made at disaster prevention for tsunami. But the situation was different for nuclear disasters, where disaster prevention policies were not effectively developed or implemented.

For the future, Japan needs real preparedness rather than illusory preparedness. This is especially important for nuclear disasters. In short, inadequate protection

⁹ Aldrich (2010).

can create a false sense of security. The Japanese nuclear industry's support for a 'safety myth' (*anzen shinwa*)—the idea that a disaster simply could not occur at a nuclear power plant—created obstacles to the design of effective preparedness and prevention. And when a disaster does occur, the safety myth produces among citizens a profound sense of distrust about the government.

Of course it is not easy to assure a true sense of safety in disaster prevention. There are some difficult questions that must be addressed. For instance, for tsunami, do you prepare for the 100-year tsunami or the 1,000-year tsunami? Who decides, and how? These go beyond technical questions and enter the realm of social values. The process of evaluating and debating social risks and preparing appropriate plans for disasters inevitably confronts issues of transparency. Philosopher Norman Daniels calls this an issue of 'fair process'.¹⁰ One of the problems in Japan has been the walls of silence that exist in the nuclear industry, so that it is hard for social risks to be discussed publicly.

Japan has a special sensitivity about nuclear disasters, because of its experience as the only country that has been attacked by atomic bombs (at Hiroshima and Nagasaki). This experience may have contributed to the 'safety myth' that was believed necessary by Japan's political and economic establishment, during the period of rapid economic growth, to support policies to develop nuclear power plants. As a result, Japan's nuclear power administration was not based on objective scientific evidence and became instead an organisational mechanism for hiding safety problems when they occurred. The safety myth thus became an obstacle in Japan's nuclear energy administration to building effective safety mechanisms for nuclear power in Japan.

What sort of public health approach could contribute to more effective safety management of nuclear power in Japan? How can the public be assured about preparedness for disasters and be convinced that the plans will really help protect people? In the post-disaster period, how can the government manage the many crises that arise and how can the government do this in ways that make people feel safe?

Here I would like to make two recommendations. First, Japan should consider establishing something like the US Centers for Disease Control and Prevention, especially its Epidemic Intelligence Service, which can send out teams to conduct epidemiological investigations for both natural and man-made disasters.¹¹ Second, Japan should consider an overall framework for comprehensive preparedness for emergencies, similar to the 'all-hazards all-threats emergency plans' approach used by the US Federal Emergency Management Agency.¹²

In short, Japan should improve its disaster management preparation, for all kinds of crises, before those events occur. These preparations should occur at the national level all the way down to prefectures, towns, and villages, on a comprehensive

¹⁰ Daniels (2008).

¹¹ See: <http://www.cdc.gov/eis/index.html>.

¹² US Federal Emergency Management Agency (2010).

basis, including a system for administrative decisions when confronted with complex multiple disasters at a single time.

2.2.5 Principle #5: Make Regulation More Effective

In all countries around the world, public health depends on effective regulation by government of private business in many settings, including food, medicines, highways, construction, and nuclear power. But in order to create an effective regulatory system that can protect people's health and people's lives, the people who regulate must be effectively separated from the people who are regulated. In many countries around the world, however, this separation is inadequate, so that the regulated end up controlling the regulators. This phenomenon is known as 'regulatory capture' in the social science literature.¹³

In Japan, one of the causes of regulatory capture is the problem of *amakudari*, the 'descent from heaven' when government officials retire to jobs in the private sector. Other countries have a similar social phenomenon, even though they use different words.¹⁴ In the US, the phenomenon is called the 'revolving door', where government officials are hired by related private companies and then may even return to government at some time in the future.

For example, in Japan in 2000, a whistleblower reported a cracked steam dryer at the Fukushima Daiichi nuclear power plant. This whistleblower was not Japanese but was a Japanese-American. Despite a law protecting the identity of whistleblowers, the Japanese regulatory agency disclosed his identity to the company and did not send its own investigators to the company.¹⁵

The lack of effective regulation no doubt contributed to the spread of damage from the Fukushima nuclear power plant during the Great East Japan Earthquake. As the *New York Times* reported, 'Many Japanese and Western experts argue that inconsistent, nonexistent, or unenforced regulations played a role in the accident—especially the low seawalls that failed to protect the plant against the tsunami and the decision to place backup diesel generators that power the reactors' cooling system at ground level, which made them highly susceptible to flooding'.¹⁶ The lack of effective regulation has had many real public health consequences as well as social consequences. It has contributed to undermining public trust in both government and corporations.

This perspective helps to clarify many events from the recent past. For example, under many past governments headed by the Liberal Democratic Party, regulators repeatedly ignored warning signs about risks of disaster at the Fukushima power

¹³ Stigler (1971).

¹⁴ Tabuchi et al. (2011).

¹⁵ Onishi and Belson (2011).

¹⁶ Onishi and Belson (2011).

plant. Today, who believes what the Tokyo Electric Power Company (TEPCO) says? How do you correct the regulatory capture that continues to persist in Japan? Part of this will require structural change in the Japanese bureaucracy, as occurred in the US many years ago—so that the agency responsible for promoting nuclear power is separated from the agency responsible for regulating nuclear power. This could contribute to controlling the practice of *amakudari*, even though it may not be a complete solution to the regulatory problem.

What can public health professionals and others in Japan do in confronting this situation?¹⁷ First, there is a need for more research on the effectiveness of regulation. How is effective regulation defined and measured? Under what kind of organisational structures is it likely to occur? And finally, how can public health professionals use that research to promote more effective regulation in Japan?

Public health departments in Japanese universities have not yet developed courses on ‘regulatory science’ as it is known in the US. As a result, there is limited awareness of these regulatory issues among health and medical professionals in Japan. Most regulatory specialists are located in the public sector bureaucracy, which creates an obstacle to public deliberation about these issues.

2.2.6 Principle #6: Create a Government that Can Be Trusted

My final public health principle is both the most important and the most difficult to implement. Japan’s old Liberal Democratic Party was not able to adequately protect public safety. The Japan Democratic Party, in power during the Great East Japan Earthquake disasters, has confronted similar problems. This may be a problem of politicians, or a problem of political parties, or a problem of Japan’s political system. In many areas, there is a need for new leadership, new technology, new vision, and new reforms.

Japan may be entering a new historical period, the ‘*shin-sai-go*’ or the ‘post-disaster period’. Where will the political energy come from to address the challenges of this new period? There may be a re-alignment of political parties, and perhaps a new political party may emerge. In that case, what should people concerned with public health hope for? Personally, I would hope for politicians who deeply understand public health.

Radiation creates an invisible, silent, tasteless poison. As a result, radiation creates deep fears among people. People in Japan would like a government that publishes safety information that they can believe and trust. They would like a government they can trust; and public health people have an obligation to help create this kind of system.

¹⁷ See Nasu (2013), in this volume.

2.3 Reflections on the Consequences

One of the core social challenges after a disaster is to provide redress for the victims, the first of my public health principles above. This was a key finding of a book called *Toxic Politics* that I published 20 years ago on responses to chemical disasters.¹⁸ The book compared the politics of chemical disasters in three countries (Italy, Japan, and the US), and identified three common themes in responses to chemical disasters: around care, compensation, and clean-up. Using these three dimensions, it is possible to assess the performance of policies for responding to a disaster. The overall goal should be to assist the victims of the disaster in achieving redress along these three dimensions.

A major finding of *Toxic Politics* was that these three themes are not just technical problems; they are also political problems and require political struggle to resolve, to help the victims achieve redress. Let me suggest some of the controversies that arise around the three common themes, using examples from the Great East Japan Earthquake.

2.3.1 Care Problems

Many problems related to care arise after a disaster occurs. The first question is who should receive care? Who is affected as a victim, and how is that decided? Second, what kind of care should they receive? Especially, what is the right balance of physical care and mental health care? Both kinds of care are needed, but what degree of each is needed for each individual affected? Third, who provides the care? For example, in 2012 in Fukushima prefecture, the number of physicians had declined by 3.5 % (compared to the pre-disaster situation), making this problem especially difficult. Fourth, who will pay the cost of care for disaster victims? In Fukushima, how much should be provided by Japan's central government and how much by the responsible company?

One example of a controversy over care in Fukushima involves mothers. Mothers have strongly demanded testing of their breastmilk for radiation contamination, especially after trace amounts of radioactive cesium were found in 7 out of 21 breastmilk samples in May and June 2011. The research team that conducted the analysis concluded that the cesium levels were very low, and therefore could be considered as no risk to newborn babies. From a health professional's perspective (obstetricians, midwives, and public health practitioners), the test could be considered unnecessary; indeed, the test could raise uncertainties among mothers and could even reduce mothers' confidence to breastfeed. Nonetheless, after a long

¹⁸ Reich (1991), pp. 266–281. On milestones in providing redress following the 3/11 disasters in Japan, see further Nottage et al. (2013), in this volume; Rheuben and Nottage (2013).

debate, Fukushima prefecture decided in January 2012 to provide free breastmilk testing to 10,000 mothers, as a response to demands from mothers.¹⁹ But that decision created confusion among some mothers, who viewed the decision to provide the test itself as a sign of the high likelihood of radiation-contaminated breastmilk.²⁰

2.3.2 *Compensation Problems*

Problems also arise related to compensation. One of the first is who should be compensated? Other problems also arise: Which losses are compensated? How much is paid as compensation? Who pays the compensation? What process is used to decide on compensation?

One example of a controversy over compensation in Fukushima involves people who decided to evacuate. Many families outside the government-decided evacuation zone moved south at their own expense and on their own initiative; they then began demanding financial compensation for their evacuation expenses.²¹ They were in the region where evacuation was not officially required, but they decided to evacuate on their own volition to reduce their risks, especially for children or for unborn children in pregnant women. On the other hand, there are people who wanted to evacuate but could not. Should the government or TEPCO provide them with financial support? Who draws the lines for compensation, and on what basis are these decisions made?

2.3.3 *Clean-Up Problems*

A third set of issues relate to clean-up. The first question is where to conduct clean-up activities? Next, how are priorities set to decide on areas designated for clean-up? What constitutes 'clean'? Who sets the guidelines for clean, and how are workers trained in implementing the guidelines? Where are contaminated materials placed for permanent disposal? Who pays for the clean-up?

One year after the disaster, residents in Fukushima were demanding comprehensive clean-up of contaminated areas. One example of confusion over clean-up involved the process for cleaning up schools. According to a *New York Times* report in February 2012,²² there was deep confusion among workers on various questions related to the clean-up of schools: over the depth of soil to be removed,

¹⁹ Japan Times (2012).

²⁰ Goto A, February 2012, Personal Communication.

²¹ McNeill (2012).

²² Tabuchi (2012).

whether buildings should be decontaminated or demolished, and the effectiveness of clean-up methods. The decontamination projects involve huge sums of money going to big companies, but these companies often used sub-contractors or sub-sub-contractors with day labourers of uncertain training to do the actual work. In addition, local residents and volunteers began participating in the school clean-up activities. The methods were described as ‘trial and error’ with the potential of re-contamination by wind and rain and dust from surrounding areas. In addition, there arose a huge debate over where to temporarily store the removed soil and other radioactive waste.

2.3.4 Conclusions on Redress

It is still early to assess the response to a complex disaster such as the Great East Japan Earthquake. Some of Japan’s environmental pollution disasters of 40 years ago (such as Minamata Disease and Kanemi Yusho) created problems in care, compensation, and clean-up that are still being debated today, decades later. Experience from the past unfortunately suggests that these three problems for Fukushima victims will persist for many years to come.

In part these problems will persist because the radiation contamination will persist for decades. But problems will also persist because the health problems will be difficult to detect and will be contested, because questions of compensation will be debated and contested, and because the quality of clean-up will be controversial and contested. In conclusion, these three problems will require both long-term debates and long-term policies—because they are not simply scientific problems; they are also social-political problems and psychological-spiritual problems.

2.4 Reflections on the Causes

Japan is now in the midst of major reflection on the underlying causes of the triple disasters of 3/11, including what needs to be changed to prevent new disasters, and how Japan can evolve in the future. Here I explore the National Diet of Japan’s Fukushima Nuclear Accident Independent Investigation Commission Report, which was submitted on 28 June 2012.

2.4.1 The Investigation Report

This report is a remarkable document. It does not mince words, and directly calls a problem a problem. The report also proposes specific actions to prevent the

recurrence of a similar nuclear disaster in Japan. In probing the causes of the disaster, the report raises questions about the nature of Japanese society and political culture. The report thus provides ample material for a serious reflection on Japan's future from the perspective of Fukushima.

The Fukushima Commission Report was based on over 900 hours of hearings and interviews with 1,167 people, including three town meetings with over 400 people who had been evacuated, plus questionnaire responses from over 10,000 residents and from many on-site workers. The report's main text was 641 pages long—a sizeable document. This was Japan's first independent commission of inquiry created by the Diet, through a law passed in October 2011. The Commission, which included ten members with diverse backgrounds and expertise, began its work in December and presented its report in June 2012.

The Commission pursued lofty objectives. It wanted to write a report that would 'contribute to the development of Japan's civil society'.²³ The Commission explicitly sought to write a report for the people of Japan and for the people of the world, and a report 'that meets the highest standard of transparency'. All 19 meetings of the Commission were open to the public and broadcast on the internet, in both Japanese and English. The Commission selected three keywords, in the Japanese report, to describe its mission: national people (*kokumin*), future (*mirai*), and the world (*sekai*).²⁴

In considering the problems that caused the nuclear accident at Fukushima, the Commission clearly stated its conclusion: Fukushima was a 'man-made disaster'. But this man-made disaster did not arise, in the report's words, from 'error by a specific individual'.²⁵ Instead, the disaster arose from systemic problems, with those problems rooted in both structure and culture. According to the report (in the English summary), the causes of the disaster are rooted in problems of 'social structure' and 'organizational, institutional, and legal framework', on the one hand—along with problems of 'organization-driven mindset', 'habit of adherence. . . to conventional procedures', attitudes of 'ignorance and arrogance', and 'disregard for global trends' and 'disregard for public safety', on the other hand.²⁶

I cannot remember any official government report in Japan that uses such harsh words in analysing social problems, corporate action, and government policy. But it is worth noting that similar language has been used in government reports in the US for these same problems with nuclear power (as discussed below).

Based on its analysis of the causes of the Fukushima disaster, the Commission makes seven recommendations for actions by Japan's National Diet:

²³ National Diet of Japan (English) (2012), p. 9.

²⁴ Kokkai Jiko Cho (2012), p. 6.

²⁵ National Diet of Japan (English) (2012), p. 21.

²⁶ National Diet of Japan (English) (2012), p. 21.

1. Create a permanent committee in the National Diet to monitor the nuclear regulatory agency;
2. Reform the crisis management system for national and local governments and for power plant operators;
3. Strengthen government responsibility for public health and welfare of people affected by the Fukushima nuclear disaster;
4. Reform the rules governing power plant operators, including risk management, governance, and safety, with enhanced National Diet oversight;
5. Create a new regulatory agency for nuclear power, that would be independent, transparent, professional, consolidated, and proactive;
6. Reform existing laws related to nuclear energy to meet global standards, define roles in emergency response, and address problems of old reactors; and
7. Develop a system of independent investigation commissions to deal with remaining problems of nuclear disasters and nuclear energy.²⁷

A brief review of these seven proposed reforms suggests that the recommendations could address many of the ‘structural’ problems presented in the report. The deeper question is whether the recommendations could also address the ‘cultural’ problems it identified.

The preface to the English translation of the report hinted at this potential limitation. Here is what Commission Chairman Kiyoshi Kurokawa wrote in his ‘Message from the Chairman’:

For all the extensive detail it provides, what this report cannot fully convey—especially to a global audience—is the mindset that supported the negligence behind this disaster.

What must be admitted—very painfully—is that this was a disaster ‘Made in Japan’. Its fundamental problems are to be found in the ingrained conventions of Japanese culture: our reflexive obedience; our reluctance to question authority; our devotion to ‘sticking with the program’; our groupism; and our insularity.²⁸

In addition, the preface to the English version cited the ‘collective mindset of Japanese bureaucracy’, which ‘led bureaucrats to put organisational interests ahead of their paramount duty to protect public safety’.

Gerald Curtis, a professor of Japanese politics at Columbia University, wrote in the *Financial Times* that he considered this effort ‘to pin the blame on culture’ as ‘the ultimate cop-out’ and ‘specious’.²⁹ In plain language, he views this approach as wrong. Instead of blaming culture, he argued that the Commission should have looked for an individual to blame for Fukushima. ‘People matter’, he wrote, and someone should be held responsible for the accident. It is unlikely, however, in my view, that the Commission could have found one person responsible for the complex multiple problems that gave rise to Fukushima.

²⁷ Kokkai Jiko Cho (2012), pp. 20–22.

²⁸ National Diet of Japan (English) (2012), p. 9.

²⁹ Curtis (2012).

2.4.2 Comparison with the Japanese Version

When I compared the English introduction of the report with the Japanese introduction of the report, I was surprised to find several key points missing from the Japanese version. It is fine to write one preface for the English version and foreign consumption, and another preface for the Japanese version and domestic consumption. But the differences that appeared in this case are noteworthy, for they raise broader questions.

First, the Japanese version does not say that this was a disaster ‘Made in Japan’.³⁰ What is the purpose of telling English readers that this was a peculiarly Japanese disaster? If it is so, then which aspects were particularly Japanese? In addition, why raise the flag of Japanese uniqueness to English readers, but not do the same for Japanese readers? More broadly, the report’s label of ‘Made in Japan’ makes it seem like this kind of nuclear accident could only happen in Japan.

One obvious problem with this assertion of Japanese uniqueness is that the two other worst-case nuclear power accidents happened in Three Mile Island and in Chernobyl, one in American capitalism and one in Soviet communism. This raises serious questions about a cultural argument for the root causes of nuclear power plant disasters (and it also raises serious questions about a capitalist versus communist argument about the root causes of nuclear accidents—but that is a separate issue from our main concerns in this chapter).

A second major difference about the two introductions is that the Japanese version does not use the word ‘culture’ (*bunka*) but instead refers to issues of ‘mindset’, translated as ‘*omoikomi*’ and followed by ‘*maindosetto*’ written in *katakana* (the Japanese syllabary commonly used for transliteration of foreign language words) in parentheses (マインドセット).³¹ The Japanese version also does not include the list of ‘ingrained conventions of Japanese culture’ that appears in the English version.

The use of the word ‘mindset’ in *katakana* is an interesting choice. It first suggests a mind that is ‘set’, not open but closed, and a mind that is resistant to change. But in this case, the Japanese introduction refers to a particular Japanese mindset, related to the postwar beliefs of the all-knowing bureaucracy, single-company worklife dedication, and single-minded elitism that put organisational goals over all other issues including public safety.

As I was reflecting on these differences between the Japanese and English versions, in preparing the first draft of this chapter, I received a call from an old friend, Richard Bell. He co-authored a book 30 years ago on the language of nuclear power, called ‘*Nukespeak*’, which was recently reissued and updated as an e-book.³² What he told me was stunning. The word ‘mindset’ appeared as a

³⁰ Kokkai Jiko Cho (2012), pp. 5–6.

³¹ Kokkai Jiko Cho (2012), p. 6.

³² Hilgartner et al. (2011).

major theme in the President's Commission on the Accident at Three Mile Island, known as the Kemeny Commission, in 1979. That accident occurred on 28 March 1979, and the report was issued in the following October. When I read that report on the internet, I found a statement that the word 'mindset' appeared repeatedly in testimony before the Commission.³³ What happened, according to the Kemeny Commission report, is that 'the belief that nuclear power plants are sufficiently safe grew into a conviction'.³⁴ The Commission continued:

[T]his attitude must be changed to one that says nuclear power is by its very nature potentially dangerous, and, therefore, one must continually question whether the safeguards already in place are sufficient to prevent major accidents.

In addition, the Kemeny Commission wrote that 'the fundamental problems are people-related problems'—not technical problems with equipment—in 'the "system" that manufactures, operates, and regulates nuclear power'.³⁵ The Commission's overall conclusion (with italics in the original) was that to prevent future accidents like Three Mile Island, '*fundamental changes will be necessary in the organization, procedures, and practices—and above all—in the attitudes*' of both the regulatory agency and the nuclear industry.³⁶ As the authors of *Nukespeak* commented, 'The "root cause" of the accident at Three Mile Island was the nuclear mindset'.³⁷

In their recent edition of *Nukespeak*, the authors included an analysis of what happened at Fukushima. They concluded that the fundamental causes were not the conflict-aversion principles of Japanese culture but rather the accident-aversion assumptions of nuclear culture. In short, the problems were not in the particular Japan mindset but in the universal nuclear mindset.

Where did Japan's Investigation Commission find this idea of 'mindset'? Commission Chairman Kurokawa explains in his personal note in the afterword for the Japanese version (which I read after speaking with my friend) that the idea came from the Three Mile Island Report.³⁸ The Chairman explains that in his view the root causes of the Fukushima nuclear disaster can probably be found in the version of 'our mindset' that is accepted and supported by Japan's social structure. In this sentence, he subtly transforms the idea of a nuclear mindset (from the US President's Commission Report) into a Japanese mindset (in the Japanese Diet's Commission Report).

³³ Report of the President's Commission (1979), p. 8.

³⁴ Report of the President's Commission (1979), p. 9.

³⁵ Report of the President's Commission (1979), p. 8.

³⁶ Report of the President's Commission (1979), p. 7.

³⁷ Hilgartner et al. (2011), p. 144.

³⁸ Kokkai Jiko Cho (2012), p. 630.

2.4.3 Challenges

This transformation from the universal to the particular raises a number of questions for me. First, let's consider the issue of Japanese culture. I should say that I am somewhat skeptical about the idea that the root causes of the Fukushima nuclear disaster reside in Japanese culture. What is the evidence for this causal claim? The Fukushima Commission Report is not focused on analysis of Japanese culture *per se* and has little to say on this topic.

But if for a moment we accept these claims about Japanese culture (such as conflict-aversion and groupism and insularity), then what could be done about it? Most of the recommendations proposed in the report do not address mechanisms to change Japanese culture. Let's accept that culture is not static and that it can be changed. Then what could be done? For example, what could educational institutions do to make Japanese people more culturally adept at dealing with the risks of complex technologies? On these points, the Fukushima Commission Report is silent.

Next, let's consider the issue of the nuclear mindset. Viewing the nuclear mindset as a root cause of the Fukushima disaster leads in a different direction. It still allows one to see the nuclear mindset expressed as a social phenomenon in Japan. This mindset will not appear the same way in all countries; it will take different institutional forms and become expressed in different actual events and behaviours. Here the report's evidence and the analysis are more persuasive and abundant. There are many ways in which attitudes about nuclear power in Japan shaped ineffective regulation, inadequate prevention, lax procedures, and sloppy behaviour leading to the Fukushima disaster and the problematic responses.

2.5 Conclusions: What Can Be Done?

So where does that leave Japan today, as it confronts the multiple effects of the Fukushima disaster? In my view, the structural changes proposed by the Fukushima Commission Report are necessary but not sufficient for Japan. They represent the minimal changes required. But they are not enough, because they do not directly address problems that arise from the Japanese version of the nuclear mindset. Structural changes require changes in people's behaviour, knowledge and attitudes if they are to improve the actual performance of a system.

For example, Recommendation 3 calls for a system to deal with long-term public health effects of a nuclear disaster, including the provision of information to residents so that individuals can make informed decisions. But providing information alone does not necessarily improve people's capacity for decision making. For instance, mothers in Fukushima were forced to make individual decisions whether to evacuate or not, with public provision of information. But the limited information they received made decisions difficult. Often mothers made decisions

depending on their personal economic situation and their personal risk perception. These personal differences become apparent in the community, creating social tension and personal anxiety.

Regarding the Japanese context, Japan needs more public guarantees of protection of whistleblowers in all companies and government agencies, more educational support for individual expression and disagreement, and more tolerance for challenges to authority in various institutions. These changes will be difficult. But Japan is now in the midst of various cultural transitions at the start of the twenty-first century, and opportunities for deeper change exist. In addition, to prevent another disaster ‘Made in Japan’, the Commission Report calls for actions to bring Japan up to ‘international standards’—but it does not say who should do this or how. How to shape Japan’s cultural future in positive directions, it seems to me, constitutes one of the core challenges posed by the Fukushima nuclear disaster.

For the nuclear mindset, Japan needs more public discussion of the risks of nuclear power, more public reporting on problems that have occurred in the past, and more training to shape the values and attitudes toward risk for people working in both the regulatory agencies and the nuclear industry. These changes will not be easy, but they are probably required for the structural adjustments to produce social change.

Finally Japan needs to confront the loss of social trust that has grown since the disasters of 11 March 2011. This loss of social trust has occurred in part because of problems in how the government communicated with people after the disasters.³⁹ Addressing the controversies around the three dimensions of redress (care, compensation, and clean-up) will require discussion with the community. Otherwise it may not be possible to rebuild social trust toward government and toward physicians. Indeed, in November 2012, the United Nations Special Envoy on the Right to Health conducted an 11-day survey in Fukushima and concluded that the government had not done enough to protect the health of local residents and workers. He recommended greater community involvement in decision-making, monitoring, and implementation of measures that affect their health.⁴⁰

Rebuilding social trust in Japan will be a key component of efforts to address the challenges of responses, consequences, and causes of the disasters of 3/11, as presented in this chapter. The most difficult decisions related to disasters are rarely based only on scientific evidence but also require social judgements, because of the scientific uncertainties involved and the inevitable role of social values. To restore social trust, Japan will need to improve its ability to collect, analyse, and report *both scientific data and community voices* related to the earthquake, tsunami, and nuclear disasters. This restoration of social trust, in turn, will help Japan move forward in resolving the problems of care, compensation, and clean-up for the victims of the Great East Japan Earthquake disasters.

³⁹ Yilmaz (2011).

⁴⁰ Associated Press (2012).

References

- Aldrich DP (2010) Fixing recovery: social capital in post-crisis resilience. *J Homeland Secur* 6:1–10
- Associated Press (2012) UN envoy urges Japan to do more to protect health of residents affected by nuclear crisis. *Washington Post*, 26 November 2012
- Curtis G (2012) Stop blaming Fukushima on Japanese culture. *Financial Times*, 10 July 2012, p 8
- Daniels N (2008) *Just health: meeting health needs fairly*. Cambridge University Press, New York
- Hilgartner S, Bell RC, O'Connor R (2011) *Nukespeak: the selling of nuclear technology from the Manhattan Project to Fukushima*, 2nd edn. Sierra Club Books, San Francisco. <http://nukespeak.org>. Accessed 12 Jul 2012
- Huddle N, Reich M (1975) *Island of dreams: environmental crisis in Japan*. Autumn Press, New York
- Japan Times (2012) Fukushima to test milk from 10,000 mothers. *Japan Times*, 13 January 2012
- Japan Real Time (2011) Letters from Fukushima: TEPCO worker emails. *Japan Real Time (Wall Street Journal Blog)*, 28 March 2011. <http://blogs.wsj.com/japanrealttime/2011/03/28/letters-from-fukushima-tepco-worker-emails/>. Accessed 27 May 2011
- Jobin P (2011) Dying for TEPCO? Fukushima's nuclear contract workers. *Asia-Pacific J* 9(3). <http://japanfocus.org/-Paul-Jobin/3523?rand=1306547082&type=print&print=1>. Accessed 27 May 2011
- Kokkai Jiko Cho, Tokyo Denryoku Fukushima Genshiryoku Hatsudensho Jiko Chosa Iinkai (2012) *Chosa Hokokusho [Honpen]*. National Diet of Japan, Tokyo. <http://naiic.go.jp>. Accessed 13 Jul 2012
- McNeill D (2012) Fukushima victims complain of stingy response. *Mainichi Daily News*, 18 February 2012, p 2a
- Ministry of Economy, Trade and Industry (METI) (2010) *Genshiryoku Anzen-Hoanin. Genshiryoku Shisetsu ni okeru Hoshasei Haikibutsu no Kanri Jokyo oyobi Hoshasen Gyomu Jyujisha no Senryo Kanri Jyoko ni Tsuite*. METI, Tokyo, p 50. <http://www.meti.go.jp/press/20100729007/20100729007-2.pdf>. Accessed 7 July 2011
- Ministry of Health, Labour and Welfare (2011) Heisei 23 Nen Tohoku Chiho Taiheiyooki Jishin ni Kiin Shite Shojita Jitai ni Taio Suru Tame no Denri Hoshasen Shogain Boshi Kisoku no Tokurei ni Kan Suru Shorei. Ministry of Health, Labour and Welfare, Rodo Kijun Kyokucho, Tokyo. <http://www.mhlw.go.jp/stf/shingi/2r985200000194mr-att/2r985200000194ow.pdf>. Accessed 7 Jul 2011
- Nasu H (2013) Managing future disasters: Japan's energy security and nanotechnology regulation. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (2012) Official report. Executive summary. The National Diet of Japan, Tokyo (English version)
- Nottage L, Nasu H, Butt S (2013) Disaster management: socio-legal and Asia-Pacific perspectives. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Onishi N, Belson K (2011) Culture of complicity tied to stricken nuclear power plant. 27 April 2011. *The New York Times*, p A1
- Putnam RD (1995) *Bowling alone: America's declining social capital*. *J Democracy* 6(1):65–78
- Reich MR (1991) *Toxic politics: responding to chemical disasters*. Cornell University Press, Ithaca
- Report of the President's Commission on Three Mile Island: The need for change: The legacy of TMI (1979) US Government Printing Office, Washington. <http://scienceblogs.de/geograffitico/files/2012/10/191.pdf>. Accessed 13 Jul 2012

- Rheuben J, Nottage L (2013) Now that the (radioactive) dust has settled: resolution of claims from the Fukushima nuclear disaster. *Asian Dispute Rev* (in press)
- Stigler G (1971) The theory of economic regulation. *Bell J Econ Manag Sci* 3:3–18
- Tabuchi H (2012) A confused nuclear cleanup. *New York Times*, 11 February 2012, p B1
- Tabuchi H, Onishi N, Belson K (2011) Japan extended reactor's life, despite warning. *The New York Times*, 22 March 2011, p A1
- US Federal Emergency Management Agency (2010) Developing and maintaining emergency operations plans. *Comprehensive Preparedness Guide (CPG) 101, Version 2.0*. FEMA, Washington
- Yilmaz S (2011) Fukushima nuclear disaster: a study in poor crisis communication. *RSIS Commentaries*. S. Rajaratnam School of International Studies, NTU, Singapore <http://www.rsis.edu.sg/publications/Perspective/RSIS0932011.pdf>. Accessed 16 Feb 2012

Chapter 3

Disaster in Japan: A Case Study

Yasuko Claremont

3.1 Introduction

Of the three disasters that befell Japan on 11 March 2011, only the earthquake and the resultant tsunami were natural disasters. Japan has a history of devastating earthquakes, including one in 1896 which occurred off the coast of Iwate prefecture and killed over 22,000 people. The March 2011 earthquake also had its epicentre off the east coast of Japan and again devastated Iwate prefecture. Had the Japanese Government and the Tokyo Electric Power Company (TEPCO) taken heed of the ominous 1896 precedent and located nuclear reactors further from the sea along the east coast, the nuclear damage caused by the rushing waters would have been averted. Instead, the tsunami knocked out the protective cooling systems in three reactors in the Daiichi nuclear plant in Fukushima, causing them to overheat, melt down, and subsequently release huge amounts of radiation into the air, polluting the surrounding land and water, and threatening the health of thousands of people with the possibility of its after-effects.¹

The Fukushima nuclear disaster left Japan facing great challenges: reconstructing the devastated land and relocating the people displaced. This chapter outlines various factors that have affected, either positively or negatively, reconstruction in the aftermath of the disasters on and since 11 March 2011. First, it examines Japan's readiness for disasters. Japan learned invaluable lessons in

¹ According to one commentator: 'Experts and the Government say that there have been no visible effects from the radioactive contamination from the Fukushima Daiichi plant so far. But they also warn that even low-dose radiation carries some risk of cancer and other diseases, and exposure should be avoided as much as possible, especially the intake of contaminated food and water. Such risks are higher for children and even higher for foetuses, and may not appear for years:' Kageyama (2012).

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disaster management and preparedness from the Kobe earthquake in 1995. However, the application of those lessons to the nuclear accident in Fukushima was hindered by ‘the nuclear village’ which controls Japan’s nuclear energy supply—the energy businesses which were responsible for locating nuclear plants so dangerously close to the sea along the east coast of Honshu. It then considers how the Japanese Government and the public coped with the disaster, highlighting the lack of strong political leadership in the Japanese Diet when joint national leadership was most needed. This impediment was counterbalanced by infrastructure measures and an emergency social coordination network for effective volunteering already in place. The final section addresses the current problems in planning for the future: political tensions over the rebuilding of the entire Tohoku region that has been ravaged by the disasters; Japan’s future energy policy; and the relocation of more than 100,000 people whose lives have been affected.

3.2 Before the Disaster

3.2.1 Lessons Learned from Previous Disasters

There were two important lessons learned from the Kobe earthquake in 1995, which proved to be effective in minimising casualties in the 2011 disasters. The first relates to safety and evacuation procedures in the event of an earthquake. Following the Kobe earthquake in 1995, building regulations were reviewed and amended to make buildings, bridges, roadways and railway lines able to withstand earthquakes. Regular evacuation drills, emergency shelters, and widespread dissemination of information and instructions, including during a Disaster Relief and Volunteerism Week in January 2011, ensured that people knew what to do and where to go in case of emergency. The result of this comprehensive national program was that no buildings collapsed in Tokyo and the casualties from the March 11 earthquake were relatively small, even though it measured an unprecedented 9.0 on the Richter scale. Given that any location in Japan can be close to an earthquake epicentre, and the difficulty in forecasting earthquake magnitudes, the measures taken to protect the population from earthquakes were most impressive.

Second, volunteering has attained recognition as a national emergency force through its sheer numbers and potential for controlled and effective deployment. Volunteer groups from a range of backgrounds, both skilled and unskilled, formed a miscellany of networks, united in their willingness to help. Volunteer recruitment centres were established locally to join other groups already in existence, such as non-governmental organisations (NGOs) and non-profit organisations (NPOs).

They provided medical aid, and several state and civil organisations, combined resources and worked collaboratively.² The media, with its broad coverage and ever-growing potential to disseminate urgent information, also proved effective. These civil elements have become further embedded in the social infrastructure since 1995 and have been key players in responding to crises.

3.2.2 *Japan's Nuclear Policy Prior to the Disaster*

When the 2011 disaster struck Japan, 54 nuclear power plants were in operation and two more were being built. Why did the Japanese come to accept and support nuclear power as a source of energy when the population had experienced cruel suffering from the atomic bombing in 1945? The original impetus came from United States (US) foreign policy. In December 1953, President Eisenhower launched an 'Atoms for Peace' policy at the United Nations General Assembly to alter the worldwide perception that nuclear power could be used only for military purposes. In effect, the policy was a disguised promotion of the development and testing of nuclear weapons. Chairman of the US Atomic Energy Commission, Lewis Strauss, acknowledged this in 1958 when he revealed that the underlying purpose was 'to highlight the peaceful application of nuclear power devices and thereby create a climate of world opinion that is more favourable to weapons development and tests'.³ Japan's participation in this program was crucial. At first, the Japanese public strongly resisted the idea, but following a two-year joint campaign by the US and Japanese governments (1954–1955), the peaceful utilisation of nuclear power became more acceptable in Japan.⁴ In December 1955, the Diet approved the Atomic Energy Basic Law, which in turn established the Japan Atomic Energy Commission.

Leaving the initial US policy imperative to one side, for the first 50 years, nuclear power helped provide Japan's domestic energy supply and contributed to Japan's economic rise. Not least, it reduced the nation's dependence on foreign imports of energy resources such as fossil fuels. When interviewed by the *Asahi Shimbun* in 2011, former Prime Minister Yasuhiro Nakasone stated that nuclear energy was necessary because 'we had no oil, no gas and our coal reserves were dwindling'.⁵ The nation's need for self-sufficiency became even more urgent when the cost of oil rose by 660 % between 1973 and 1981.⁶

² For example, two high-profile networks were the Nippon Volunteer Network Active in Disaster (NVNAD) and the Nishinomiya Volunteer Network, a collaborative state-civil group. See Avenell (2012), pp. 58–59.

³ Kuznick and Tanaka (2011).

⁴ Tanaka (2011).

⁵ Aldrich (2012), p. 132.

⁶ Scalise (2012), p. 151.

In control of the nuclear energy supply was a consortium which came to be known in Japan as ‘the nuclear village’. This group comprised the Liberal Democratic Party (LDP), which was in government until 2009, the Ministry of Economy, Trade and Industry (METI, known as MITI until 2000), the ten nuclear power companies (the largest of which was Tokyo Electric Power Company: TEPCO), and Keidanren and Doyukai (two leading business institutions representing the interests of major corporations). All worked in close co-operation to the point of being ‘cosy’. For example, the ten utility companies contributed 72.5 % of all donations received by the LDP in 2009,⁷ and when the party lost office that year, the utilities continued to provide large donations to the LDP and nothing to the new Government formed by the Democratic Party of Japan (DPJ). In addition, on retirement, government officials were able to find new senior executive positions in the nuclear companies. In return, executives from these companies were appointed as members of nuclear policy-making committees.⁸ Moreover, the Nuclear and Industrial Safety Agency (NISA), the regulatory body charged with reactor safety and security, was not an independent watchdog, being a division within METI, which was also charged with promoting nuclear energy in Japan.

TEPCO was supremely confident in the strength and safety of its nuclear reactors. As Professor Yuki Tanaka has pointed out:

TEPCO claimed that nuclear reactors would safely stop, then automatically cool down and tightly contain the radiation in the event of an earthquake, and that there would therefore be no danger that earthquakes would cause any serious accident.⁹

The vulnerability of nuclear reactors was already evident, however, when TEPCO’s Kashiwazaki-Kariwa plant on Japan’s north-west coast experienced several malfunctions, including a fire in a transformer and a leak of a small quantity of radiation into the ocean and atmosphere following a magnitude 6.8 earthquake that hit the region in July 2007. Despite this serious accident, TEPCO officials still blindly took pride in their ‘world-best nuclear power technology’.¹⁰

In deciding where to locate nuclear reactors, the Government and the power companies avoided areas where residents were likely to protest. Instead they targeted areas in decline, offering large sums of money for building public facilities and financing local industries in return for their agreement on the construction of a nuclear reactor nearby. This is how reactors came to be located close to villages along the coasts of Honshu. The Government and the power companies ignored altogether the risk of major earthquakes that had hit Japan, such as the Great Kanto Earthquake in 1923 (magnitude 8.2) and the Nobi earthquake in 1891 (magnitude 8.0). Profits and expediency had overridden concern for public safety.

⁷ Kingston (2012b), p. 199.

⁸ Kingston (2012b), p. 201.

⁹ Tanaka (2011).

¹⁰ Tanaka (2011).

3.3 Coping with the Disaster

3.3.1 *Governmental and Non-governmental Emergency Responses*

What is now referred to in Japan as the Great East Japan Earthquake was a megadisaster consisting of an unprecedented magnitude 9 earthquake, magnitude 6 and 7 aftershocks that continued for a week, and a tsunami that swept across more than 500 km² of land, washing away towns and villages in its path. Within three days, three reactors in the Daiichi nuclear power plant in Fukushima started to melt down, releasing an unknown quantity of atomic radiation into the atmosphere, the surrounding soil, rivers, mountains and the sea. In the afternoon of 11 March 2011, 20,000 people died, most from drowning. Comprehensive statistics are contained in an Executive Report compiled jointly by the Government of Japan and the World Bank, published in 2012.¹¹

At the peak of the relief effort, more than 470,000 people were housed in evacuation centres. In the Tohoku region alone, nearly 2,500 evacuation facilities were established. Publicly-owned schools and community centres as well as hotels and temples were used as evacuation facilities. Many evacuees stayed with relatives or friends. Four months after the disaster, as the construction of temporary housing progressed, about 75 % of evacuees had vacated the emergency evacuation facilities or found other accommodation.¹² Items such as portable toilets and power generators became key necessities. At many centres, a self-governing body emerged with leaders and members of various communities which were selected by the evacuees themselves. Although such organisation would normally be a municipal responsibility, staff losses weakened the capacity of local governments to cope with the emergency.

If Japan had faced only an earthquake—even one of such unprecedented magnitude—its emergency measures probably would have been adequate, if not excellent. As mentioned, the Kobe earthquake had led to stringent measures relating to buildings, bridges, roadways and railway lines. These proved to be very effective in protecting buildings and people. Nineteen bullet trains were running at the time of the earthquake, including two at 270 km/h. All were equipped with advanced technology able to detect the first sign of a tremor, enabling the trains to stop at once. This measure alone saved the lives of thousands of passengers.¹³ A further precaution against a tsunami had been the building of 300 km of dikes in the Tohoku region. While they helped save lives, 190 km of them were swamped by the huge tsunami in the aftermath of the 2011 earthquake.

¹¹ World Bank (2012), p. 3.

¹² World Bank (2012), p. 16.

¹³ World Bank (2012), p. 13.

Two days after the triple disaster, the then Prime Minister, Naoto Kan, ordered 100,000 Self Defence Force soldiers to be deployed for relief and rescue operations. He asked for foreign assistance, including from the US military bases in Japan, and immediately established two high-level control centres for volunteers. The Government also moved swiftly to allocate funds to help volunteer centres in affected areas. A network for disasters assistance also existed among government departments, prefectures and communities within the prefectures.

Occupying a key role in the volunteer infrastructure were two large quasi-government organisations, Zenshakyō and the Red Feather Community Chest Movement. Through ‘constructive collaboration’ they created a wide-ranging network of volunteer centres at both prefectural and municipal levels, providing coordination, funding and liaison services.¹⁴ Neighbourhood associations (NHAs), the most common form of civil society organisation in Japan, supplemented government relief and recovery work throughout Japan.¹⁵ There are about 300,000 such groups and nearly all Japanese citizens belong to one.¹⁶ NHAs engage in disaster preparedness and response improvement activities. Through regular training, all residents, including school children, know what to do and where to go in an emergency situation. NHAs also encourage communities to come together for social activities, with the effect that residents know one another and can work together in an emergency. Special assistance is available for the elderly, people with disabilities, pregnant women, and foreigners who do not understand Japanese. The aim of each of these centres is to ensure that no one is forgotten.

An important service performed by NHAs was to urge the public not to rush at once into the affected areas as volunteers, or begin sending relief materials independently. Evacuation centres had to be set up first. Debris made access difficult, local communities were initially unable to provide volunteers with food or accommodation. Volunteers needed to bring their own provisions.

By using the media and the internet, NHAs were able to coordinate public participation in the relief efforts. Social media such as Twitter, Facebook, YouTube, as well as emergency FM radio, were extensively used in search and rescue as well as for fundraising. Community radio stations communicated useful information to residents, such as times and locations for the distribution of emergency food, water and other necessities.¹⁷ And in the immediate aftermath of the calamity, mobile phones were an excellent means of trying to contact family and friends, although often unfortunately to learn the worst.

Special groups also swung into action. In the afternoon of 11 March 2011, local fire fighters acted promptly in the town of Otsuchi, Iwate prefecture, where a one-kilometre embankment had been built along the ocean with gates at every 100 m to allow people to pass through. As soon as the alarm was sounded, volunteer

¹⁴ Avenell (2012), p. 63.

¹⁵ Kawato et al. (2012), p. 83.

¹⁶ Kawato et al. (2012), p. 83.

¹⁷ Slater et al. (2012), p. 97.

firemen rushed to close the gates, after which they helped local residents to higher ground. When the emergency siren failed to work, one officer stayed at his post ringing a bell to warn residents of the approach of the tsunami until he was overwhelmed by the huge tide of water. Twenty-six fire fighters died or went missing while helping local residents escape the tsunami.¹⁸

The Consumers' Cooperative Union had agreements with 46 prefectures and 310 local governments to help provide supplies in the aftermath of natural disasters. As a result, by 1 April 2011, the Cooperative had despatched about 10,170,000 bottles of water and food deliveries in 852 trucks involving 2,777 staff.¹⁹ In facing this unprecedented disaster, the Japanese people maintained order in the midst of chaos, highlighting a key strength of their society.²⁰

3.3.2 *The Ishinomaki Model*²¹

At Ishinomaki, close collaboration took place between three sectors: (1) the city disaster rescue centre including the fire department, police and the Self Defence Force; (2) NPO and NGO volunteer groups; and (3) individual volunteers. Such was the scale of the disaster that swamped Ishinomaki that the city council was not able to control or use established rescue systems. Fortunately, a blueprint agreement of cooperation was ready to be signed by the city council and the local academic institution, Senshu University. Having suffered only minor damage, Senshu University became the focal point for rescue efforts, where local and external volunteer groups worked together in nine divisions including food delivery, medical assistance, transport, support for children, and cleaning. Volunteers received on-site accommodation, food and toilet facilities. These different groups worked together in what is now seen as a successful model resulting from local preparation.

3.4 Aftermath of the Disaster

3.4.1 *Political Tensions*

The triple disaster brought about the greatest crisis faced by Japan since the end of World War II. Yet instead of uniting to lead the nation's reconstruction, major

¹⁸ Kawato et al. (2012), p. 85.

¹⁹ Kawato et al. (2012), p. 88.

²⁰ For informative detail on the civil response I am deeply indebted to Simon Avenell's extensive study: Avenell (2012).

²¹ Nakahara (2011).

political parties engaged in petty politics—especially the LDP, which in opposition was intent on bringing down the Government and Prime Minister Naoto Kan. Only one week after the disasters, Kan invited the leader of the LDP to join the Government in the spirit of common leadership. The offer was immediately rejected.²² Kan came to be seen by the public as an unreliable and weak leader. He was criticised for failing to unite the Diet and even his own party.²³

The political circumstances in which Prime Minister Kan found himself in significantly impeded the relief efforts. The Government lacked a two-thirds majority in the House of Councillors, leaving measures approved by Cabinet subject to veto or delay by the opposition parties.²⁴ Kan's leadership was being undermined by a faction within his own party led by Ichiro Ozawa, who had previously lost the party leadership.²⁵ Furthermore, once legislation was passed, power struggles within the bureaucracy over the assignment of responsibilities created further obstacles to action.²⁶ Kan became a lone figure of responsibility in this conflicting and aggressive political climate, prone to making decisions and announcements without consulting the Cabinet, thereby alienating its members. For example, on 18 June 2011, the Minister for METI, Banri Kaieda, went to great lengths to assure the public that nuclear reactors had been checked and were safe,²⁷ only to be followed by the Prime Minister's announcement early in July that all of Japan's 54 reactors would be subject to two-stage stress tests.²⁸ The result of contradictory decisions, political tensions, and weak leadership was that the public lost all confidence in the Government. Taking the blame was Prime Minister Kan, who unfortunately lacked the presence, composure and communication to be the strong leader the nation so desperately needed. Indeed, it was Chief Cabinet Secretary Yukio Edano who became a prominent spokesman for the Government, making frequent television appearances to keep the public informed about rescue operations and the state of the stricken Fukushima operations.

Adding to this unease was the fear of radiation. On the day of the disaster, the president of TEPCO, Masataka Shimizu, disappeared and did not resume his position for nearly a month. His absence was a destabilising factor, provoking public outrage. On 12 March 2011, one day after the disaster, TEPCO officials were unable to provide the Prime Minister and the public with any firm information concerning what damage may have been done to nuclear reactors, particularly at Fukushima, causing the Prime Minister to rebuke TEPCO angrily on television.²⁹

²² Kingston (2012b), p. 189.

²³ Kingston (2012a), p. 7.

²⁴ Kingston (2012b), p. 189.

²⁵ Kingston (2012b), p. 185.

²⁶ Kingston (2012b), p. 193.

²⁷ Kingston (2012b), p. 194.

²⁸ Kingston (2012b), p. 194.

²⁹ Broinowski (2012), p. 223.

Exasperated, he sought help from the US Nuclear Regulatory Commission³⁰ and US military assets based in Japan to provide more reliable information. Subsequently, the International Atomic Energy Agency formally admonished TEPCO for its lack of transparency and inability to provide technical information in a timely manner.³¹ TEPCO waited two months to divulge that three reactors at the Fukushima Daiichi plant had melted down within three days.³² Originally claiming that only the tsunami had damaged the reactors, the company later admitted that the earthquakes had damaged them too. Vital information was first published in the Bloomberg News on 23 March 2011, when Mitsuhiro Tanaka, a designer and supervisor in the construction of Reactor 4, revealed that the radiation containment vessel had been damaged in the last stages of its production and was missing necessary steel braces, causing its walls to warp under extreme heat.³³ It was not until well over a year later, on 11 October 2012, that TEPCO admitted that the nuclear disaster at Fukushima could have been averted. The company acknowledged that it had known before the disaster took place that improved safety measures were needed to meet international standards. The reason given was that, while ‘severe accident measures were necessary, these could alarm the community and have negative political and legal ramifications’.³⁴

TEPCO twice spread false information about the Prime Minister, aiming to publicly discredit him. TEPCO claimed that a visit by him to reactors on 13 March 2011 resulted in delays to venting, causing hydrogen explosions on that day.³⁵ It turned out that the responsibility for the explosions lay solely with the company itself, and that the Government had actually instructed it to proceed with the venting. TEPCO was forced to publicly withdraw their initial claim.³⁶ Also, TEPCO blamed the meltdown on Kan, claiming that he had ordered the cessation of pumping water to cool the fuel rods. It was later established that the Prime Minister had never given such an order, forcing TEPCO to publicly recant once again.³⁷

On 6 May 2011, Prime Minister Kan requested Chubu Electric to shut down their Hamaoka power plant due to its high-risk location on a major active fault line. Also in May, Kan declared that Japan would boost renewable energy to 20 % of its electricity generating mix in the 2020s, up from its current level of about 1 %.³⁸

³⁰ The Nuclear Regulatory Commission is an independent agency of the US Government. The NRC oversees reactor safety and security, radioactive material safety, and spent fuel management. By 14 March 2011, 11 staff had been despatched to Japan to provide technical assistance to the Japanese Government: United States Nuclear Regulatory Commission (2013).

³¹ Kingston (2012a), p. 3.

³² Kingston (2012a), p. 6.

³³ Clenfield (2011).

³⁴ McCurry (2012b).

³⁵ Kingston (2012b), p. 190.

³⁶ Kingston (2012b), p. 190.

³⁷ Kingston (2012b), pp. 190–191.

³⁸ Bird (2012).

Then on 13 July, he announced his vision of gradually phasing out nuclear energy. This would mean abandoning current plans to build 14 new reactors by 2030 and overturning the current national energy policy that envisaged nuclear reactors would generate more than half of Japan's electricity supply by 2030. Expressing his personal views, Kan stated:

It is when I considered the scale of such risks arising from the nuclear incident that I realized that it would no longer be possible to conduct policy on the basis of ensuring safety alone, which was the conventional wisdom until the incident. I was made keenly aware of the type of technology nuclear power is.

These thoughts led me to conclude that with regard to Japan's future nuclear power policy, we should aim to achieve a society that is not dependent on nuclear power. In other words, we should reduce our dependence on nuclear power in a planned and gradual manner and aim to realize a society in the future where we can do without nuclear power stations. I have come to believe that this is the direction that Japan should pursue.³⁹

The Prime Minister's vision received strong support in public polling where a negligible 1 % favoured expanding nuclear plants and 77 % supported its gradual abolition.⁴⁰ Kan also proposed separating NISA from METI on the grounds that responsibility for both the regulation and promotion of nuclear energy should not be held by the same Government ministry. He also supported separating the power transmission from the ten regional power-generating utilities as a way of giving nuclear energy providers access to the market. All these actions were designed to undermine the monopoly that the nuclear companies enjoyed, and as a consequence these proposals were fiercely opposed by the 'nuclear village'.

Political tensions came to a head in early June 2011 when the opposition tabled a no-confidence motion against the Prime Minister. Recognising that the motion could also be supported by the dissident faction in his own party, Kan agreed to step down provided that three bills were passed by the Diet, one being a feed-in tariff promoting renewable energy.⁴¹ This tariff is a form of subsidy ensuring price stability in the introduction and encouragement of renewable energy. These bills were passed by the Diet in August. On 26 August 2011, the Prime Minister stepped down, to be replaced by Yoshihiko Noda. Although Kan's popularity remained low to the end of his prime ministership, the feed-in tariff will endure as his legacy. The tariff will help ensure that Japan has an available alternative and self-sufficient energy source.

3.4.2 *Energy Policy*

Until the Fukushima meltdown, nuclear energy was the reserved domain of the Government for implementation by utility companies. Fifty-four nuclear reactors

³⁹ Prime Minister's Office (2011).

⁴⁰ Kingston (2012b), p. 198.

⁴¹ Kingston (2012b), p. 189.

had already been installed. Fifty of them provided 30 % of Japan's electricity needs.⁴² More reactors were planned, which would have left nuclear power providing 50 % of electricity needs. After the meltdown, a question at the forefront of public debate was how to ensure future energy supply. While the full effects of the radiation from the catastrophe are not yet known, the population has been forced to live in a radiation-contaminated environment that poses further health threats.⁴³ In regular media polling and public meetings, the public desire for a nuclear-free society has been made overwhelmingly clear. For example, in 11 public hearings over the summer of 2012, about 70 % of participants supported the idea of a nuclear-free future, and in an exit poll taken by the *Asahi Shimbun* on 16 December 2012, the day of the national election, 78 % of respondents favoured an immediate or gradual move to a nuclear-free society.⁴⁴

Despite this, the Noda Government has continued to be equivocal in its energy planning strategy. Conflicting statements made by the Government in September 2012 are a case in point. On 14 September 2012, the Minister for Policy and Environment announced the forthcoming introduction of its 'Revolutionary Energy and Environment Strategy', which, if implemented, would phase out all nuclear reactors in Japan by 2040. However, the Minister went on to say that, although the policy prohibited the further construction of reactors, it left open the possibility that seven reactors still under construction could be completed and activated.⁴⁵ Officials went even further, confirming that 'it may be feasible to see the operations of these reactors through to the 2070s'.⁴⁶

Following this announcement, business and industry leaders demanded that the Prime Minister withdraw the policy, as the high costs of imported combustible fuels, the transfer of companies' operations overseas, and the resultant job losses, would cripple the economy.⁴⁷ On 18 September 2012, only four days after the policy was first announced, the Cabinet refused to endorse it stating only that 'it would take into consideration the 2040 goal'.⁴⁸ Since then, any formally endorsed plan has been put on hold, pending the national election. In summary, as the *Asahi Shimbun* has pointed out, since the disaster at Fukushima 'no cabinet approval was given for seeking a nuclear-free society, and that objective was not included in the new energy basic plan or any laws passed by the DPJ administrations'.⁴⁹

Japan's electricity needs are large, and in meeting them three social forces must be considered. The first of these are the people, who desire a clear and definite plan to phase out all nuclear reactors by the 2030s. Polling in July and August 2012

⁴² World Nuclear Association (2013).

⁴³ See more generally, Suter (2013), in this volume.

⁴⁴ *Asahi Shimbun* (2012).

⁴⁵ Tabuchi (2012a).

⁴⁶ Hixson (2012).

⁴⁷ McCurry (2012a).

⁴⁸ Warnock (2012).

⁴⁹ *Asahi Shimbun* (2012).

confirmed that 90 % of the population wish to live without nuclear energy altogether. Within the phase-out period they want to be assured that the existing reactors are safe, and that strict maintenance requirements will be met. Accordingly, the Nuclear Regulation Authority, reporting directly to the Cabinet, was established on 19 September 2012 to formulate and implement stringent safety standards based on lessons learnt from the accident at the Fukushima Daiichi nuclear power station.⁵⁰

The second force is Japanese utility companies. In defence of their monopoly position, they point to the high cost of imported fuels which, if continued, would cause the bankruptcy of four of the ten nuclear power companies. This is untenable because each acts as a monopoly in its own prefectural area. Since the suspension of all reactors in May 2011, the utility companies have argued that rising costs have led to price increases, and that increased costs resulting from greater reliance upon imported fossil fuels have forced Japan into trade deficit for the first time in over 30 years. Utility companies also claim that Japanese companies will be forced to relocate offshore, damaging the economy and causing significant unemployment. Finally, the utility companies argue that energy supply from nuclear power is more stable than the often volatile supply of imported fuels.

Advocates for renewable energy form a third social force. They argue that renewable energy would provide Japan with a feasible alternative to nuclear energy, foster new business opportunities, create large-scale employment, reduce imports and thereby improve the nation's terms of trade. Advocates enjoy significant public support. A prominent business figure, Chairperson and Chief Executive of Softbank Corporation, Masayoshi Son, has argued that since land destroyed by the tsunami cannot be cultivated for the next decade, an East Japan Solar Belt could be constructed producing solar, wind, and geothermal energy.⁵¹ Son's plan, while still at an early stage, is attracting prefectural and business support. Further, taking advantage of huge reserves of hot subterranean water that can drive electricity-generating turbines, the residents of the resort town of Tsuchiya are building Japan's first geothermal power plant to provide enough thermal energy for local needs. The town aims to have its first generator running by 2014.⁵²

With the feed-in tariff commencing on 1 July 2012, renewable energy applications amounting to US\$2 billion were approved and financed by the banks in the first month.⁵³ Most were for domestic use, but several were larger in scale, as businesses started seizing profitable opportunities. Other factors favourable to renewable energy opportunities lie in community planning. For example, the town of Rikuzen-takata, which was badly affected by the tsunami, has already planned solar panelling and offshore wind turbines.⁵⁴ Renewable energy production

⁵⁰ The website of the Nuclear Regulation Authority is available at: <http://www.nsr.go.jp/english/>.

⁵¹ Son and De Wit (2011).

⁵² China Dialogue (2012).

⁵³ Climate Spectator (2012).

⁵⁴ Karlenzig (2012).

centres tend to be dispersed rather than concentrated in a specific area, as is the case with nuclear plants. Therefore, in the event of an earthquake they are less likely to suffer such catastrophic damage. If such systems were to be implemented nationally to replace nuclear power, it would remove once and for all the fear that persists in the population.

On the other hand, two major sticking points remain. The first is the length of time before renewable energy can become nationally viable. Secondly, while the purpose of a feed-in tariff is to cap costs and stabilise prices, any excess inevitably has to be paid for by taxpayers. As an international comparison, it should be noted that in Germany, where a firm 20-year phase-out plan for nuclear energy has been put in place, cost increases in the first year of the plan are causing concerns, resulting in a push to slow the rate of progress.⁵⁵

In his address to the Diet on 29 October 2012, Prime Minister Noda set out what seemed to be the Government's position and the dilemma that it faced:

Neither an approach of continuing with the promotion of nuclear power plants as if an accident had never happened, nor an insistence on the immediate elimination of nuclear power plants without consideration of the various impacts it would have on the lives of the people, fulfils our responsibility towards tomorrow... Changing the policy of promoting nuclear power, a policy which we have continued since soon after the end of World War II, is by no means an easy task.⁵⁶

Indeed it is not, but, as a young woman said at a protest meeting outside the Prime Minister's residence:

They're ignoring the terror that many of us feel towards nuclear power. By sticking with nuclear so long the Government has put the interest of power companies and big business above those of the Japanese people.⁵⁷

A menacing issue, still unresolved, is the 1,500 bundles of spent fuel rods stored in Reactor 4 of the Fukushima Daiichi plant, weighing a total of 256 tonnes. If damaged by further earthquakes, the rods have the potential to release an enormous amount of radioactive caesium into the atmosphere, requiring evacuations on a larger scale than those previous. At the current rate, it will take years for all the rods to be removed. Worryingly, the Noda Government appears intent on continuing to extract plutonium from them.⁵⁸ The stockpiling of the rods for further use is at odds with the thrust of the Government's policy not to create any further nuclear reactors.

In its report on the Fukushima disaster issued on 5 July 2012, a Japanese parliamentary panel detailed the collusion and lack of governance in the nuclear power industry. The panel recommended the reform of nuclear energy laws to meet global standards of safety, public health and welfare. The panel also found that

⁵⁵ Allan and Reklef (2012).

⁵⁶ Prime Minister's Office (2012).

⁵⁷ Tabuchi (2012a).

⁵⁸ Yamaguchi (2012).

these laws ‘have only been revised as stopgap measures, based on actual accidents’ and that ‘the existing regulations are biased towards the promotion of a nuclear energy policy, and not to public safety, health and welfare’.⁵⁹

In the national election held on 16 December 2012, the LDP regained office with a substantial majority and, despite public opinion and the findings of the parliamentary panel, has given strong indications of a return to its former policy of promoting nuclear power as a major source of energy generation. Five days after the election, Prime Minister Abe announced that he would review the decision of the previous Government to prohibit the construction of new nuclear reactors, and in a television appearance on 30 December 2012 he added that the new nuclear plants ‘will be completely different from those at the Fukushima Daiichi nuclear power plant’.⁶⁰ Construction of new nuclear plants and the reactivation of existing ones are both subject to approval by the newly established Nuclear Regulation Authority, which will issue its standards in July 2013.⁶¹ The Abe Administration has not yet announced whether it will extract plutonium from spent fuel rods.

In July 2011, legislation came into force authorising premium prices to be paid, through a feed-in tariff, to suppliers of renewable energy for electricity production. This resulted in investment of US\$8.6 billion during the remainder of 2011, with an accelerating rate in 2012.⁶² Solar energy has attracted the most attention from companies which have needed only a few months for construction and to become ready for operations. As at 27 April 2013, out of 170 applications lodged with the Government’s Energy Department, 155 have been for solar, 14 have been for wind, and only one for biomass.⁶³ A Japanese trading house, Mitsui, plans to construct large-scale solar plants able to supply 30,000 houses in the tsunami-affected north-east area.⁶⁴ To take advantage of the premium rates for electricity supply, Sumitomo Corporation plans to build wind farms and at least two biomass plants.⁶⁵ Japan’s Agency for Natural Resources has announced the building of the world’s largest offshore wind farm, consisting of 143 turbines, to be completed by 2020 off the coast of Fukushima. This is part of Fukushima’s plan to become completely self-sufficient by 2040, using renewable energy sources alone.⁶⁶ Also notable is that Japanese companies have secured contracts to import liquid natural gas from the US, Canada, Australia and other countries.⁶⁷ These various initiatives are in line

⁵⁹ BBC News Asia (2012).

⁶⁰ Tabuchi (2012b).

⁶¹ Nakamoto (2013).

⁶² Watanabe (2012).

⁶³ 2050 Magazine (undated).

⁶⁴ Yomiuri Shimbun and Daily Yomiuri (2011).

⁶⁵ Humber and Inajima (2012).

⁶⁶ Grozdanik (2013).

⁶⁷ Kurtenbach (2013) and Koh (2012).

with one of the purposes of the Japanese Renewable Energy Foundation, created by Masayoshi Son in September 2011: to move Japan away from its dependence on nuclear energy and towards ‘eco-friendly and safer renewable sources’.⁶⁸

3.4.3 *Relocation and Reconstruction*

The Japan Reconstruction Design Council (RDC) issued comprehensive recommendations on the recovery plan of disaster affected areas.⁶⁹ Its four chapters address rebuilding the region, the restoration of life and livelihood, reconstruction after the nuclear accident, and open reconstruction—a global concept that advocates ‘the dissemination of various executive reconstruction activities not only in the affected areas, but also throughout Japan and the world’.⁷⁰ Primary recommendations are:

- Planning for each region must be community-based and consider the needs of the elderly and disabled. The plans should bring people together in residential and business areas of towns and villages, and with the appropriate civic infrastructure, the result should be the creation of a community which meets residents’ needs.⁷¹
- Preparations for future disasters must be based on disaster-reduction, focused on people-oriented measures that move away from an exclusive reliance on defensive waterside measures which proved ineffective. Existing infrastructure, combined with education and hazard maps, will help people to escape.⁷²
- In large-scale changes to land use, such as the mass relocation of settlements to higher ground, it may be necessary to transform residential land for agricultural use. Legal measures should be in place, so as not to obstruct rebuilding programs.⁷³
- The installation of renewable energy systems in disaster-affected areas should be accelerated as an energy priority. ‘[I]t is essential to establish a feed-in tariff system as soon as possible’.⁷⁴

Based on these recommendations, the Diet passed the *Basic Act on Reconstruction in Response to the Great East Japan Earthquake* on 24 June 2011.⁷⁵ The Reconstruction Agency, over which the Prime Minister presides, was established in

⁶⁸ Yirka (2011).

⁶⁹ Reconstruction Design Council (2011).

⁷⁰ Reconstruction Design Council (2011), p. 40.

⁷¹ Reconstruction Design Council (2011), p. 11.

⁷² Reconstruction Design Council (2011), p. 12.

⁷³ Reconstruction Design Council (2011), pp. 17–18.

⁷⁴ Reconstruction Design Council (2011), pp. 33, 40.

⁷⁵ Law No. 76 of 2011.

2011 under the oversight of the Cabinet to promote and coordinate reconstruction policies and measures in an integrated manner. Recovery plans were developed in accordance with the Reconstruction Act in the three disaster-affected prefectures, taking into full account independent recovery plans developed by those communities. These plans focus on the effective use of land as the key to rebuilding viable communities. Special reconstruction zones have been identified by local governments, and concessions and incentives are available within these zones as an inducement to business development. Under the 'Uniting Japan' work project, local governments in priority areas have access to job-creation funds. In the town of Minami-sanriku, for example, 47 job-creation projects were funded employing 460 people. Additional employment and livelihood projects will attract more funds.⁷⁶

The World Bank, in its report on the Great East Japan Earthquake, prepared jointly with the Japanese Government, praised the democratic manner in which planning reconstruction was being conducted:

Communities should be involved from the outset in planning reconstruction. In the areas affected by the Great East Japan Earthquake consultation between governments and communities were the rule, and community representatives were invited to serve alongside experts on recovery planning committees from the earliest stages. The most common ways of collecting residents' opinions were surveys and workshops. The central government and local governments outside the disaster-affected areas helped affected municipalities plan their recovery by conducting research, seconding staff, and hiring professionals to provide technical support. University faculty members, architects, engineers and, lawyers and members of NGOs participated in the municipal planning process.⁷⁷

One difficulty faced by reconstruction planners is accommodation of the inevitable variation in population numbers. For example, plans to rebuild the city of Minami-soma had to be revised because the population decreased by 8 % in one and a half years. Also, official statistics collected in August 2012 and reported in the *Asahi Shimbun*⁷⁸ show that 60,878 Fukushima residents have been relocated to other prefectures. How many will return once rebuilding has taken place is uncertain.

The joint impact of the triple disaster has brought with it yet another urgent challenge: the disposal of a huge amount of debris, some of which contain high levels of radiation. Until an area is cleared and free from radiation, reconstruction cannot begin. Location of dumping sites in other municipal areas is another thorny problem that must be resolved by local governments working together on treatment and disposal methods. The World Bank report recommends that, in general,

⁷⁶ World Bank (2012), p. 19.

⁷⁷ World Bank (2012), p. 18.

⁷⁸ Otsuki (2012). The number of Fukushima residents who remained evacuated in other areas of Japan is 60,878 as of 2 August 2012: Kanto district, 26,179; Chubu district, 10,955; Tohoku, 16,088; Kinki district, 2,760; Hokkaido, 1,837; Kyushu, 1,155; Chugoku district, 963; Okinawa, 693 and Shikoku, 248.

‘authorities should prepare for disasters by designating temporary storage sites, traffic routes for transporting waste, and so forth’.⁷⁹

The task of reconstruction is huge, and overall progress to date has been strongly criticised on many grounds. First, it has been alleged that contaminated soil has been removed by large construction companies lacking the necessary expertise. Second, the Government has not employed specialist companies from the US.⁸⁰ Third, one quarter of the reconstruction budget has been spent on projects that arguably have little or nothing to do with reconstruction of the affected areas.⁸¹ Published examples released have naturally outraged the public.⁸² As reported in the *Guardian*, 31 October 2012, a government audit of the reconstruction budget revealed the following miscellaneous expenditure:

...500m yen for road construction in Okinawa. . . ; 330m yen to repair a sports stadium in Tokyo; 10.7bn yen to a nuclear power research organisation; and subsidies to a contact lens factory. . . 2.3bn yen was given to the fisheries agency to protect Japan’s whaling fleet from harassment. . .

This was in addition to ‘renovations of government offices in Tokyo; training for fighter pilots; and research and production of rare earth materials’.⁸³ In addition, ‘[the] government audit also revealed that half of the reconstruction budget had yet to be distributed owing to the absence of a decision as to how affected communities should be rebuilt’.⁸⁴

In line with the zoning plan, the Reconstruction Agency has announced its ‘Grand Design’ for the recovery of 12 municipalities in Fukushima. Involving three stages to be completed over five years, the Grand Design focuses on the reconstruction of roads, water supply and sewerage systems and infrastructure as well as relief for long-term resettlement in the 12 zones. The first stage will involve decontaminating towns over a two-year period. During the next three years, efforts will be aimed at rebuilding communities and infrastructure, together with restoring industry, agriculture and employment by attracting new enterprises to the region.⁸⁵

The effective removal of radiation from land and forests has proved difficult in Fukushima, and has slowed progress in the reconstruction of the prefecture.⁸⁶ An example of difficult conditions persisting into 2013 can be found in the town of Namie, which has been divided by authorities into three zones: (1) areas for which evacuation orders are ready to be lifted; (2) areas in which habitation would be restricted; and (3) areas where residents are expected to face difficulties in

⁷⁹ World Bank (2012), p. 19.

⁸⁰ Tabuchi (2013).

⁸¹ McCurry (2012c).

⁸² McCurry (2012c).

⁸³ McCurry (2012c).

⁸⁴ McCurry (2012c).

⁸⁵ Japan Today (2012).

⁸⁶ Tabuchi (2013).

returning.⁸⁷ Triple zoning of this kind continues to confine the lifestyle of those returning, leaving the area considerably different to what it once was.

3.5 Conclusion⁸⁸

Ten lessons can be learned from the recent triple disaster in Japan:

1. Laws and regulations related to nuclear energy should be in place to protect public safety, health and welfare. Decisions by the Japanese governments of the 1950s to build nuclear reactors did not adequately consider public safety, given that Japan is constantly subject to earthquakes. On 11 March 2011, it was earthquakes that damaged the emergency cooling system in Reactor 4 of the Fukushima Daiichi complex, causing a meltdown and the release of radiation.
2. The decision to place reactors close to the coast increased the danger to the public.
3. Strict construction codes relating to buildings, bridges, roadways and railway lines saved lives.
4. The installation of high-tech early warning systems on shinkansen (bullet trains) also saved lives.
5. Strong political leadership and prompt decision-making are essential in managing disasters. The Japanese Diet failed to unite and lead the nation as required.
6. The social structure for emergency response including government agencies, prefectures, communities and volunteers was effective given the circumstances.
7. Modern technology can provide effective means of communication.
8. Plans for the removal of debris should be in place before disasters strike.
9. The reconstruction of devastated areas must be based on land planning combined with re-building community identity.
10. Plans for re-building communities must take into account the views of the residents themselves, and include provision for the elderly and disabled.

References

- 2050 Magazine (undated) Feed-in tariff creating renewable energy investment boom in Japan. <http://www.2050publications.com/feed-in-tariff-creating-renewable-energy-investment-boom-in-japan/>. Accessed 27 Apr 2013
- Aldrich DP (2012) Networks of power: institutions and local residents in post-Tohoku Japan. In: Kingston J (ed) *Natural disasters and nuclear crisis in Japan: response and recovery after Japan's 3/11*. Nissan Institute/Routledge Japanese Studies, New York, pp 127–139

⁸⁷ Sakurai (2013).

⁸⁸ Compare with Reich (2013), in this volume.

- Allan A, Reklev S (2012) Finance key as U.N. talks on climate deal resume. Reuters, 28 August 2012. <http://www.reuters.com/article/2012/08/28/us-un-climate-idUSBRE87R07U20120828>. Accessed 26 Sep 2012
- Asahi Shimbun (2012) Pro-nuclear bureaucrats back in the picture after Abe, 29 December 2012. http://ajw.asahi.com/article/behind_news/politics/AJ_201212290057. Accessed 6 Jan 2013
- Avenell S (2012) From Kobe to Fukushima. In: Kingston J (ed) *Natural disasters and nuclear crisis in Japan: response and recovery after Japan's 3/11*. Nissan Institute/Routledge Japanese Studies, New York, pp 53–72
- BBC News Asia (2012) Japan Panel: Fukushima nuclear disaster 'man-made'. <http://www.bbc.co.uk/news/world-asia-18718057>. Accessed 6 Jan 2013
- Bird W (2012) Powering Japan's future: the pros and cons of Japan's renewable energy options. Japan Times, 24 July 2011. <http://www.japantimes.co.jp/text/fl20110724x1.html>. Accessed 29 Nov 2012
- Broinowski R (2012) *Fallout from Fukushima*. Scribe Publishers, Brunswick
- China Dialogue (2012) Geothermal dreams in Fukushima. China Dialogue, 14 August 2012. <http://www.chinadialogue.net/article/show/single/en/5106-Geothermal-dreams-in-Fukushima>. Accessed 9 Nov 2012
- Clenfield J (2011) Fukushima engineer says he helped cover up a flaw at Daiichi Reactor No. 4. Bloomberg News, 23 March 2011. <http://www.bloomberg.com/news/2011-03-23/fukushima-engineer-says-he-covered-up-flaw-at-shut-reactor.html>. Accessed 8 Jan 2013
- Climate Spectator (2012) Solar PV market booms in Japan's post feed-in tariff. <http://www.climatespectator.com.au/news/solar-pv-market-booms-japan-post-feed-tariff>. Accessed 9 Mar 2013
- Grozdanik L (2013) Japan to build world's largest offshore wind farm. Inhabitat, 28 January 2013. <http://inhabitat.com/japan-to-build-worlds-largest-offshore-wind-farm-near-fukushima/>. Accessed 9 Mar 2013
- Hixson L (2012) Japan already justifying exceptions to new energy policy. Enformable, 15 September 2012. <http://enformable.com/2012/09/japan-already-justifying-exceptions-to-new-energy-policy/>. Accessed 29 Nov 2012
- Humber Y, Inajima T (2012) Sumitomo sees 'solar bubble' as Japan rejects nuclear energy. Bloomberg Business Week, 1 October 2012. <http://www.bloomberg.com/news/2012-10-01/sumitomo-sees-solar-bubble-as-japan-rejects-nuclear-energy.html>. Accessed 9 Mar 2012
- Japan Today (2012) Government unveils 'Grand Design' for Fukushima reconstruction. Japan Today, 5 September 2012. <http://www.japantoday.com/category/national/view/govt-unveils-grand-design-for-fukushima-reconstruction>. Accessed 29 Nov 2012
- Kageyama Y (2012) People flee from nuke disaster to Okinawa. The Guardian, 22 December 2012. <http://www.guardian.co.uk/world/feedarticle/10583345>. Accessed 9 Mar 2013
- Karlenzig W (2012) Japan's eco renewal. China Dialogue, 27 April 2012. <http://www.chinadialogue.net/article/show/single/en/4896-Japan-s-eco-renewal>. Accessed 9 Nov 2012
- Kawato Y, Robert P, Tsujinaka Y (2012) Civil society and the triple disasters. In: Kingston J (ed) *Natural disaster and nuclear crisis in Japan: response and recovery after Japan's 3/11*. Nissan Institute/Routledge Japanese Studies, New York, pp 78–93
- Kingston J (2012a) Introduction. In: Kingston J (ed) *Natural disasters and nuclear crisis in Japan: response and recovery after Japan's 3/11*. Nissan Institute/Routledge Japanese Studies, New York, pp 1–11
- Kingston J (2012b) The politics of disaster, nuclear crisis and recovery. In: Kingston J (ed) *Natural disasters and nuclear crisis in Japan: response and recovery after Japan's 3/11*. Nissan Institute/Routledge Japanese Studies, New York, pp 188–206
- Koh Q (2012) Japan shops for alternative LNG sources amid burgeoning demand. Rigzone, 8 November 2012. http://www.rigzone.com/news/article.asp?a_id=121949. Accessed 9 Mar 2013

- Kurtenbach E (2013) Japan's TEPCO gears up for US shale gas imports. Associated Press (AP), 6 February 2013. <http://bigstory.ap.org/article/japans-tepcO-gears-us-shale-gas-imports>. Accessed 9 Mar 2013
- Kuznick P, Tanaka Y (2011) Japan, the atomic bomb, and the 'Peaceful Uses of Nuclear Power'. *Asia Pac J* 9:2
- McCurry J (2012a) Japan drops plans to phase out nuclear power by 2040. *The Guardian*, 19 September 2012. <http://www.guardian.co.uk/world/2012/sep/19/japan-2040-nuclear-power-exit>. Accessed 7 Jan 2012
- McCurry J (2012b) Fukushima disaster could have been avoided, nuclear plant operator admits. *The Guardian*, 15 October 2012. <http://www.guardian.co.uk/environment/2012/oct/15/fukushima-disaster-avoided-nuclear-plant>. Accessed 29 Nov 2012
- McCurry J (2012c) Japan's disaster: 25% of reconstruction funds spent on unrelated projects. *The Guardian*, 31 October 2012. <http://www.guardian.co.uk/world/2012/oct/31/japan-tsunami-disaster-reconstruction-fund>. Accessed 14 Jan 2013
- Nakahara I (2011) Kiseki no saigai borantia 'Ishinomaki moderu' [Miracle work at a disaster: 'the Ishinomaki model']. *Asahi Shinsho* 322
- Nakamoto M (2013) Japan prepares for nuclear U-turn. *Financial Times*, 3 January 2013. <http://www.ft.com/intl/cms/s/0/d85d6624-5588-11e2-bbd1-00144feab49a.htm>. Accessed 7 Jan 2013
- Otsuki N (2012) Genkai Nippon: chinseika yusen no anzen kijun [Limitations in Japan: Government safety standards distrusted]. *Asahi Shimbun*, 17 September 2012, p 6
- Prime Minister's Office (2011) Press conference by Prime Minister Naoto Kan. http://www.kantei.go.jp/foreign/kan/statement/201105/10kaiken_e.html. Accessed 26 Nov 2012
- Prime Minister's Office (2012) Policy speech by Prime Minister Yoshihiko Noda to the 181st Session of the Diet. http://www.kantei.go.jp/foreign/noda/statement/201210/29syosin_e.html. Accessed 2 May 2013
- Reconstruction Design Council (2011) Towards reconstruction "Hope beyond the disaster". www.mofa.go.jp/announce/jfpu/2011/7/pdfs/0712.pdf. Accessed 5 Jan 2013
- Reich M (2013) A public health perspective on reconstructing post-disaster Japan. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Sakurai Y (2013) Japan's new administration must exercise political leadership in reconstruction of Fukushima. <http://en.yoshiko-sakurai.jp/2013/02/07/5188>. Accessed 6 Mar 2013
- Scalise P (2012) Hard choices: Japan's post-Fukushima energy policy in the 21st century. In: Kingston J (ed) *Natural disasters and nuclear crisis in Japan: response and recovery after Japan's 3/11*. Nissan Institute/Routledge Japanese Studies, New York, pp 140–155
- Slater DH, Nishimura K, Love K (2012) Social media in disaster Japan. In: Kingston J (ed) *Natural disasters and nuclear crisis in Japan: response and recovery after Japan's 3/11*. Nissan Institute/Routledge Japanese Studies, New York, pp 94–108
- Son M, De Wit A (2011) Creating a solar belt in East Japan: the energy future. *Asia Pac J* 38(2). <http://www.japanfocus.org/-andrew-dewit/3603>. Accessed 9 Mar 2013
- Suter R (2013) The March 2011 Tohoku disaster in Japanese science fiction. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Tabuchi H (2012a) Japan sets policy to phase out nuclear power plants by 2040. *New York Times*, 14 September 2012. <http://www.nytimes.com/2012/09/15/world/asia/japan-will-try-to-halt-nuclear-power-by-the-end-of-the-2030s.html>. Accessed 15 Oct 2012
- Tabuchi H (2012b) Japan's new leader endorses nuclear plants. *The New York Times*, 30 December 2012. http://www.nytimes.com/2012/12/31/world/asia/japans-new-prime-minister-backs-more-nuclear-plants.html?_r=0. Accessed 9 Mar 2013
- Tabuchi H (2013) In Japan, a painfully slow sweep. *New York Times*, 7 January 2013. <http://www.nytimes.com/2013/01/08/business/japans-cleanup-after-a-nuclear-accident-is-denounced.html?pagewanted=all>. Accessed 9 Mar 2013

- Tanaka Y (2011) The atomic bomb and 'peaceful use of nuclear energy'. *Asia Pac J: Japan Focus*. <http://www.japanfocus.org/-Yuki-TANAKA/3502>. Accessed 30 Sept 2011
- United States Nuclear Regulatory Commission (2013) Implementing lessons learned from Fukushima. <http://www.nrc.gov/reactors/operating/ops-experience/japan-info.html>. Accessed 20 Apr 2013
- Warnock E (2012) Japan backtracks on nuclear-free plan. *The Wall Street Journal*, 19 September 2012. http://www.algosys8.com/index.php/news/news_link/248126. Accessed 6 Jan 2013
- Watanabe C (2012) Japan's renewable energy investments may double as incentives start. *Bloomberg*, 29 June 2012. <http://www.renewableenergyworld.com/rea/news/article/2012/06/japan-renewable-energy-investments-may-double-as-incentives-start>. Accessed 9 Mar 2013
- World Bank (2012) Learning from megadisasters: knowledge notes, executive summary. http://wbi.worldbank.org/wbi/Data/wbi/wbicms/files/drupal-acquia/wbi/drm_exsum_english.pdf. Accessed 29 Nov 2012
- World Nuclear Association (2013) Nuclear power in Japan. <http://www.world-nuclear.org/info/Country-Profiles/Countries-G-N/Japan/>. Accessed 20 Apr 2013
- Yamaguchi M (2012) Nowhere to use Japan's growing plutonium stockpile. *Japan Today*, 28 December 2012. <http://www.japantoday.com/category/national/view/nowhere-to-use-japans-growing-plutonium-stockpile> Accessed 9 Mar 2013
- Yirka B (2011) Japanese businessman launches Japan Renewable Energy Foundation. *Phys Org*, 14 September 2011 <http://phys.org/news/2011-09-japanese-businessman-japan-renewable-energy.html>. Accessed 9 Mar 2013
- Yomiuri Shimbun, Daily Yomiuri (2011) Mitsui to build huge solar power plants in disaster areas. 7 July 2011. <http://www.accessmylibrary.com/article-1G1-260861357/mitsui-build-huge-solar.html>. Accessed 6 May 2013

Chapter 4

Government Liability for Regulatory Failure in the Fukushima Disaster: An Australian Comparison

Joel Rheuben

4.1 Introduction

The report of the Fukushima Nuclear Accident Independent Investigation Commission, established by the Japanese Diet in December 2011 to investigate the causes of the disaster at the Fukushima Daiichi Nuclear Power Plant, attributes the accident to a systemic lack of safety precautions common throughout the nuclear power industry in Japan and a series of costly judgement errors.¹ But it does not limit its criticism to the plant's operator, Tokyo Electric Power Company (TEPCO). It also sternly rebukes regulators for falling 'captive' to the industry, relying on the industry for technological expertise and failing to put in place or enforce adequate safety standards.² The report categorises the Fukushima disaster as a classic case of regulatory failure.

Under the law applicable to nuclear accidents, TEPCO alone is liable for compensating the tens of thousands of evacuees and businesses affected by radiation. Since this liability is estimated to be significantly more than the value of TEPCO's assets, the Japanese Government has provided TEPCO with financial assistance to prevent its insolvency, and has established a mediation centre under the Ministry of Education, Culture, Sports, Science and Technology (MEXT) to handle compensation disputes between TEPCO and its victims. If the Government was content to give TEPCO free rein before the accident, it no longer is.

This chapter argues that the mechanisms that have been established for resolving and funding compensation payouts in disputes between claimants and TEPCO in

¹The National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (2012).

²The National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (2012), p. 5.

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the aftermath of the Fukushima disaster should be viewed against the backdrop of the Government's own potential liability. No doubt there are compelling political and economic reasons for the Government to have intervened and to have prevented TEPCO's insolvency,³ but from a legal perspective the manner in which the Government has intervened can be explained by the ever-present risk that claimants, dissatisfied with the amount of TEPCO's compensation or the speed of its response, could move their complaints to the courts, suing the Government for its failure to prevent the disaster. In contrast with common law countries, including Australia, where courts have historically been reluctant to find public authorities liable for regulatory failure, there is ample precedent in Japan.⁴ Moreover, it will be argued, the standard for fault is considerably lower in Japan.

The response of the Japanese Government to the Fukushima disaster can be contrasted with the response of the government of New South Wales (NSW), the most populous state of Australia, over the past several decades to mounting claims over asbestos-related disease, and to the potential underfunding of the principal defendant in these claims, James Hardie. Both involve large numbers of claims by poorly-resourced claimants against a limited number of private companies, operating against the background of apparent government regulatory failure. Both reflect a need to deal with disputes quickly, and to avoid overburdening the ordinary courts. And in both cases, governments faced the problem of ensuring that the primary defendant remained adequately capitalised and sufficiently responsive to claimants. Yet whereas the Japanese approach has been interventionist, ultimately leading to the effective nationalisation of TEPCO, the NSW Government, free from concern over its liability for failing to regulate the manufacture and use of asbestos products, has taken a far less dirigiste approach.

4.2 The Fukushima Disaster Compensation Framework

4.2.1 *The Nuclear Damages Act*

Compensation for losses arising from nuclear accidents is principally governed by the *Nuclear Damages Act*,⁵ the provisions of which take precedence over the general tort provisions under the *Civil Code*. While the definition of 'nuclear damage' under the Act would appear to be restricted to physical damage resulting

³ Canvassed in Morita (2012).

⁴ I use the term 'regulatory failure' in this chapter to refer to the failure to exercise a range of discretionary functions, and not simply functions related to passing regulations (rule-making functions).

⁵ Law No. 147 of 1961. See also Weitzdörfer (2013), in this volume. An unofficial English-language translation of the Act is available online at: <http://www.oecd-nea.org/law/legislation/japan-docs/Japan-Nuclear-Damage-Compensation-Act.pdf>. Accessed 15 March 2013.

directly from radiation,⁶ in the small number of cases following the 1999 Tokaimura accident, courts applied a broader, causation-based test. A causal relationship was found between the accident and subsequent reputational damage to vegetable growers in the radiation-affected area on the one hand,⁷ but not in the case of a fall in real estate value for nearby properties.⁸

The Act aims to ensure clear principles of liability and speedier resolution of claims in the event of a nuclear accident by providing that liability for nuclear damage is: (1) strict, (2) unlimited, and (3) borne exclusively by nuclear power operators. Operators are exempted from liability only where damage occurred as a result of a major natural disaster of an exceptional character or social unrest.⁹

Beyond the mandatory indemnification amount of ¥120 billion,¹⁰ operators must bear the costs of compensation alone. The Act requires the Government to ‘assist’ operators with compensation where the Government ‘deems it necessary’,¹¹ but neither the factors relevant to this determination nor the nature of assistance are specified. There is no explicit provision for government liability and no right to remedy from the Government for either operators or victims. Where operators are exempted from liability by one of the relevant exceptions, the Government is required to ‘take necessary measures to relieve victims and to prevent further damage’,¹² but this requirement again falls short of an enforceable civil remedy.

4.2.2 *The TEPCO Compensation Scheme*

TEPCO is, therefore, the first and only port of call for members of the public seeking compensation for the Fukushima disaster under the *Nuclear Damages Act*. There may be arguments that the scale of the Tohoku earthquake and subsequent tsunami was so unforeseeable that the exemption to liability provision would apply, absolving TEPCO of liability.¹³ However, the bulk of academic opinion in and outside of Japan weighs against this proposition,¹⁴ and TEPCO itself has arguably

⁶ See Weitzdörfer (2013), in this volume, Sect. 5.2.2.

⁷ Tokyo District Court decision of 29 February 2008; Tokyo District Court decision of 19 April 2006.

⁸ Tokyo High Court decision of 21 September 2005.

⁹ Law No. 147 of 1961, Article 3.

¹⁰ See Weitzdörfer (2013), in this volume, Sect. 5.1.2.

¹¹ Law No. 147 of 1961, Article 16.

¹² Law No. 147 of 1961, Article 17.

¹³ See Weitzdörfer (2013), in this volume, Sect. 5.1.2.

¹⁴ In English, see Osaka (2012) and Ramseyer (2012).

forfeited any right to rely on this exemption by voluntarily making compensation payments.¹⁵

At the behest of the Ministry for the Economy, Trade and Industry (METI), TEPCO initiated provisional compensation payments of up to ¥1 million per household to claimants in the area immediately surrounding the Fukushima Daiichi plant from late April 2011. At the same time, the Government began making provisional payments to affected small- and medium-sized businesses in the region.¹⁶

The Dispute Reconciliation Committee for Nuclear Damage Compensation, a panel established within MEXT under the *Nuclear Damages Act* to oversee resolution of disputes between operators and victims, then announced its *Interim Guidelines on the Scope of Nuclear Damages from the Accident at the TEPCO Fukushima Daiichi and Daini Plants* on 5 August 2011.¹⁷ The Interim Guidelines provide non-binding principles as to the types of damages compensable by TEPCO, supplementing the vague definition of ‘nuclear damage’ under the *Nuclear Damages Act*. The Dispute Reconciliation Committee’s powers to make such guidelines were inserted into the Act in response to the inconsistent and confused judicial decisions in the Tokaimura cases referred to above.¹⁸ Following the Dispute Reconciliation Committee’s announcement, TEPCO put in place a system to make ‘permanent’ compensation payments that could cover the gap between provisional payments and the full amount claimed. Although not binding, the Interim Guidelines have provided a basis for TEPCO’s own compensation guidelines.

Claimants can apply for compensation by way of a detailed application form.¹⁹ As of April 2013, some 551,000 applications had been received by TEPCO, of which TEPCO and claimants have reached an agreed compensation amount in 465,000 cases.²⁰ Where TEPCO and claimants cannot reach an agreement, claimants may refer the dispute to the Dispute Resolution Centre for Nuclear Damage Compensation, a newly established alternative dispute resolution body, or, failing this, pursue tort litigation on the basis of the *Nuclear Damages Act*.

The Dispute Resolution Centre was set up in August 2011 to assist in mediation between TEPCO and dissatisfied claimants, after it became clear that the number of

¹⁵ Indeed, a group of TEPCO shareholders has brought a shareholders’ suit against the management of the company on this basis.

¹⁶ Under the *Law on Emergency Measures in relation to Victims of the 2011 Nuclear Accident* (Law No. 91 of 2011).

¹⁷ Available online at: http://www.mext.go.jp/b_menu/shingi/chousa/kaihatu/016/. Accessed 18 April 2013.

¹⁸ Kojima (2011), p. 36.

¹⁹ Available online through TEPCO’s website: <http://www.tepco.co.jp/en/comp/index-e.html>. Accessed 18 April 2013. See Weitzdörfer (2013), in this volume, Sect. 5.2.1 for more details.

²⁰ See <http://www.tepco.co.jp/en/comp/images/jisseki-e.pdf>. Accessed 18 April 2013. This excludes more than one million applications from voluntary evacuees, which are treated separately by TEPCO.

potential disputes would be too great for the Dispute Reconciliation Committee to handle.²¹ Mediators are all lawyers, with the remainder of the Centre's staff made up of secondees from the Ministry of Justice and MEXT. Yet the requirement that mediators use the Interim Guidelines as a base for their settlement proposals, together with the fact that the Centre sits under and is funded by MEXT (notwithstanding initial proposals that the Centre should be established outside of government), has led to criticisms that the Centre is not sufficiently independent.²² Nor is it entirely transparent: while the Centre does publish anonymised versions of some of its settlement proposals and agreements online,²³ this is not mandatory, and the Centre may not do so where its Steering Committee regards it as unnecessary or inappropriate. Moreover, those published are noticeably short. In a random sample taken from the Centre's website, the substantive reasoning in almost all was less than half a page long.

4.2.3 Government Financial Assistance

From an early stage it became clear that TEPCO would be unable to meet its potential liability above the insured amount of ¥120 billion alone. TEPCO estimated its total liability at ¥2.5 trillion,²⁴ a figure that has since been revised up to more than ¥3.2 trillion.²⁵ Against this, the company's net assets are worth no more than ¥812.5 billion.²⁶ Accordingly, TEPCO requested government assistance pursuant to the *Nuclear Damages Act* in May 2011.

The Government's response was the enactment of the Nuclear Damages Compensation Support Fund.²⁷ The legislation enables the Fund to render financial assistance to any nuclear operator liable for compensation under the *Nuclear Damages Act*, including through the acquisition of an equity interest in the operator. Where the potential liability of the operator far exceeds the assets held by the Fund (as is naturally the case with the TEPCO payout), the Fund may request government assistance in the form of a special issue of bonds. Operators receiving financial assistance must formulate a 'special business plan' with the Fund, geared towards swift payment of compensation to victims and repayment of the further assistance from the Fund through increased contributions. The relevant minister must approve

²¹ For a detailed analysis of the Dispute Resolution Centre, see Foote (2013).

²² Akimoto (2012), p. 25; Idei (2012).

²³ See http://www.mext.go.jp/a_menu/genshi_baisho/jiko_baisho/detail/1329118.htm. Accessed 18 April 2013.

²⁴ TEPCO (2012), p. 3.

²⁵ TEPCO (2013a).

²⁶ TEPCO (2012), p. 21.

²⁷ Under the *Nuclear Damages Compensation Support Fund Act (Genshiryoku Songai Baisho Shien Kiko Ho)* (Law No. 94 of 2011). See also Weitzdörfer (2013), in this volume, Sect. 5.3.3.

of the business plan, and can order the operator to produce reports and take appropriate measures for its duration.

TEPCO submitted its business plan and requested financial assistance from the Fund in October 2011, receiving approval on 4 November.²⁸ The company had made 14 requests for assistance as at April 2013,²⁹ and has issued new shares to the Fund such that the Fund now holds 54.69 % of the shares in TEPCO.³⁰

4.3 Contrast: Asbestos Compensation in New South Wales

4.3.1 *The Dust Diseases Tribunal*

In the same way that TEPCO faces mounting claims for the Fukushima disaster, the number of tort cases seeking compensation for harm caused by exposure to asbestos has gradually risen in Australia since the use and manufacture of asbestos products were steadily phased out from the 1980s. Governments in Australia, as elsewhere, were aware of the health hazards associated with asbestos by the middle of the twentieth century. Yet in NSW, asbestos was mined until 1979, while products containing asbestos were manufactured until the late 1980s. Sales of asbestos were not outlawed altogether until 2004. This represents a gap of some several decades during which Australian governments could have regulated to prohibit or restrict the use of asbestos, potentially saving lives.

Mass tort cases for asbestos exposure-related disease are certainly not unique to Australia.³¹ However, Australia was historically the highest user per capita of asbestos products, and mesothelioma rates are higher in Australia than in any other country—most of these within the state of NSW.³² Workers' compensation claims for inhalation have been handled for several decades outside of the NSW courts by the Dust Diseases Board, a statutory no-fault compensation body.³³ Yet an increasing number of negligence claims relate to long-term environmental exposure, such as through asbestos-lined concrete used in commercial and residential buildings, and therefore fall outside of the Dust Diseases Board's jurisdiction.

In 1989, the NSW Government recognised the need to create a more streamlined process for handling such claims, particularly as many claimants were dying from disease before judgment could be reached in the state Supreme Court.³⁴

²⁸ TEPCO (2011), Approval of the Special Business Plan.

²⁹ TEPCO (2013b).

³⁰ <http://www.tepco.co.jp/en/corpinfo/ir/stock/stock-e.html>. Accessed 18 April 2013.

³¹ In respect of asbestos claims in Japan, see Nottage (2006).

³² O'Meally (2007), p. 1210.

³³ Under the *Workers Compensation (Dust Diseases) Act 1942 (NSW)*.

³⁴ O'Meally (2007), pp. 1211–1213.

In response, the Government created a specialist court in the form of the Dust Diseases Tribunal (DDT) in 1989,³⁵ which began hearing its first cases within the year.

Although nominally a tribunal, the DDT is in fact a court of record, meaning that its proceedings are open to the public and that its judgments form part of the common law. All cases must be heard before a qualified District or Supreme Court judge, who has the same powers of contempt as in the Supreme Court. Accordingly, the DDT enjoys the same degree of independence as ordinary courts.

However, due to the need to process claims quickly, the DDT has been provided with a procedural flexibility that is unique within the NSW judiciary. For example, the DDT can sit at any hour on any day, anywhere in or outside of Australia, and often does so at the bedsides of terminally ill patients.³⁶ Some rules ordinarily applicable to tort claims, such as the general law limitation period, are also not applicable to claims before the DDT.

This is not to suggest that the DDT is universally loved. The Tribunal has attracted criticism over the past several decades for being unduly slow and rule-bound, in spite of its design, and a succession of government enquiries have considered whether to abolish the DDT or merge it with other tribunals (although no government yet has). Nevertheless, the DDT has played an important role in keeping claims out of the ordinary courts.

As a proportion of population, the number of claims heard by the DDT on an annual basis are comparable with those dealt with by the Japanese Dispute Resolution Centre for Nuclear Damage Compensation. As at April 2013, the Dispute Resolution Centre had received a total of 5,924 claims since its establishment in 2011, of which 2,611 had been settled.³⁷ In 2012 alone, the DDT, covering a jurisdiction with a population only 5 % that of Japan, received 451 claims and finalised 357.³⁸

4.3.2 *Defendant Funding Arrangements*

In a significant proportion of cases brought before the DDT, companies in the James Hardie group, which held a near-monopoly on the manufacture of asbestos products in Australia for most of the twentieth century, were among the defendants. As the number of claims mounted over the 1980s and 1990s, James Hardie sought to distance its profit-making activities from its tort liabilities. In 2001, the group established a trust in NSW to administer asbestos compensation claims, while at

³⁵ See *Dust Diseases Tribunal Act 1989* (NSW).

³⁶ O'Meally (2007), p. 1215.

³⁷ See http://www.mext.go.jp/a_menu/genshi_baisho/jiko_baisho/detail/1329118.htm. Accessed 18 April 2013.

³⁸ Statistics provided by direct communication with the DDT.

the same time shifting the James Hardie holding company and most of the group's assets offshore.³⁹

In 2004, a critical judicial enquiry into James Hardie's corporate re-organisation found that the trust was significantly underfunded, in breach of its representations to the NSW Supreme Court, which had authorised the re-organisation. James Hardie negotiated with the NSW Government, trade unions and victims' groups, and ultimately agreed to establish a new trust, the Asbestos Injuries Compensation Fund (AICF), with assets worth more than Australian \$4 billion, paid for by 35 % of James Hardie's annual cash flow.⁴⁰ Under the agreement, the NSW Government has the right to appoint fewer than half of directors to the board of the trustee. Following the global financial crisis, the Government put in place a standby loan facility for the AICF worth Australian \$320 million, in exchange for which the Government received security over certain of the AICF's assets. The loan facility agreement gives the Government no control over the operations of either the AICF or James Hardie.⁴¹

4.4 Government Liability for Regulatory Failure in Japan

4.4.1 *The State Compensation Act*

While the Japanese Government does not bear any direct liability for compensation of victims of the Fukushima disaster under the *Nuclear Damages Act*, it may nevertheless be possible for victims to bring actions against the Government on the basis of the *State Compensation Act (Kokka Baisho Ho)*, which makes special provision for the tort liability of public authorities.⁴² The operator-centred liability principle of the *Nuclear Damages Act* arguably cannot preclude claims under the *State Compensation Act* (as compared to the Civil Code), as this would be potentially unconstitutional.⁴³

Any such actions would presumably be based on the Government's apparent failure to adequately regulate TEPCO. The *State Compensation Act* does not explicitly refer to omissions, and the Japanese courts were traditionally reluctant to recognise the 'unlawfulness' (the traditional standard for fault in Japanese tort

³⁹ See generally Dunn (2005).

⁴⁰ Amended and Restated Final Funding Agreement (2012).

⁴¹ AICF Facility Agreement (2010). See also *James Hardie Former Subsidiaries (Winding Up and Administration) Act 2005* (NSW).

⁴² Law No. 125 of 1947: in particular, Article 1(1). For a now slightly dated overview of the *State Compensation Act* in English, see Kamino (1999) and Uga (1999).

⁴³ In particular, it would arguably be inconsistent with Article 17 of the Constitution, which provides a right of citizens to sue for redress for the illegal acts of public officials: Ootsuka (2011), p. 40.

law) of a failure to exercise a regulatory function. This was due to both deference to administrative discretion and a narrow reading of the scope of duty of care in the absence of positive Government conduct.⁴⁴

From the 1970s, however, lower courts began to find an unlawful failure to exercise a regulatory function on several dozen occasions. The Supreme Court has considered liability for regulatory failure in four principal cases.⁴⁵ Although none has evinced a clear test or criteria for unlawfulness, each has employed something close to the public law test for invalidity in exercising a discretionary function, considering whether the relevant regulatory failure ‘significantly lacked reasonableness’ in light of the purpose of the function granted or the relevant legislation, thereby exceeding the bounds of the discretion.

Of particular interest in light of the NSW experience is the *Chikuho Pneumoconiosis Case*. There, former miners at major coal mines in Chikuho, Fukuoka Prefecture, brought suits against the national government for failing to exercise regulatory functions under the *Mine Safety Act*⁴⁶ so as to prevent them from developing coal workers’ pneumoconiosis, a type of lung disease similar to asbestosis. Specifically, it was argued that the relevant minister had sufficient knowledge of the risks of exposure to coal dust at the time when the preventative *Pneumoconiosis Act* came into force in 1960, but failed to exercise powers under the *Mine Safety Act* to amend existing ministerial ordinances to mandate suitable abatement techniques or to exercise adequate safety supervision of mines, principally because of the importance of cheap coal for the country’s economic policy. The Supreme Court found that such a failure was contrary to the purpose of the *Mine Safety Act*, being to safeguard the health and safety of miners, and therefore ‘significantly lacked reasonableness’, rendering it unlawful.

In the *Kansai Minamata Disease Case* only a few months later, the Supreme Court again found a minister liable for failing to intervene earlier to minimise the effects of Minamata disease in southern Japan.⁴⁷ Here it was found that even if the minister did not have actual knowledge of the source of the waterborne poisonous mercury compounds that caused the disease, the source could have been discovered had a more thorough investigation been made. The court found that the failure both to carry out this investigation and consequently to take appropriate regulatory measures from the point at which the hypothetical investigation could have occurred again ‘significantly lacked reasonableness’ and were unlawful.

⁴⁴ In a number of cases, lower courts borrowed from the public law ‘reflexive interest principle’, requiring claimants to show an actual legal interest affected by the government’s failure to regulate, and not simply a general interest as an ordinary member of the public. See Nishino (2012), p. 205.

⁴⁵ The *Real Estate Law Case*; the *Chloroquine Medical Harm Case*; the *Chikuho Pneumoconiosis Case*; and the *Kansai Minamata Disease Case*. For concise summaries of each decision, see: Uga et al. (2012).

⁴⁶ Law No. 70 of 1949.

⁴⁷ See Upham (1987) for a detailed overview of the Minamata Bay disaster, including earlier mass tort litigation against Chisso, the chemical company responsible for the outbreak of the disease.

The *Chisso* and *Minamata Disease* cases appear to suggest that failure to exercise discretionary regulatory functions will “significantly lack reasonableness” where: (1) there is a risk of significant harm; (2) the government is aware or should be aware of the risk of harm; and (3) it is within the government’s power to prevent harm by exercising the regulatory function. To some extent, all three conditions are met by the facts of the Fukushima disaster.

4.4.2 *Liability for the Government’s Failure to Regulate TEPCO*

Several omissions on the part of the Government have been pointed to as possible grounds for liability under the *State Compensation Act*. The Nuclear Safety Commission (NSC) failed, for example, to keep its *Inspection Guidelines for Seismic Design for Nuclear Power Facilities* up-to-date with new knowledge on the scale of past seismic activity in the Tohoku region.⁴⁸ According to the Diet’s Independent Commission Report, the Nuclear and Industrial Safety Agency (NISA) accepted calculations by the Japan Society of Civil Engineers as to the maximum height of any possible tsunami and TEPCO’s own calculations as to the probability of a tsunami reaching the Fukushima Daiichi plant at face value, without conducting independent analysis.⁴⁹ While inspection guidelines are not binding on operators, the Report also stressed that the NSC failed to exercise its rule-making powers to mandate severe accident countermeasures for natural disasters in line with international trends.⁵⁰

Even on the basis of existing inspection guidelines, regulators’ oversight appears to have been lax. After revising the *Seismic Design Guidelines* in 2006, NISA and METI chose the softer option of requiring operators with existing facilities to conduct ‘backchecks’ (safety assessments), in preference to ordering ‘backfits’ (upgrading of facilities in accordance with specified technical standards).⁵¹ Given the age of the 1–4 reactors at Fukushima Daiichi it was obvious to both TEPCO and to NISA that existing safety facilities could not meet the 2006 standards. Nevertheless, after submitting only partial interim reports in 2008 and 2009, TEPCO

⁴⁸ Hitomi (2011), p. 23. See also Utatsu (2012) for a detailed analysis of faults in other NSC guidelines.

⁴⁹ The National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (2012), p. 26.

⁵⁰ The National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (2012), pp. 286–287.

⁵¹ See Utatsu (2012) for a detailed analysis of the regulatory basis for doing so.

repeatedly delayed submission of its final backcheck report. NISA neither required TEPCO to produce its final report earlier, nor ordered it to carry out reinforcement of the reactors.⁵²

In comparison with the wealth of regulatory failure cases relating to consumer products,⁵³ there is almost no existing precedent in respect of nuclear damage, including among the Tokaimura cases referred to above, which were directed solely at the nuclear operator. Whether any of the above omissions could be said to ‘significantly lack reasonableness’ is therefore an open question.

It is argued that courts are more likely to find that a failure to regulate was unlawful where the interest affected was personal safety or health rather than property.⁵⁴ It is also worth noting that in both of the cases above, the government had actively sided with the primary tortfeasors—coal mining companies in the *Chikuhō* case, and chemical-maker Chisso in the *Minamata Disease* case—to avoid imposing an economic burden on them. This no doubt informed the court’s finding that regulatory failure was unlawful. The parallels with the government’s ‘soft touch’ regulation of TEPCO are obvious.

4.5 Government Liability for Regulatory Failure: An Australian Comparison

4.5.1 *The Common Law Position*

In contrast with Japan, most common law jurisdictions do not have a separate body of law governing state liability in negligence. Rather, to the extent that sovereign immunity has been waived,⁵⁵ in theory the ordinary common law tort rules apply to public authorities, consistent with the Diceyan view of the rule of law.⁵⁶ In practice, however, civil liability in respect of functions that have a statutory basis (as opposed to private law functions) is often limited by statute,⁵⁷ and courts have

⁵² The National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (2012), p. 25.

⁵³ See Nishino (2012), pp. 202–205 for a comprehensive list.

⁵⁴ Futagoishi and Suzuki (2011), p. 22.

⁵⁵ See, for example, *Judiciary Act 1903* (Cth) s 64 (Australia); *Crown Proceedings Act 1947* s 2 (UK); *Federal Torts Claims Act*, 28 USC § 674 (US).

⁵⁶ See Weeks (2010).

⁵⁷ For example, in the US by the ‘discretionary function exception’ under 28 USC § 680, or in NSW by the *Civil Liability Act 2002* (NSW) Part 5, which provides inter alia that an authority cannot be liable for the exercise or non-exercise of a ‘special statutory power’ unless it was ‘so unreasonable that no authority having the special statutory power in question could properly consider the act or omission to be a reasonable exercise of, or failure to exercise, its power’.

tended to apply a higher threshold in determining the existence of a duty of care owed to members of the public.

In both the US and England, courts have traditionally placed emphasis on the distinction between functions of a ‘policy’ or ‘planning’ character (typically with a high degree of administrative discretion, and therefore ordinarily non-justiciable) and conduct of a merely ‘operational’ character.⁵⁸ The policy/operational distinction has been considered by the High Court of Australia, as well, but has ultimately been held to be ‘unhelpful’.⁵⁹ The High Court has, however, suggested that the exercise or otherwise of a function will be generally non-justiciable where it is at the upper end of the policy scale: for example, where it touches on ‘core policy’ matters,⁶⁰ or is of a ‘quasi-legislative’ (that is, rule-making) character.⁶¹

On the other hand, Japanese courts appear not to have made any such distinction. It did not seem to matter to the Supreme Court in either the *Chikuho* or *Minamata Disease* cases that the functions involved included highly discretionary rule-making functions, and moreover, those to be exercised by a minister. Indeed, in other *State Compensation Act* cases plaintiffs have even succeeded in holding the Diet liable for failure to pass legislation beneficial to their interests.⁶²

Instead of the character of the function itself, Australian courts have tended to focus on the conduct of the relevant public authority surrounding the exercise of the function. So far as regulatory failure is concerned, it is settled that the mere existence of a regulatory power will not give rise to a common law duty of care to exercise that power in order to avert harm. Nor is it sufficient that the public authority is aware in a general sense of the potential risk of harm if it fails to exercise its power. Rather, a duty of care will only arise where some positive act by the authority has created the risk of harm or has specifically encouraged an individual to rely on the authority for ensuring their safety.⁶³ Recent cases have also emphasised that a duty of care may arise where a public authority enjoys a ‘significant and special measure of control’ over an individual’s safety or the safety of their property.⁶⁴ ‘Control’ does not exist simply because the authority has the

⁵⁸ See *Dalehite v. United States*; *Anns v Merton London Borough Council*.

⁵⁹ *Pyrenees Shire Council v Day*, per Toohey J at [68] and Gummow J [182]; *Crimmins v Stevedoring Committee*, per Hayne J at [292]; *Graham Barclay Oysters Pty Ltd v Ryan*, per Gleeson CJ at [12].

⁶⁰ *Crimmins v Stevedoring Committee*, per McHugh J at [87].

⁶¹ See, for example, *Crimmins v Stevedoring Committee*, per Hayne J at [291]–[296]; *Graham Barclay Oysters Pty Ltd v Ryan*, per Gleeson CJ at [14].

⁶² *Overseas Voters Case*.

⁶³ *Sutherland Shire Council v Heyman*, per Mason J at [23]–[25]; *Pyrenees Shire Council v Day*. In *Sutherland Shire Council v Heyman*, Mason J, as he then was, proposed that in rare cases a duty of care could also be grounded on ‘general reliance’, where all members of the public relied on an authority to perform a task that was the sole reason for its existence: for example, air traffic control. Subsequent cases have disapproved of this test of general reliance. See Weeks (2010), pp. 19–20.

⁶⁴ See for example *Brodie v Singleton Shire Council*; *Crimmins v Stevedoring Committee*.

power to regulate certain conduct: rather, the authority must be directly responsible for the source of the risk of harm.⁶⁵

Moreover, the existence of an actionable duty to exercise a function must be consistent with and anticipated by the relevant legislation granting the power to exercise it. This will most commonly be the case where the subject of the power is an identifiable individual or class of persons, rather than the public at large.⁶⁶

Illustrative of these principles in the context of asbestos litigation is the case of *Crimmins v Stevedoring Industry Finance Committee*.⁶⁷ Mr Crimmins was a stevedore registered with the Australian Stevedoring Industry Authority, which maintained a presence in Australian ports and directed stevedores to work for particular employers on a casual basis—often for only hours at a time. While stevedores were never directly employed by the Authority, it nevertheless exercised disciplinary powers over them. The Authority could also direct employers in respect of workplace safety. Although aware of the risk of exposure to asbestos products loaded and unloaded by stevedores, the Authority did not direct employers to provide the stevedores with protective respiratory equipment, contributing in the case of Mr Crimmins to his developing mesothelioma.

A majority of the High Court found that the Authority had a duty of care to exercise its statutory powers. In a leading judgment, McHugh J noted that a duty could not ordinarily arise where a power was directed towards the benefit of the public at large, but that here the relevant powers related very specifically to stevedores. The Authority's disciplinary powers enabled it to compel Mr Crimmins to work in circumstances in which there was a risk of harm, placing him at a 'special vulnerability' to the Authority. Moreover, the Authority had a greater incentive to ensure workplace safety than the employers, which had usually employed Mr Crimmins for only short periods of time.

However, *Crimmins* should be best understood as a unique case highlighting the exceptional degree of control required to establish a duty of care. The NSW case of *Amaca v NSW* also considered the liability of a public authority for failure to mandate workplace safety standards for handling asbestos, but was distinguished from *Crimmins* on the basis of the degree of control enjoyed by the authority.⁶⁸

The victim in *Amaca*, Mr Hay, worked in the construction of a power station, where he handled asbestos products without adequate respiratory equipment. The worksite was regularly visited by a government inspector who investigated workplace safety, but made no specific directions in respect of asbestos. After developing mesothelioma, Mr Hay brought an action against his employer and the owner of the power plant in the DDT. Both defendants successfully

⁶⁵ *Graham Barclay Oysters Pty Ltd v Ryan*, per McHugh J at [93].

⁶⁶ Hayne J in *Brodie v Singleton Shire Council* at [326], McHugh J in *Graham Barclay Oysters Pty Ltd v Ryan* at [79]. In England, see *Stovin v Wise*.

⁶⁷ *Crimmins v Stevedoring Committee*.

⁶⁸ *Amaca Pty Limited (formerly known as James Hardie & Coy Pty Limited) v New South Wales & Anor*.

cross-claimed against James Hardie, the manufacturer of the products used on the site, which in turn cross-claimed against the state of NSW. James Hardie argued that the NSW Government had been generally aware of the dangers of asbestos, and was aware in particular of dangerous levels of asbestos dust onsite at Mr Hay's workplace as a result of several inspection reports, and therefore should have mandated the use of respiratory equipment. The NSW Court of Appeal rejected those arguments, noting that, in contrast with the Stevedoring Industry Authority in *Crimmins*, the State through its inspectors exercised no day-to-day control over Mr Hay's working conditions. Nor did it have any greater knowledge of or incentive to eliminate the risk of harm than the other parties. Consequently, no duty of care arose.

This decision stands in stark contrast with those of the Japanese Supreme Court. The *Chikuho* and *Minamata Disease* decisions appear to stand for the proposition that the mere knowledge of potential harm (or constructive knowledge, in the case of the *Minamata Disease* case) and the capacity to have exercised a regulatory power to prevent that harm is sufficient to render the failure to regulate 'unreasonable'.

Nor did the Supreme Court in either the *Chikuho* or *Minamata Disease* cases advert to the earlier lower court jurisprudence on scope of duty in regulatory failure cases.⁶⁹ Whereas the subject of the minister's power to regulate mine safety arguably related to an identifiable class of persons (in this case, coal miners), the same could not be said for the power to regulate effluence into public waterways. These factors may likewise not act as a bar to success in any claims regarding the Fukushima disaster.⁷⁰

4.5.2 *Judicial Policy Considerations*

Australian courts have pointed to a number of reasons for their reluctance to recognise a duty of care in regulatory failure cases, aside from obvious concerns based on the separation of powers about the capacity of courts to pass judgment on the reasonableness of administrative action.⁷¹ It has been held, for example,

⁶⁹ This is despite the fact that the 'reflexive interest principle', while not referred to by name, appears to have been a relevant consideration in finding no liability in *Real Estate Law Case*.

⁷⁰ In any event, the 'reflexive interest principle' was considered and held not to be a bar to suit in the *Monju Reactor Case*, in which plaintiffs sought to have voided the construction permission for the Monju reactor in Fukui Prefecture.

⁷¹ See for example *Graham Barclay Oysters Pty Ltd v Ryan*, per Gleeson CJ at [6]: 'When courts are invited to pass judgment on the reasonableness of governmental action or inaction, they may be confronted by issues that are inappropriate for judicial resolution, and that, in a representative democracy, are ordinarily decided through the political process. Especially this is so when criticism is addressed to legislative action or inaction'.

that the question of whether to regulate a field of activity or not in the first place, or to leave industry to self-regulate in the shadow of private damages suits, is a highly political one, and often not suitable for resolution by the judiciary.⁷²

Relatedly, in cases where the impugned failure is to regulate so as to prevent a third party from causing harm, such as *Amaca*, Australian courts have found it particularly relevant that the primary tortfeasor was not a public authority, but a commercial actor with a self-interest in minimising risk of harm.⁷³ Requiring government to take positive steps to prevent another party's negligence is both inconsistent with the general common law reluctance to find a duty of care for omissions, and arguably reduces the moral culpability of the primary tortfeasor. Japanese courts, on the other hand, have tended to regard public authorities as *less* deserving of protection from liability than private defendants, precisely because they are compelled to act in the public interest.⁷⁴

Moreover, requiring public authorities to regulate to prevent third party negligence potentially puts the government in the position of being an insurer of last resort whenever the primary tortfeasor is insufficiently capitalised to pay damages, simply because it has 'deeper pockets'. Judgments in *Amaca* and other cases have pointed out that the Government would bear a 'massive obligation' if it were liable for every missed opportunity to prevent harm.⁷⁵ It is telling that the *Chikuho* case was the first pneumoconiosis compensation case to be brought against the Japanese Government, only after most of Japan's coal mining companies had already been wound up.⁷⁶

Another, more practical reason for denying liability is the difficulty of proving a counterfactual in order to demonstrate a causal relationship between the regulatory failure and the damage suffered.⁷⁷ In the *Chikuho* case, the Court held that the minister's failure to regulate had only been unreasonable from the day of the passage of the *Pneumoconiosis Act* on 31 March 1960, thereby rejecting several claims predating the legislation. This highlights the precarious nature of determining liability in the absence of a specific affirmative act or omission.

⁷² *Graham Barclay Oysters Pty Ltd v Ryan*, at [6].

⁷³ *Graham Barclay Oysters Pty Ltd v Ryan*, per Gummow and Hayne JJ at [145]; *Amaca v NSW*, per Ipp JA at [145].

⁷⁴ Sato (2008), p. 69.

⁷⁵ *Amaca v NSW*, per Ipp JA at [159]; *Graham Barclay Oysters Pty Ltd v Ryan*, per Callinan J at [324].

⁷⁶ See *Hanrei Taimuzu* No. 1152, p. 120.

⁷⁷ *Graham Barclay Oysters Pty Ltd v Ryan*, at [10].

4.6 Conclusion

In contrast with the Japanese government's ostensibly inadequate regulation of TEPCO and other nuclear operators prior to the meltdown at the Fukushima Daiichi Nuclear Power Plant, its response in facilitating the resolution and funding of claims related to the Fukushima disaster demonstrates a significant degree of government intervention. The Government successfully convinced TEPCO to begin compensating victims only weeks after the disaster, thereby seriously impairing TEPCO's ability to disclaim liability under the *Nuclear Damages Act*, then used its powers under the Act to set the terms for compensation, and to establish an ad hoc body under MEXT to mediate disputes. It established its own mandatory provider of financial assistance to TEPCO in the form of the Nuclear Damages Compensation Support Fund, coercing the entire nuclear industry into participating in its funding. The legislation establishing the Fund gives the Government the power to direct TEPCO's business conduct, although the Fund has in effect nationalised the company, thereby removing any possibility of independence.

This outcome was not inevitable, as shown by the response of the NSW Government to mass tort claims for asbestos exposure. While some form of alternative dispute resolution was no doubt necessary given the volume of claims, there are no obvious barriers to establishing a specialised, informal court capable of dealing with claims quickly, like the DDT. Similarly, the Japanese Government could have entered into a financing agreement with a priority charge over TEPCO's assets, as did the NSW Government with James Hardie. It is true that the NSW Government's legislative options were limited by James Hardie's move offshore, but TEPCO's statutory monopoly in power provision to the capital at least means that its long-term ability to repay is significantly more secure.

From a legal perspective, the Japanese Government's management of the claims process can be explained by a desire to avoid the risk of its own liability. The first reported claims against the Government for its handling of the Fukushima disaster have only now begun to emerge,⁷⁸ but the Government could face a deluge if TEPCO were allowed to fold or was too slow to respond and unresponsive to claims. Unlike TEPCO, which is limited in the amount of compensation it can pay to victims by the value of its assets, the Japanese Government could be liable for an almost unlimited amount of damages. Such large-scale litigation could also institutionalise actions against the Government as a legitimate response to third party torts wherever the Government was a more attractive defendant, thereby opening the floodgates to the 'massive obligations' that have concerned the Australian courts.

Moreover, the factors that might have prevented the finding of a duty of care in an equivalent case in Australia—the highly discretionary nature of the impugned regulatory powers, the general applicability of the powers to the public safety, and the lack of day-to-day control of the nuclear regulators over plant safety—would potentially not be relevant in Japan. Indeed, the 'regulatory capture' of the Japanese nuclear regulators by industry is comparable with the relationship between

⁷⁸ Aoki (2013), although as yet the legal basis of these claims is unclear.

government and industry in the *Chikuho* and *Minamata Disease* cases, in which the moral culpability of the Government for deliberately under-regulating appears to have contributed to the court's finding of unlawfulness. The incentive for the Government to take steps to avoid such liability is clear.

References

- Akimoto M (2012) Genshiryoku Songai Baisho: Higai Kyusai Hori no Kokoromi [Nuclear damages compensation: an approach for legal principles for victim relief]. *Jiyu to Seigi (Liberty Justice J Japan Fed Bar Assoc)* 63(7):23–29
- Aoki M (2013) Evacuee suits target TEPCO, government. *The Japan Times*, 9 February 2013, p 1
- Dunn E (2005) James Hardie: no soul to be damned and no body to be kicked. *Sydney Law Rev* 27(2):339–353
- Foote D (2013) Japan's ADR system for resolving nuclear power-related damage disputes (in press)
- Futagoishi R, Suzuki K (2011) Kisei Kengen no Fukushi wo meguru Kokka Baisho Ho jo no Sho-Mondai ni tsuite [Various issues under the State Compensation Law surrounding non-exercise of regulatory functions]. *Hanrei Taimuzu* (1356):7–25
- Hitomi T (2011) Fukushima Daiichi Genshiryoku Hatsudensho Jiko no Songai Baisho [Compensation for damages from the accident at the Fukushima Daiichi Nuclear Power Plant]. *Hogaku Seminaa* 56(12):20–25
- Idei N (2012) Genpatsu Jiko Songai Baisho Seikyū to ADR no Katsuyo: Genshiryoku Songai Baisho Funso Kaiketsu Sentaa no Katsudo wo Chushin to shite [The use of ADR in nuclear accident damages compensation claims: centred on the dispute resolution centre for nuclear damage compensation]. *Jiyu to Seigi (Liberty Justice J Japan Fed Bar Assoc)* 63(7):73–75
- Kamino K (1999) Governmental compensations in Japan. In: Zhang Y (ed) *Comparative studies on government liability in East and Southeast Asia*. Kluwer Law International, The Hague, pp 95–115
- Kojima N (2011) Fukushima Daiichi Genshiryoku Hatsudensho Jiko ni kan suru Songai Baisho to Sore ni kanren suru Sho-Mondai [Damages compensation for the Fukushima Daiichi Nuclear Power Plant accident and various related problems]. *Jiyu to Seigi (Liberty Justice: J Japan Fed Bar Assoc)* 62(12):35–46
- Morita H (2012) Rescuing victims and rescuing TEPCO: a legal and political analysis of the TEPCO bailout (in press)
- Nishino A (2012) *Kokka Baisho Ho Komentaari [State Compensation Law Commentary]*. Keiso Shobo, Tokyo
- Nottage L (2006) The ABCs of product safety re-regulation in Japan: asbestos, buildings, consumer electrical goods, and Schindler's lifts. *Griffith Law Rev* 15(2):242–286
- O'Meally JL (2007) Asbestos litigation in New South Wales. *J Law Policy* 15(3):1209–1223
- Ootsuka T (2011) Fukushima Daiichi Genpatsu Jiko ni yoru Songai Baisho to Baisho Shien Kiko Ho: Fuho Koi Hogaku no Kantan kara [Damages compensation for the Fukushima Daiichi Nuclear Power Plant Accident and the Compensation Support Fund Law: from a Torts Law perspective]. *Jurisuto* (1433):39–44
- Osaka E (2012) Corporate liability, government liability and the Fukushima Nuclear Disaster. *Pac Rim Law Policy J* 21(3):433–459
- Ramsayer JM (2012) Why power companies build nuclear reactors on fault lines: the case of Japan. *Theor Inquiries in Law* 13(2):457–485
- Sato H (2008) *Jitsumu Hanrei: Chikujo Kokka Baisho Ho [Practical Case Law: annotated State Compensation Law]*. Sankyo Hoki, Tokyo
- The National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission (2012) *Official report of The Fukushima Nuclear Accident Independent Investigation Commission*. The National Diet of Japan, Tokyo

- TEPCO (2011) Press release (Nov 04, 2011): Approval of the special business plan. <http://www.tepco.co.jp/en/press/corp-com/release/11110403-e.html>. Accessed 16 Aug 2013
- TEPCO (2012) Annual Report 2012
- TEPCO (2013a) Press release (Jan 22, 2013): Financial support from the Nuclear Damage Liability Facilitation Fund. http://www.tepco.co.jp/en/press/corp-com/release/2013/1224260_5130.html. Accessed 16 Aug 2013
- TEPCO (2013b) Press release (Feb 22, 2013): Financial support from the Nuclear Damage Liability Facilitation Fund. http://www.tepco.co.jp/en/press/corp-com/release/2013/1224906_5130.html. Accessed 16 Aug 2013
- Uga K (1999) The State Reparation Law. In: Hondius E (ed) *Modern trends in tort law: Dutch and Japanese law compared*. Kluwer Law International, The Hague, pp 195–201
- Uga K, Koketsu H, Yamamoto R (eds) (2012) *Gyosei Hanrei Hyakusen II* [100 select cases on Administrative Law, Vol II]. Betsuyo Jurisuto, 6th edn. Yuhikaku, Tokyo
- Upham FK (1987) *Law and social change in Postwar Japan*. Harvard University Press, Cambridge
- Utatsu N (2012) Genshiryoku Songai Baisho Ho ni okeru Sekinin Shuchu Gensoku to Kokka Hoshō [The concentrated liability principle under the Nuclear Damage Compensation Law and State Compensation]. *Songai Hoken Kenkyu* 74(1):111–150
- Weeks G (2010) *Private law litigation against the government: are public authorities and private actors really 'the Same?'* University of New South Wales Faculty of Law Research Series, vol 68. University of New South Wales, Sydney
- Weitzdörfer J (2013) Liability for nuclear damages under Japanese law: Key legal problems arising from the Fukushima Daiichi nuclear accident. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4

Documents and Materials

- Amaca Pty Limited (formerly known as James Hardie & Coy Pty Limited) v New South Wales & Anor* [2004] NSWCA 124
- Amended and Restated Final Funding Agreement (2012) dated 28 March 2012. <http://www.aicf.org.au/docs/AFFA%20Amended%20and%20Restated%20as%20at%2010312.pdf>. Accessed 15 March 2013.
- AICF Facility Agreement (2010) tabled in NSW Parliament 22 December 2010
- Brodie v Singleton Shire Council* (2001) 206 CLR 512
- Chikuhō Pneumoconiosis Case*, Supreme Court (Third Petty Bench) decision of 27 April 2004, 58(4) Minshu 1032
- Chloroquine Medical Harm Case*, Supreme Court (Second Petty Bench) decision of 23 June 1995, 49(6) Minshu 1600
- Crimmins v Stevedoring Committee* (1999) 200 CLR 1
- Dalehite v. United States* 346 U.S. 15 (1953)
- Graham Barclay Oysters Pty Ltd v Ryan* (2002) 211 CLR 540
- Kansai Minamata Disease Case*, Supreme Court (Second Petty Bench) decision of 15 October 2004, 58(7) Minshu 1802
- Monju Reactor Case*, Supreme Court (Third Petty Bench) decision of 22 September 1992, 46(6) Minshu 571
- Overseas Voters Case*, Supreme Court (Full Bench) decision of 14 September 2005, 59(7) Minshu 2087
- Pyrenees Shire Council v Day* (1998) 192 CLR 330
- Real Estate Law Case, Supreme Court (Second Petty Bench) decision of 24 November 1989, 43(10) Minshu 1169
- Stovin v Wise* [1996] 1 AC 923
- Sutherland Shire Council v Heyman* (1985) 157 CLR 424
- Tokyo District Court decision of 19 April 2006 (Hei-14 (wa) No. 6644)
- Tokyo District Court decision of 29 February 2008 (Hei-19 (wa) No. 7869)
- Tokyo High Court decision of 21 September 2005 (Hei-16 (ne) No. 5435)

Chapter 5

Liability for Nuclear Damages Under Japanese Law: Key Legal Problems Arising from the Fukushima Daiichi Nuclear Accident

Julius Weitzdörfer

5.1 Introduction

The legal, financial and political impact of the Fukushima Daiichi nuclear accident can hardly be underestimated. With a financial magnitude calculated at approximately ¥10 trillion (US\$110 billion) and an unprecedented number of over 1,500,000 claimants, it constitutes the largest civil liability case in the legal history of not only Japan, but probably the world. While the catastrophe has implications for the application and revision of numerous fields of law—such as regulations concerning reactor safety and energy supervision, insurance and taxation, emergency evacuation, and even real property and labour law—this overview focuses on Japan’s nuclear liability regime.¹ It addresses a range of practical and doctrinal issues associated with liability for nuclear damages pursuant to the *Nuclear Damages Act* (NDA) and other legislation. Examining some of the legal challenges facing the victims, government and judiciary in the aftermath of the catastrophe, this chapter is divided into: a general introduction into the recovery of nuclear

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¹ For a more comprehensive study in German (with an English abstract), including Japanese legal terminology and sources, as well as an economic analysis, full references to all statutes, precedents and legal opinions mentioned here, see Weitzdörfer (2011). The chapter partially summarises that analysis and adds updated information, drawing upon new sources in Western languages since 2011.

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damages under Japanese law (Sect. 5.1); a discussion of specific tort law (Sect. 5.2) and constitutional law problems related to the Fukushima accident (Sect. 5.3); and some final conclusions on the solutions to these issues (Sect. 5.4).

The way in which compensation law principles are applied largely determines not only the prospects of the victims, but also of the operator of the Fukushima Daiichi nuclear power plant, Tokyo Electric Power Company (TEPCO), along with other nuclear power plant operators. For Japanese consumers and citizens, it will influence more than the future price and sources of electricity. The Japanese Government's approach to these questions can also be regarded as one of the major political minefields in Japan today. The power industry, the Treasury, insurers and taxpayers want answers. To understand the answers to the legal questions, it is first necessary to understand the basics of Japan's nuclear liability laws.

5.1.1 Nuclear Compensation Legislation in Japan

Predictably, nuclear legislation is somewhat complex. For instance, to construct a single nuclear power plant in Japan, over 30 laws have to be applied and over 60 different procedures have to be followed. Further laws are applied in cases of emergency and evacuation. Prior to the catastrophe, four major laws governing nuclear liability were in force.

The most important of these is the aforementioned *Nuclear Damages Act* (NDA).² Japan is party to neither the *Vienna Convention on Civil Liability for Nuclear Damage* nor the *Paris Convention on Nuclear Liability*,³ but its liability regime resembles these treaties in some significant respects.⁴ The NDA only stipulates very basic provisions and is therefore accompanied by the *Order for the Execution of the Nuclear Damages Act*.⁵ The third piece of legislation is the *Act on Indemnity Agreements for Compensation of Nuclear Damages* (AIA).⁶ This law is intended to ensure that plant operators have sufficient funds to compensate victims; its provisions are again elaborated by a final *Order for the Execution of*

² Law No. 147 of 1961; English translation available at: <http://www.oecd-nea.org/law/legislation/japan-docs/Japan-Nuclear-Damage-Compensation-Act.pdf> (translation as of 2009).

³ The respective conventions are available at: <http://www.oecd-nea.org/law/legal-documents.html#agreements>.

⁴ For a recent and detailed comparison of the Japanese to the international nuclear liability regimes, see Pelzer (2011b); Sato (2012), pp. 2–14; Vásquez-Maignan (2012). See further, Cook (2013), in this volume.

⁵ Cabinet Order No. 44 of 1962; English translation available at: <http://www.oecd-nea.org/law/legislation/japan-docs/Japan-Cabinet-Order-No%2044.pdf> (translation as of 2009).

⁶ Law No. 148 of 1961; English translation available at: <http://www.oecd-nea.org/law/legislation/japan-docs/Japan-Nuclear%20Liability-Indemnification-Contract-Law.pdf> (translation as of 2009).

the Act on Indemnity Agreements for Nuclear Damages.⁷ Cabinet Orders are important in Japanese law as they set out necessary details, such as (in this case) whether damage by a tsunami is covered by insurance.

In addition, at least two further statutes⁸ may become relevant in a nuclear liability case. The *Atomic Energy Basic Act*⁹ defines some relevant legal terms and the *Civil Code*¹⁰ sets forth general provisions on damages, causation, expiry of claims and so on. The expiry of claims could likely become particularly important in the case at hand, for instance when health conditions occur years after the actual event. We will see below that the Government, faced with significant legal ambiguities, overburdened courts and the near-insolvency of TEPCO soon after the catastrophe, was forced to take action and enact retrospective legislation¹¹ in order to facilitate claims and cope with the (foreseeably) insufficient funds of the operator.

5.1.2 Key Features of Japan's Nuclear Liability Regime

What are the distinctive features of Japan's nuclear liability regime? In principle, the legal burden is put upon the operator—in this case, TEPCO. However, as part of the compromise reached between the Government and the power industry during the process of enactment, several mitigating factors and exceptions can apply. Nonetheless, the nuclear operator's liability (set forth in NDA Article 3(1)) is exclusive, unlimited and strict:

Where nuclear damage is caused as a result of Reactor Operation during such operation, the nuclear operator who is engaged in the Reactor Operation on this occasion shall be liable for the damage (...)

To ensure payment of compensation by the operator, the operator has a duty to provide financial security according to NDA Articles 6–14, generally amounting to

⁷ Cabinet Order No. 45 of 1962; English translation available at: <http://www.oecd-nea.org/law/legislation/japan-docs/Japan-Cabinet-Order-No%20201.pdf> (translation as of 2009).

⁸ For a discussion on more specialised statutes, for example concerning labour safety standards and insurance for nuclear power plant staff and contract workers, state liability or disaster relief measures for evacuees, see generally Weitzdörfer (2011). For accompanying legislation on the regulatory bodies, power plant licensing, reactor safety as well as the relevant environmental and energy law, see also Yokouchi (2011), pp. 126–128 and Pardieck (2013).

⁹ Law No. 168 of 1955.

¹⁰ Laws No. 98 of 1896 and No. 9 of 1898; English translation available at: [http://www.japaneselawtranslation.go.jp/law/detail/?ft=2&re=02&dn=1&yo=&kn\[\]=%E3%81%BF&_x=2&_y=44&ky=&page=9](http://www.japaneselawtranslation.go.jp/law/detail/?ft=2&re=02&dn=1&yo=&kn[]=%E3%81%BF&_x=2&_y=44&ky=&page=9) and [http://www.japaneselawtranslation.go.jp/law/detail/?ft=2&re=02&dn=1&yo=&kn\[\]=%E3%81%BF&_x=2&_y=44&ky=&page=10](http://www.japaneselawtranslation.go.jp/law/detail/?ft=2&re=02&dn=1&yo=&kn[]=%E3%81%BF&_x=2&_y=44&ky=&page=10).

¹¹ For initial overviews, see OECD, NEA Legal Affairs Section (2011); Sato (2012), pp. 15–22; and broadly and very comprehensively, Faure and Liu (2012), pp. 170–205. A recent update is given by Nomura et al. (2012).

¥120 billion (US\$1.3 billion) per site. This duty has to be fulfilled both by obtaining private liability insurance and by concluding public indemnity agreements or otherwise by providing a deposit as a security to be kept by the Government.¹² The second aspect within the nuclear liability regime is the role of the Government. According to NDA Article 1, the law has a dual function. It should protect persons suffering from nuclear damages and contribute to the ‘sound development’ of the nuclear industry. This may be interpreted as somewhat contradictory but, due to the twofold purpose of the law, a great deal of the economic burden of nuclear compensation is shifted onto and handled under the auspices of the Government.¹³ Relevant to this are two main aspects:

- State aid is given by the Government to operators. These may be paid in accordance with the indemnity agreements under Article 10 of the NDA (amounting up to the aforementioned ¥120 billion, in general) or ‘if deemed necessary for helping to compensate’ as under Article 16 of the NDA (well beyond the threshold of ¥120 billion, as is now the case with TEPCO); and
- An exemption from the operator’s liability is included under Article 3(1) of the NDA for damage caused by ‘a grave natural disaster of exceptional character’.

The provision of state aid and the application of the exemption generate the most delicate constitutional law aspects of the Fukushima Daiichi nuclear accident. However, we should first consider the issue that matters most to the victims—TEPCO’s liability in tort.

5.2 Tort Law Issues in Compensating for the Nuclear Accident

5.2.1 *How Can Victims Successfully Assert Their Legal Rights?*

In compensating for the Fukushima Daiichi nuclear accident, the first question is: how can (potential) plaintiffs assert their legal rights successfully? It should be kept in mind that approximately 160,000 residents have been evacuated from the area deemed to be directly affected by the nuclear accident and, as of January 2013, 1.4 million affected non-business individuals had already claimed damages from TEPCO. Yet, according to the website of the Japanese Bar Association (*Nichibenren*), only 157 lawyers were practicing in Fukushima prefecture in 2011, with just

¹²For details on the rules on financial security, on the respective amounts and on state aid to operators see, Weitzdörfer (2011), pp. 73–75.

¹³The burden-sharing of nuclear liability is shown in Fig. 5.2, below.

20 lawyers maintaining an office there.¹⁴ It follows that the numbers of lawyers and courts in Fukushima prefecture will probably be insufficient for all affected parties to claim damages through the courts. Moreover, plaintiffs' documents may have been lost or made inaccessible following evacuation from the exclusion zone. Natural persons affected by the nuclear damage may also have inferior bargaining power compared to TEPCO and hence may be reluctant to sue.¹⁵

Possibly in anticipation of these obstacles to compensation, including an overburdening of the courts, Article 18 of the NDA stipulates that potential plaintiffs may choose whether to file an action against the nuclear operator in court or instead pursue their complaint through an alternative dispute resolution (ADR) system established under that legislation.¹⁶ In detail, Article 18 of the NDA provides as follows:

- (1) The Dispute Resolution Committee for Nuclear Damage Compensation (hereinafter referred to as 'Resolution Committee') may be established as an organisation attached to the Ministry of (...) Science and Technology, pursuant to the provisions laid down by Cabinet Order; this Committee shall be in charge of mediating Resolution of any dispute arising from compensation of nuclear damage and of preparing general instructions to help operators reach a voluntary settlement of such disputes.
- (2) The Resolution Committee shall:
 - (i) mediate Resolution of any dispute arising from compensation of nuclear damage;
 - (ii) in the event of a dispute arising from compensation of nuclear damage, draft instructions establishing the scale of the nuclear damage and other general instructions to help operators reach a voluntary settlement of the said dispute;
 - (iii) investigate and assess nuclear damage as necessary for dealing with the matters mentioned in (i) and (ii) above (...).

Accordingly, shortly after the catastrophe, the Government and TEPCO set up telephone consultation services and compensation offices in both Fukushima prefecture and Tokyo, and enacted various measures to facilitate redress, such as the *Special Act for Support for Victims of the East Japan Disaster*.¹⁷ Moreover, TEPCO representatives visited victims in evacuation shelters to commence compensation negotiations and distribute compensation claim forms. Although they have facilitated recovery, the forms were initially over 60 pages in length, with 2,115 sections to be completed. Many of those affected by the nuclear disaster felt overburdened by such a task and, ironically, assigned the work to a lawyer nonetheless. (Incidentally, TEPCO refused to issue the author with a specimen of the forms due to reasons of 'confidentiality', despite their wide circulation, so copies for this chapter's research were obtained by inquiring with a Tokyo law office.)

¹⁴ Nihon Bengoshi Rengo-kai (2011), as of 1 June 2011.

¹⁵ There are countless studies on the widely-perceived sense of low litigiousness in Japan. However, on the (relatively high) number of suits in the field of nuclear law which had been heard before the Fukushima disasters, see Weitzdörfer (2011), pp. 62–63, 84, 86, and further Ramseyer (2012), pp. 9–14 (all page numbers referring to the online version).

¹⁶ See generally, Foote (2013); Idei (2012); also compare Rheuben (2013), in this volume.

¹⁷ Law No. 6 of 2012. For details, see Foote (2013).

As a result of persistent complaints, in November 2011 TEPCO reduced the number of pages to 34—although this still contained 1,005 sections—to better assist the compensation process.

Table 5.1¹⁸ shows the soaring financial scale of the case, which cannot yet be thoroughly assessed, and the sheer number of plaintiffs. By the end of spring 2013, it was estimated that an unprecedented nearly 1.7 million natural and legal persons will likely have initiated claims.¹⁹ Assuming the monthly payouts of over ¥100 billion continue, the amounts paid by TEPCO and, predominantly, the Government's indemnification fund will have easily exceeded the sum of ¥2.0 trillion (more than US\$22 billion) by that time. Table 5.1 also illustrates the dual compensation scheme adopted for both permanent and preliminary payments,²⁰ the latter of which was initially criticised as being insufficient and discriminatory in part.²¹ Note that, under the scheme, victims affected by the Government's respective temporary and permanent evacuation orders are treated differently to voluntary evacuees, who 'chose' to relocate as a precaution in the wake of the catastrophe. This gives rise to the issue of the exact legal requirements for the grant of compensation and the question of what kind of damages are covered at all, as discussed below.

5.2.2 What Kind of Damage Is Covered Under the *Nuclear Damages Act*?

Article 2(2)(i) of the NDA stipulates that:

“nuclear damage” means any damage caused by the effects of the fission process of nuclear fuel or of the radiation from Nuclear Fuel, or of the toxic nature of such materials, which means effects that give rise to toxicity or its secondary effects on the human body by ingesting or inhaling such materials.

That is to say, the NDA defines damages only in physical terms. This gives rise to the question of whether wholly reputational or psychological harm is within the scope of the Act.²² What happens, for example, if the prices of agricultural products from the Tohoku area have been adversely affected by the catastrophe with

¹⁸ Reproduction of public press material by TEPCO (2013a), available in regularly updated versions online.

¹⁹ Author's estimations, based on the still-increasing numbers previously published above in 2012 and 2013.

²⁰ Compare especially the hastily-enacted *Act on Emergency Measures Relating to Damage Caused by the 2011 Nuclear Accident*, Law No. 91 of 2011; English translation: OECD and NEA Legal Affairs Section (2012), pp. 237–242.

²¹ For details, see Weitzdörfer (2011), pp. 101, 107–108. For a recent summary of the progress in compensating victims, see Matsuura (2012).

²² On the scope of the Act, see generally Yokouchi (2011).

Table 5.1 Applications and payouts for indemnification of nuclear damage, by nature of applicant and type of indemnification (TEPCO 2013a)

As of 01/25/13			
	Individuals	Individuals (Losses due to voluntary evacuation)	Corporations and Sole Proprietors
Applications			
Applications received (cumulative) ^①	Approx. 324,000 cases	Approx. 1,084,000 cases	Approx. 142,000 cases
Agreement ^②			
Agreed Cases (cumulative)	Approx. 284,000 cases		Approx. 119,000 cases
Agreed Amounts (cumulative)	Approx. 550.2 Bil Yen		Approx. 908.2 Bil Yen
Permanent Indemnification			
Number of permanent indemnification cases (cumulative)	Approx. 263,000 cases	Approx. 881,000 cases	Approx. 117,000 cases
Amount of permanent indemnification ^③	Approx. 464.9 Bil Yen	Approx. 298.7 Bil Yen	Approx. 866.8 Bil Yen
Cumulative Payouts			
Permanent indemnification ^③			Approx. 1,630.4 Bil Yen ^①
Provisional compensation			Approx. 148.6 Bil Yen ^②
Total amounts paid			Approx. 1,778.9 Bil Yen ^{①+②}

^① as of January 17, 2013

^② agreement forms are not sent for the losses of voluntary evacuation

^③ amounts paid as provisional compensation are not included.

consumers avoiding potentially irradiated produce? Regardless of whether or not specific agricultural produce has sustained radiation, it is far from easy to provide evidence to support claims of reputational damage, since the calculation of the amount of damages is difficult—even more so when documents and other resources may be inaccessible due to their location in the evacuated area. In this context, it is also important to consider the mental suffering of the (mostly elderly) victims who were forced to live in crowded shelters and who were additionally subject to rumours about radiation.

In the landmark Tokaimura criticality accident cases, the absence of clear provisions in the NDA and the *Civil Code* forced Japanese courts to deal with this issue, which marked the beginning of nuclear liability litigation in Japan. In an incident at TEPCO’s Tokaimura reprocessing facility in 1999, two workers died after improperly handling nuclear material at the facility. As a consequence, 310,000 people were temporarily prohibited from leaving their houses, and the area surrounding the facility had to be evacuated within a radius of 350 metres. These numbers and the actual threat posed by the accident came nowhere near the scale of Fukushima. Yet, in its aftermath, 17 power plants that were run by TEPCO were temporarily closed down and over ¥12 billion (US\$132 million) had to be paid in damages in the first year alone, mostly as a result of out-of-court settlements. The standards developed by the Japanese courts in Tokaimura-related litigation²³ allowed for the recovery of damages such as bodily harm, medical examination

²³ Such as by the Tokyo High Court on 21 September 2005, the Tokyo District Court on 27 February 2006 and 19 April 2006, and the Mito District Court on 27 February 2008; in total, 11 cases were brought to court, the remaining 99 % were handled using ADR.

costs, evacuation costs, examination expenses for potentially contaminated objects, contamination of property, losses of income and profits, business damages and mental suffering.²⁴

Following the Fukushima catastrophe and drawing upon these standards, new guidelines and respective appendices were hastily enacted, starting with the *First Guidelines on Determining the Scope of Nuclear Damage by the Accident at the TEPCO Fukushima I & II Power Plants* on 28 April 2011.²⁵ As their name and date indicates, the guidelines are technically not laws enacted by parliament, but are retrospectively developed guidelines set by a panel appointed by the Government and consisting of 16 scholars of law, medicine and physics.²⁶ Followed and amended by at least six rather lengthy subsequent guidelines and supplements so far, their unquestioned and crucial purpose is to establish and facilitate an out-of-court compensation scheme by, *inter alia*, specifying a non-obligatory scope of application for the *Nuclear Liability Act*. The guidelines, which more resemble a legal commentary, stipulate both a personal and a precise geographical ambit of application, and are predominantly in line with the standards established in the Tokaimura cases. They partially differ, for example, in terms of facilitating compensation for mental suffering. This immediately leads to the practical problems of proving causation and calculating the exact amount of damages, both in and out of court.

5.2.3 *How to Prove Causation and Calculate Damages?*

The actual causes of cancer or long-term sicknesses related to radiation are classic examples of damages that are fairly difficult to prove in court. With respect to the causation of damages for evacuation, ‘voluntary’ and mandatory evacuations must be considered separately. For loss of income, the calculation of pure economic losses is always hypothetical and there is the question of whether government and humanitarian aid payments should be deducted from the amount of damages awarded, to name just a few of many possible circumstances.

The doctrinal contours of Article 416 of the *Civil Code*, which is analogously applicable when assessing causation in tort claims, have long been disputed among

²⁴ For a summary, see Weitzdörfer (2011), pp. 83–86. For a description of three of the cases see Yokouchi (2011), pp. 143–144.

²⁵ Guideline and appendices available at: http://www.mext.go.jp/a_menu/anzenkakuho/baisho/1304756.htm (in Japanese); for a first full English translation of seven guidelines and their respective supplements, see OECD, NEA Legal Affairs Section (2012), pp. 89–184.

²⁶ For an overview of the first guidelines and the committee that enacted them, see Weitzdörfer (2011), pp. 64–65, 83–87, 106–108. A detailed early description followed by Yokouchi (2011), pp. 133–134, 135–137.

legal scholars in Japan and therefore raise considerable legal uncertainty.²⁷ Nevertheless, there are precedents in the Tokaimura cases²⁸ and the Minamata environmental pollution accident cases. Japanese courts have a tradition of establishing rules for easing, or even reversing, the burden of proof in favour of the plaintiffs in such claims. Taking into account the difficulties of such cases and the ongoing discussions, the respective guidelines and appendices enacted in 2011 again set out specific amounts of damages to be awarded in certain situations in order to facilitate negotiations between plaintiffs and TEPCO.

Figure 5.1²⁹ and Table 5.2³⁰ demonstrate sample calculations of damages for a company that has sustained damages related to harmful rumours regarding radiation and for an evacuated family, respectively. Note that the heavily criticised preliminary compensation initially announced by TEPCO in April 2011, which was to be exactly ¥1 million (US\$10,986) per household, was discarded. It was subsequently replaced by more elaborate and differentiated lump sums in the guidelines, and revised guidelines also enabled the possibility to obtain actual costs, including the costs of temporary entry into the evacuation zone allowed to recover personal items and documentation from evacuees' homes. It should also be noted that permanent indemnification for loss of real property, vehicles, machinery, cattle and other property—which, in many cases, might constitute the bulk of the financial damage sustained—is not included in either of these sample calculations. Temporary payments advanced to the victims are deducted once a final settlement is reached.

5.2.4 Is There a Right to Specific Action (Soil Decontamination) Over Compensation?

The NDA does not explicitly provide for restitution in kind. Therefore, after the catastrophe, a key question was whether plaintiffs could demand soil decontamination instead of damages. This might seem a very specific and doctrinal problem, but it is a crucial consideration for displaced farmers and home owners. To be able to return to their previously used and inhabited premises, decontamination is the sole solution for land owners; but costs involved in decontamination are significantly more expensive than just compensating for the reduction in property value (if owners return to the land without full decontamination) or the pre-disaster property value (if they cannot return). For an affirmative answer, it would have been necessary to clarify that either (1) the NDA overrides only tort law and does

²⁷ The doctrinal and practical issues of causation in nuclear liability cases are examined comprehensively by Yokouchi (2011), pp. 134–135, 138–151.

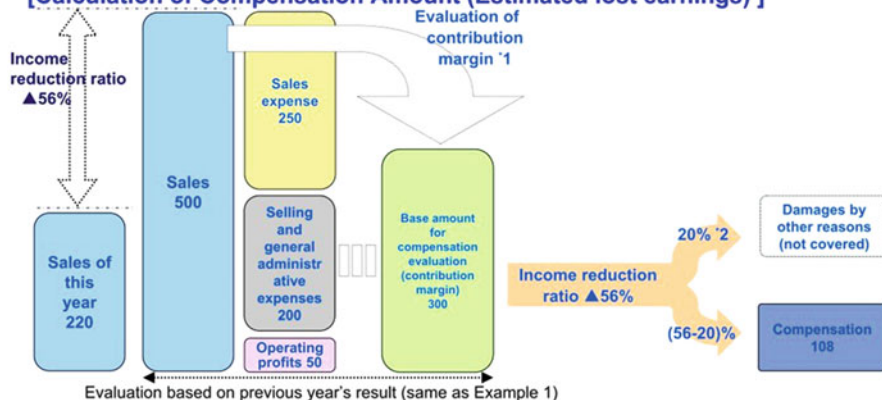
²⁸ For a case of a nuclear power plant worker exposed to radiation involving questions of causation, see Japanese Supreme Court on 17 December 1991, in: Rodo Hanrei 600 (1992), p. 6.

²⁹ Reproduction from TEPCO (2012a), p. 2.

³⁰ Reproduction from TEPCO (2012b), p. 2.

- Similar to closed cases, the contribution margin is the basis for compensation evaluation ^{*1}.
- Amount due to this accident among reduced contribution margins has been compensated.


[Calculation of Compensation Amount (Estimated lost earnings)]



^{*1}: Contribution margin is calculated individually, but a small-to-medium sized company can use the industry classified average profit rate (hotel business: 60%)

Fig. 5.1 Commercial damage calculation related to evacuation orders, sample case of a tourist business (reproduced from TEPCO 2012a)

Table 5.2 Personal damage calculation related to evacuation orders, sample case of a family of four (reproduced from TEPCO 2012b)

 <p>[Family members]</p> <ul style="list-style-type: none"> - husband (office worker) - wife (housewife) - children 1 - children 2 	<p>[Evacuation Status]</p> <ul style="list-style-type: none"> - Stayed in the gymnasium within the prefecture for 5 months after the accident, evacuating from the house in the evacuation zone - Moved to and staying in the temporary housing - Monthly income of the husband was 270,000 yen (No income at present)
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	husband	wife	Child 1	Child 2	Compensation (Test calculation according to the standard of compensation)
Evacuation Cost (moved twice within the prefecture)	○	○	○	○	Actual cost (40,000 yen)
Return Cost	(Request after returning to the house)				—
Temporary Entry (Only husband participated)	○	—	—	—	Actual cost (10,000 yen)
Life and physical damages (Child 2 was injured)	—	—	—	○	Actual cost (-)
Damages of loss of work etc.	○	—	—	—	Actual cost (1,620,000 yen)
Mental damages ((120,000 yen x 5+100,000 yen * 1) / person)	○	○	○	○	2,800,000 yen
Test Cost (human) (except for husband)	—	○	○	○	Actual cost (45,000 yen)
Test Cost (material)	(Request after checking the material)				—
Loss or reduction of property value etc.	Planned to be announced later				—
Compensation Cost (assuming the actual cost is the same as the standard cost)					4,515,000 yen
Provisional Payment of Compensation (appropriated for compensation: integrated)					2,200,000 yen
Payment amount for this time					2,315,000 yen

not bar other provisions of the *Civil Code*, or (2) that the courts may grant restitution in kind on the basis of the NDA itself, contrary to its wording. Articles 709, 710 and 717(1) of the *Civil Code* are overridden by the NDA. Moreover, attempting to base a claim on the *Product Liability Act* is impossible due to the explicit provision of Article 4(3) of the NDA. Nuclear damages are similarly excluded under Article 13 of the *Environmental Act*, Article 2(1) of the *Soil Contamination Countermeasures Act*, and Article 2 of the *Law Preventing Contamination of Farmland*.³¹ In this situation, at best, one could have based a claim for decontamination on the protection of possessions (as opposed to property) set out in Articles 179 and 198 of the *Civil Code*.

Even though the applicability of these provisions remained dubious, in practice the Government instructed TEPCO to arrange for the decontamination of property in Fukushima prefecture, and decontamination measures soon commenced. It was initially unclear to what extent TEPCO or the Government would ultimately have to bear the financial burden of these works, until the *Act on Special Measures Concerning the Handling of Pollution by Radioactive Materials*³² finally clarified in August 2011—retrospectively—that such cost would be borne by the operator. This statute has been in force since January 2012.

To summarise, legal uncertainty—even with respect to critical issues, as demonstrated in this and prior examples—is not exceptional, but instead typical under Japan’s nuclear liability regime created before the Fukushima disaster. The legal issues discussed next in Sect. 5.3 are also due to statutory uncertainty, and are even more dramatic in their implications.

5.3 Constitutional Law Issues in Compensating for the Nuclear Accident

5.3.1 *Exemption of TEPCO’s Liability due to the Natural Disaster?*

The first issue related to constitutional law is the fundamental question of whether a complete exemption of TEPCO’s liability might apply as a result of the natural disaster. After all, the power plant was damaged by a gigantic earthquake and a devastating tsunami. In this respect, Article 3(1) of the NDA stipulates that a nuclear operator is *not* liable for damages in the case where the ‘damage is caused by a grave natural disaster of an exceptional character or by an insurrection’. As this

³¹ The (im)possibility of an accumulative application of these and many other special laws, including agricultural, fisheries and labour law, is summarised in Weitzdörfer (2011), pp. 87–93.

³² The draft English translation is available at: http://josen.env.go.jp/en/framework/pdf/special_act.pdf?20130118.

wording leaves considerable room for interpretation, it has been the centre of much scholarly debate.³³ It is indeed a very exciting topic to examine, not only because of the dramatic financial *consequences* for either the utility or the Japanese treasury and taxpayers. Even more interesting is the *way* in which this legal question was ultimately decided.

Intuitively, the 9.0 magnitude megathrust earthquake which struck Japan on 11 March 2011 and the subsequent tsunami could seem to fall within the exception under Article 3(1) of the NDA. However, there have been no other tried standards or statutory interpretations of the exemption clause that provide a basis upon which to decide whether the events indeed constitute a ‘grave natural disaster of exceptional quality’. The wording of the statute in Japanese, which literally translates as ‘abnormally gigantic catastrophe’, suggests that very high thresholds both for the intensity and the exceptionality have to be exceeded in order to exempt the nuclear operator from liability.

The majority of the legal scholarship in Japan initially argued in favour of a rather limited scope to the exemption in order to impose a high duty of care upon the operators. Some academics suggested that the exemption should apply to an earthquake amounting to three times the intensity of the famous 1923 Kanto earthquake in Tokyo. However, it is unclear if this threshold refers to three times the devastation or three times the force of the Kanto earthquake. Others, favouring an even narrower ambit of the exemption clause, only include earthquakes of a magnitude greater than any reasonable foreseeability. TEPCO, in turn, argued that the conditions for the exemption had been met at least well into April 2011. Considering the standards of the previously prevailing legal opinion along with the fact that the earthquake was by far the most powerful earthquake known to have hit Japan, there was a solid basis for it to be deemed a ‘natural disaster of exceptional magnitude’. Such a statutory interpretation would have rendered TEPCO legally unaccountable for the nuclear catastrophe—leaving the victims with no party to turn to, except for the goodwill of the Government.

In contrast, on 25 March 2011, the Kan Government proclaimed through its Chief Cabinet Secretary, Yukio Edano, that ‘in light of the general situation and current social circumstances following the accident, the application of the exemption clause was unthinkable’.³⁴ He only later explained that the reason for this narrow interpretation of the clause was that TEPCO had been aware that its anti-disaster measures were insufficient and had been warned in this regard by experts, so that the damage to the plant was not unforeseeable.³⁵ As a result, a lively

³³ For a more detailed discussion with further references, see Weitzdörfer (2011), pp. 76–78; Yokouchi (2011) and Ramseyer (2012) briefly raise the question but leave the answer open. Recently, Osaka (2012) elaborately advocated against the applicability of the exemption clause, also suggesting that the manufacturer of the plant, General Electrics, may be liable under US law.

³⁴ Press conference on the afternoon of 25 March 2011, available as a video at: http://www.kantei.go.jp/jp/tyoukanpress/201103/25_p.html; an English transcription is available at: http://www.kantei.go.jp/foreign/incident/110325_1611.html.

³⁵ Statement on NHK Television on 30 April 2011.

discussion on the question occurred in the Japanese media, and even occasionally in the international media.

Figure 5.2³⁶ outlines possible nuclear liability scenarios and how the respective types of accidents determine burden-sharing between operators, insurers and the Government.

Not long after the Government expressed its position, TEPCO—faced with insolvency, and dependant on state aid and the Government’s benevolence—back-pedalled on the whole matter. Ever since, it no longer seems to be an issue of major public debate; the catastrophe has overwhelmingly come to be regarded as being outside the ambit of the exemption clause.³⁷ At this point, the second noteworthy and maybe even more intriguing aspect begins to unravel. From a policy perspective, the Government’s solution may indeed be favourable to the victims as they would not be able to bring any claims against TEPCO if the latter were to be exempted from liability. Furthermore, with respect to considerations of justice, it is impossible to deny TEPCO’s responsibility in the nuclear catastrophe.

However politically justified it may be to impose liability on TEPCO, it is doubtful whether the Government should have the authority to decide upon a legal question of such enormous import. In other words, the downside of the Government’s well-intentioned allegations can be seen as a violation of the principle of the separation of powers, which is stipulated in Article 41 of the *Japanese Constitution*. In the author’s opinion, a legal question as difficult and as far-reaching as this should be left for the judiciary to decide and must not be determined through the retrospective execution of political power. In a democracy, part of the equilibrium of the legislature and the judiciary is that, if legislators have chosen to leave sensitive legal questions open by means of deliberately ambiguous statutes *ex ante*, as is often the case in Japanese law and unarguably nuclear liability in particular, legislators must refrain from tampering with the statutory interpretation *ex post facto*. Many Japanese legal scholars and lawyers have sensed the strong political pressure in this regard, but few have openly expressed serious concerns.³⁸

³⁶ Translated from Weitzdörfer (2011), p. 75.

³⁷ This is also the observation of Yokouchi (2011), p. 129. For an attempt to summarise the political relationship of TEPCO and the Government in terms of nuclear indemnification, see Weitzdörfer (2011), pp. 102–108.

³⁸ One of the rare examples in a Western language is Kabashima (2013). Kabashima extends explicit criticism concerning the rule of law and separation of powers, with respect to the compensation guidelines (at p. 18): ‘...the government is trying to resolve the dispute by applying the Guideline which it drew up by itself. Insofar as it too is liable for the accident, it is dubious whether the Guideline is fair to all parties. In addition, it is also problematic for the Guideline to play a role as a special act of tort liability for the on-going cases, even though it is being applied retroactively. It is therefore not legitimate with regards to procedural justice’. Kabashima also repeats the scandalous fact that several members of the government-appointed panels had earlier received research grants from TEPCO.

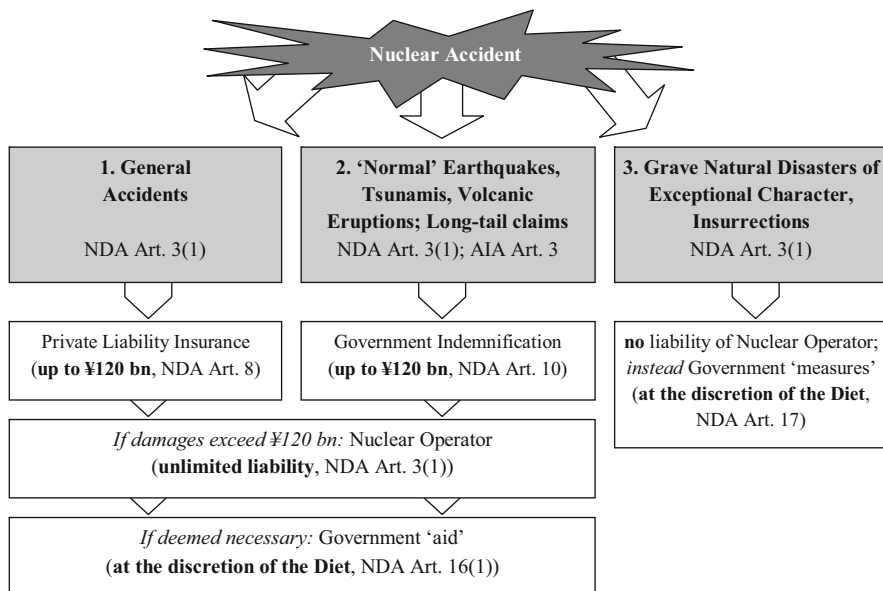


Fig. 5.2 The three scenarios of nuclear liability and the respective burden-sharing in Japan (translated from Weitzdörfer 2011)

5.3.2 Could Evacuees File Claims Based on State Liability Law?

A further liability issue is the captivating question of whether evacuees could file claims against the Government based on state compensation law. Leaving aside whether the forced evacuations constitute de-facto expropriations under Article 49(3) of the *Japanese Constitution*,³⁹ we have to bear in mind that insufficient structural measures against tsunami or earthquakes were required in the construction permit for the Fukushima Daiichi power plant, despite the foreseeability and frequency of tsunami along the Sanriku coast,⁴⁰ as well as the long seismic history of the region. In this regard, the authorities, namely the Nuclear and Industrial Safety Agency in Japan (NISA) and the Japan Nuclear Energy Safety Organization (JNES), failed to act even after the risk of a tsunami became apparent through alarming expert surveys and warnings, most recently in 2008 and 2009.

In Japan, government liability claims are derived from Article 17 of the Constitution. This in turn is specified in Article 1(1) and Article 5 of the *State Liability*

³⁹ The *Japanese Constitution* of 3 November 1946.

⁴⁰ Ramseyer (2012), pp. 2–3 provides a compelling summary of the ignored seismic history around the plant site.

Law.⁴¹ However, when plaintiffs file actions based on this statute, a number of requirements have to be met, one of which is that the authorities' behaviour was 'illegal'. In the present case, it will be quite difficult to establish that the authorities' behaviour was illegal, especially since the doctrinal standards are under dispute—an issue which is beyond the scope of the present discussion.⁴² That said, it should be pointed out that in a number of precedents, including the Minamata mercury poisoning cases, victims were awarded claims against local authorities in addition to claims against the actual private parties responsible for environmental contamination. In some instances, they have even made successful primary claims against the authorities. Nevertheless, with respect to the Fukushima Daiichi nuclear accident, the primary legal aspect that most likely bars recourse to the *State Liability Law* is the so-called 'concentration of liability' on the operator. Article 4 of the NDA states that:

where nuclear damage is covered by the preceding section, no person other than the nuclear operator who is liable for the damage pursuant the preceding section shall be liable for the damage.

The result of this concentration is that the responsibility lies solely with the nuclear operator and claims based on the *State Liability Law* are unlikely to succeed, although they would be welcomed by some legal scholars in Japan,⁴³ and would arguably be desirable for the sake of accountability in an evidentially deficient nuclear administration in Japan.

5.3.3 *Is the Government's Way of Rescuing TEPCO Constitutional?*

A final intriguing constitutional law question is whether the Government's financial support of TEPCO is consistent with the rule of law. Following the nuclear disaster, TEPCO soon faced insolvency, and financing the crippled utility through bank loans became difficult. In addition, financing the company through electricity price hikes or direct contributions in 2011 would have been a politically sensitive matter, to say the least. The Government, however, had a strong interest in maintaining TEPCO's solvency, be it for the alleged reason to 'allow TEPCO to provide for the indemnification of the victims' and to ensure decommission of the plant and decontamination of the area, or be it for the sake of the highly influential

⁴¹ Law No. 125 of 1947.

⁴² For more details and further references, see Weitzdörfer (2011), pp. 94–100; and Rheuben (2013), in this volume.

⁴³ This question is also raised, yet left open, by Yokouchi (2011), p. 128.

shareholders of TEPCO.⁴⁴ As a solution, in August 2011, the Japanese Diet enacted a plan to support TEPCO by establishing a financing corporation administering the so-called ‘Nuclear Damage Liability Facilitation Fund’. The scheme was set out in the newly enacted *Nuclear Damage Compensation Facilitation Corporation Act*,⁴⁵ as demonstrated in Fig. 5.3.⁴⁶

According to the 2011 scheme, the Ministry of Finance, which has already supported TEPCO financially through the indemnity agreements pursuant to Article 10 of the NDA, adopts a much more important role in contributing government bonds to the financing corporation. The financing corporation then makes capital infusions into TEPCO. The company is therefore in the position to indemnify plaintiffs according to Article 3 of the NDA, using the generous funds provided by the financing corporation.⁴⁷

Through this scheme, TEPCO had requested monies 14 times as of the end of March 2013, to a total of around ¥2.02 trillion (US\$22.2 billion).⁴⁸ In turn, the utility has been restructured and put under government supervision to the extent that it is practically nationalised, since the state has subsequently gained control over two thirds of its shares. The Government, which was under no legal obligation to support TEPCO,⁴⁹ could have passed on that financial support to the victims directly, but so far, its approach is consistent with Article 16 of the NDA, which states:

- (1) Where nuclear damage occurs, the Government shall give a nuclear operator (...) such aid as is required to compensate for the damage, when the actual amount which the operator should pay for the nuclear damage pursuant to Article 3 exceeds the financial security amount and when the Government deems it necessary in order to attain the objectives of this act.
- (2) Aid as provided for in the preceding paragraph shall be given to the extent that the Government is authorised to do so by decision of the National Diet.

In contrast, the scheme also encompasses at least two aspects that are, mildly put, rather difficult to bring in line with the NDA. Firstly, a number of financial institutions, which had already advanced loans to TEPCO, are further obliged to

⁴⁴ The political reasons why the Government did not decide to compensate or financially support victims directly, instead of fuelling funds into TEPCO, both when enacting and when applying the liability regime, can only be speculated upon. Rheuben (2013), in this volume argues that the schemes in force were adopted to shield the Government from the burden and the shame of possible lawsuits under the State Liability Law.

⁴⁵ Law No. 94 of 2011. English translation with orders of enforcements and so on in OECD, NEA Legal Affairs Section (2012), pp. 185–236.

⁴⁶ Translated from Weitzdörfer (2011), p. 81. For updates see OECD, NEA Legal Affairs Section (2012), p. 235.

⁴⁷ For an updated summary on the Government’s support of TEPCO, see Takahashi (2012).

⁴⁸ As of 22 February 2013: TEPCO (2013b), p. 1. Note how this ever-growing sum demonstrates the clear inadequacy of the mandatory insurance of only ¥120 billion and that TEPCO’s payouts, according to its information in Table 5.1, lag behind the funds it has received. For an economic analysis of the legal rescue of TEPCO, see generally Morita (2013).

⁴⁹ For an explanation of the Japanese wording of the statute, see Yokouchi (2011), p. 136, footnote 58.

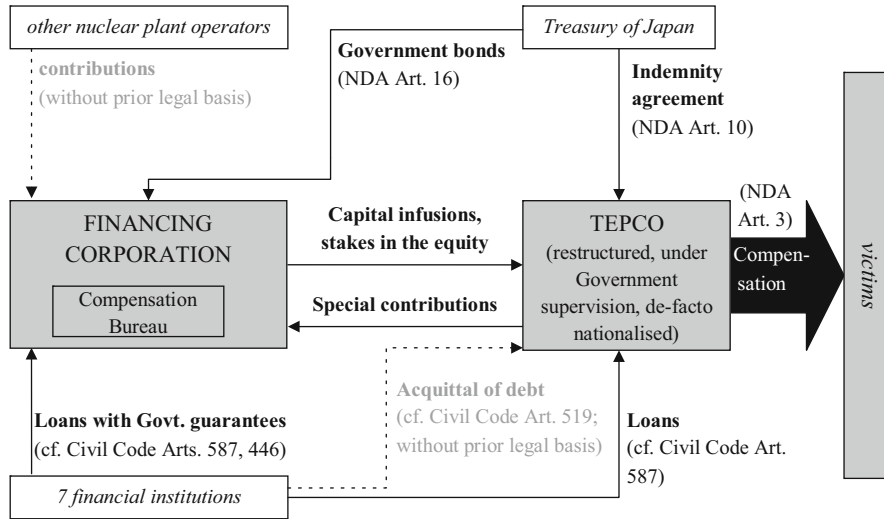


Fig. 5.3 The government’s scheme to rescue TEPCO, as of summer 2011 (translated from Weitzdörfer 2011)

grant loans to the financing corporation, secured by government guarantees. TEPCO also requested debt relief. Furthermore, all other nuclear plant operators in Japan became obliged to contribute financially to the fund.

Obviously, this fundamentally contradicts the prior legal situation, under which, by full intention of the legislator, no liability pool or any other mechanism existed that obliged operators, aside from the actual polluter—let alone financial institutions—to contribute funds for nuclear accident compensation. Leaving aside the considerations as to why Japanese utilities have deemed it economically wise to comply with such far-reaching obligations lacking prior legal basis,⁵⁰ this raises the question of whether the law violates two fundamental principles of Japanese constitutional law, which require separate treatment. First, the principle of non-retroactivity requires that no person shall be held criminally liable for an act that was lawful at the time it was committed, as stipulated in the first part of Article 39 of the *Japanese Constitution*. This is an often-litigated and well-established principle in criminal law; however, its scope is unclear in cases of civil law. Secondly, no close analysis is necessary to see that the law might violate the principle that legislation must not apply to only one single case, an important element of the rule of law, which is understood to be stipulated in Article 41 of the *Japanese Constitution*.

⁵⁰ On this question, see Weitzdörfer (2011), pp. 108–111. Morita (2013) also points out that the financial institutions in question benefit from the scheme, for TEPCO’s bankruptcy would mean the loss of their (many) unsecured loans to the utility.

In summary, the intent of the Government on the one hand might be favourable to the victims of the catastrophe (along with the creditors and the relatively lucky shareholders of TEPCO, who will be able to avoid a complete loss of their assets due to insolvency of the utility).⁵¹ However, the legal solution is questionable from the point of view of the rule of law.

5.4 Conclusion

When the nuclear catastrophe struck on 11 March 2011, Japan was faced with a practically insufficient, prevalently ambiguous nuclear liability law. So far, the Government has not imposed any significant financial ‘liability’ on the operator, but rather on Japanese taxpayers. A price of the subsequent political solutions’ unarguable feasibility is the flaw of their arguable legality.

As discussed in this chapter, with regard to substantive law, the Government was faced with unpleasant legal uncertainties even in relation to crucial questions, owing to a careful legislative compromise reached between the regulators and the industry in 1961.

The Government responded by retrospectively amending and supplementing the *substantive* tort law in virtually all of its components: be it scope of application, causation, calculation of damages, as far as the simple question of a right to decontamination. In particular, the Government saw itself forced to take action and enact more retrospective legislation in order to counter the vastly insufficient funds of the operator. Despite the principle of unlimited liability of the nuclear operator under the NDA, the economic burden now falls primarily upon the Treasury. In addition to requiring other nuclear operators and financial institutions to contribute funds, despite the lack of a prior legal basis, indirect state aid has been granted to TEPCO, through the Diet’s approval of the creation of a compensation fund of more than US\$22 billion to date. This ever-growing sum, for an accident that could have had far worse consequences, far exceeds and strongly contrasts with the meagre US\$1.3 billion in mandatory liability insurance (at least in that respect, therefore, Japan’s nuclear liability law still needs improvement).⁵² All these solutions were directly or indirectly determined by politics to a considerable extent, as in the vivid example of the exemption for natural disasters or the guidelines by government-appointed panels.

The Government made further efforts to find feasible *procedural* answers to handle claims of one and a half million plaintiffs in a swift manner. By bypassing potentially overburdened courts and judicial lawmaking, redress is evidently

⁵¹ See particularly the pin sharp analysis of nuclear liability versus corporate law by Ramseyer (2012), pp. 17–23; and Faure and Liu (2012), pp. 203–225.

⁵² See also Pelzer (2011a); Faure and Liu (2012), pp. 202–205, 212–218; and Sato (2012), pp. 22–24.

happening almost exclusively through extra-judicial procedures, primarily in negotiations with the TEPCO compensation offices involving government-directed preliminary compensation payments according to the guidelines of the appointed panel. Although this optional procedure is consistent with the existing law, many victims still feel overburdened by it.

The application of liability law in the Fukushima case was relatively successful for the purpose of compensation and appeasement, but relatively weak from the viewpoint of justice and deterrence.⁵³ Taking into account the enormous challenges of the triple disaster, on the one hand, the solutions can be praised as generally well-intended, flexible and relatively efficient. On the other hand, they give rise to concerns relating to the separation of powers, legislative retroactivity, the universality of law, and the rule of law in general. Until now, it has been the highly topical and immediately practical or financial issues that have received more immediate attention in scholarly writing, rather than the underlying doctrinal considerations of political non-legality.

References

- Cabinet Office of Japan (2011) Press conference on the afternoon of 25 March 2011. http://www.kantei.go.jp/jp/tyoukanpress/201103/25_p.html (video); http://www.kantei.go.jp/foreign/incident/110325_1611.html (English transcript). Accessed 1 June 2011
- Cook H (2013) International nuclear law – nuclear safety, emergency response and nuclear liability. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Faure M, Liu J (2012) The Tsunami of March 2011 and the subsequent nuclear incident at Fukushima: who compensates the victims? *William & Mary Environ Law Policy Rev* 37(129):129–218. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2213713. Accessed 9 Feb 2013
- Foote D (2013) Japan's ADR system for resolving nuclear power-related damage disputes (in press)
- Idei N (2012) The nuclear damage claim dispute resolution center. *Jpn Commercial Arbitration Assoc Newsl* 28:1–11
- Kabashima H (2013) Current issues in legal policy for recovery from the aftermath: one year after the 3.11 Tohoku Earthquake and Tsunami. *J Jpn Law* 34:7–21
- Matsuura S (2012) The current progress of relief of victims of nuclear damage caused by the Fukushima Daiichi Nuclear Power Plant accident. In: OECD, NEA Legal Affairs Section (eds), *Regulatory and institutional framework in Japan against the background of Fukushima*. *Nucl Law Bull* 87(1):27–44, pp 29–40
- Morita H (2013) Rescuing the Fukushima victims and rescuing TEPCO: a legal & political analysis. *J Jpn Law* 34:23–42
- Nihon Bengoshi Rengo-kai (2011) Search Lawyers Online. http://www.nichibenren.or.jp/bar_search. Accessed 1 June 2011

⁵³ Referring to the four traditional aims of tort law, most prominently described by Williams (1951). Although Glanville Williams paid relatively little attention to the notion of appeasement, for Japanese society and particularly in the case at hand, it should not be dismissed without further consideration.

- Nomura T, Hokugo T, Takenaka C (2012) Japan's nuclear liability system. In: OECD, NEA Legal Affairs Section (eds), Regulatory and institutional framework in Japan against the background of Fukushima. *Nucl Law Bull* 87(1):15–28
- OECD, NEA Legal Affairs Section (eds) (2012) Japan's compensation system for nuclear damage. As related to the TEPCO Fukushima Daiichi Nuclear Accident. <http://www.oecd-nea.org/law/fukushima/7089-fukushima-compensation-system-pp.pdf>. Accessed 9 Feb 2013
- OECD, NEA Legal Affairs Section (2011) Regulatory and institutional framework in Japan against the background of Fukushima. *Nucl Law Bull* 87(1):27–44
- Osaka E (2012) Corporate liability, government liability, and the Fukushima nuclear disaster. *Pac Rim Law Policy J* 21(3):433–459
- Pardieck A (2013) Layers of the law: a look at the role of law in Japan today. *Pac Rim Law Policy J* 22(3). Available at SSRN: <http://ssrn.com/abstract=2254631>
- Pelzer N (2011a) Does the nuclear incident require a revision of the international legal regime on nuclear safety? In: Presentation at the IAEA conference on nuclear safety, 20–24 June 2011. http://www-pub.iaea.org/mtcd/meetings/pdfplus/2011/cn200/working-sessions/w_d4_n_pelzer.pdf. Accessed 9 Feb 2013
- Pelzer N (2011b) Die Haftung für Nuklearschäden nach japanischem Atomrecht aus internationaler Sicht [Liability for nuclear damage under Japanese law from an international perspective]. *J Jpn Law* 32:97–122 (Japanese translation by the Japan Energy Law Institute; forthcoming, 2013)
- Ramseyer JM (2012) Why power companies build nuclear reactors on fault lines: the case of Japan. *Theor Inquiries Law* 13:457–486. <http://ssrn.com/abstract=1874869>. Accessed 9 Feb 2013
- Rheuben J (2013) Government liability for regulatory failure in the Fukushima disaster: an Australian comparison. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Sato C (2012) Legal framework for responsibility for damage caused by nuclear accidents. *Meiji Law J* 19:1–24
- Takahashi Y (2012) The financial support by the nuclear damage compensation facilitation corporation. In: OECD, NEA Legal Affairs Section (eds) *Regulatory and institutional framework in Japan against the background of Fukushima*. *Nucl Law Bull* 87(1):41–60
- TEPCO (2012a) [Reference 1] Example of commercial damage evaluation relating to evacuation order etcetera (case of closed). Press material (undated). http://www.tepco.co.jp/en/press/corp-com/release/betu11_e/images/110921e14.pdf. Accessed 9 Feb 2013
- TEPCO (2012b) [Reference 1] Compensation (Damages caused by evacuation order etc.). Press material (undated). http://www.tepco.co.jp/en/press/corp-com/release/betu11_e/images/110830e5.pdf. Accessed 9 Feb 2013
- TEPCO (2013a) Records of applications and payouts for indemnification of nuclear damage. Press material dated as of 22 March 2013. <http://www.tepco.co.jp/en/comp/images/jisseki-e.pdf>. Accessed 9 Feb 2013
- TEPCO (2013b) Financial Support from the Nuclear Damage Liability Facilitation Fund. Press release dated 22 February 2013. http://www.tepco.co.jp/en/press/corp-com/release/2013/1224906_5130.html. Accessed 22 Feb 2013
- Vásquez-Maignan X (2012) The Japanese nuclear liability regime in the context of the international nuclear liability principles. In: OECD, NEA Legal Affairs Section (eds), *Regulatory and institutional framework in Japan against the background of Fukushima*. *Nucl Law Bull* 87(1):27–44, pp 9–14
- Weitzdörfer J (2011) Die Haftung für Nuklearschäden nach japanischem Atomrecht – Rechtsprobleme der Reaktorkatastrophe von Fukushima I [Liability for nuclear damages pursuant to Japanese Atomic Law – legal problems arising from the Fukushima I Nuclear Accident]. *J Jpn Law* 31:61–115, full-text with English abstract: http://www.mpipriv.de/files/pdf3/zjapanr31_09_weitzdoerfer12.pdf. Accessed 9 Feb 2013 (Japanese translation by the Japan Energy Law Institute, forthcoming, 2013)
- Williams G (1951) The aims of the law of tort. *Curr Legal Probl* 4(1):137–176
- Yokouchi M (2011) Abgrenzungsprobleme des Haftungsumfanges bei Atomschäden [Problems of the delimitation of the scope of liability for nuclear damages]. *J Jpn Law* 32:123–152

Chapter 6

Managing Future Disasters: Japan's Energy Security and Nanotechnology Regulation

Hitoshi Nasu

6.1 Introduction

The nuclear disaster in Fukushima in the aftermath of the 11 March 2011 earthquake has reminded us of the fragility of technological safety measures, and the danger of lax implementation of safety regulations. The loss of confidence in the reliability of nuclear energy has quickly spread all across Japan, which resulted in the suspension of all nuclear power plants by 5 May 2012.¹ The energy security concern that ensued in Japan after the suspension of nuclear power plants highlighted the structural energy problem 81 % of its energy generation.²

While searching for ways in which the Government can address this energy security concern, Japan was forced to revisit its overall energy policy.³ Central to Japan's future energy policy is the role of nanotechnology in energy generation, particularly through its applications in solar electricity and solar fuels. In fact, Japan's nanotechnology policy has shifted towards encouraging the exploration of a number of different applications of nanotechnology in developing the renewable energy sector. However, widespread use of nanotechnology is not free from concerns, due to the potential toxicity of engineered nanomaterials.⁴ The health and environmental risks of engineered nanomaterials are not localised due to their

¹ Legewie (2012).

² Ministry of Economy, Trade and Industry (METI) (2011).

³ Dickie and Soble (2012).

⁴ See, for example, US Environmental Protection Agency (2007), pp. 29–62; UK Department for Environment, Food and Rural Affairs (2007); UK Royal Society & Royal Academy of Engineering (2004).

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potential long-range transport and the bioaccumulation of nanoparticles through the air and water after their release into the environment.⁵ Inadequate safety regulation may lead to a repeat of errors that resulted in the Fukushima nuclear disaster, exposing the public to health and environmental hazards for an extended period because of the uniquely persistent characteristics of engineered nanomaterials.⁶

This chapter ties lessons from the 2011 Fukushima nuclear disaster to Japan's future disaster management, focussing on nanotechnology safety regulation—a crucial aspect of Japan's future energy security policy. To that end, this chapter first reviews the post-Fukushima shift in Japan's energy security policy, highlighting the role that nanotechnology is expected to play. After discussing the blurred division between nuclear safety and nuclear security in nuclear regulation, as demonstrated by the Fukushima nuclear disaster, this chapter assesses the adequacy of nanotechnology safety regulation in Japan and elsewhere in the event of disasters. This chapter concludes that a security perspective is imperative in reconceptualising safety regulation as one of the mechanisms to manage future disasters.

6.2 Japan's Energy Security Policy

The concept of energy security is differently interpreted from country to country according to the availability and affordability of resources. For Japan, energy security means 'offsetting its stark scarcity of domestic resources through diversification, trade, and investment'.⁷ Thus, the main focus of its energy security policy has been securing energy resources from foreign countries and their transportation. Japan's energy security outlook is likely to deteriorate due to increased energy demands across Asia, international pressure for carbon emission reductions, and the potential instability of fossil fuel supplies.⁸ Further, Japan's continuing reliance on imported fossil fuels will inevitably conflict with its international obligation to reduce carbon emissions.

The *Energy Supply Structural Enhancement Act*, enacted prior to the Fukushima nuclear disaster, sought to facilitate the use of non-fossil energy sources.⁹ This plan—an extension of Japan's energy policy to reduce oil dependency, developed since the 1973 Oil Crisis—aimed to pursue 'the best mix of energy sources' in

⁵ See, for example, Center for International Environmental Law (2009); US Environmental Protection Agency (2007), pp. 36–41.

⁶ See, for example, Gottschalk and Nowack (2011) and UK Royal Commission on Environmental Pollution (2008).

⁷ Yergin (2006), p. 71.

⁸ Japan Forum on International Relations (2006), pp. 6–11.

⁹ Law No. 72 of 2009.

which nuclear energy had a central role to play.¹⁰ The original implementation plan was expansionary, envisaging the building of new nuclear power plants alongside greater usage of existing nuclear facilities.¹¹ After the Fukushima nuclear disaster, however, policy-makers were forced to review this reliance on nuclear power.¹² Speaking to the Japanese media about the future of Japan's energy policy on 8 March 2012, the then Minister for Economy, Trade and Industry, Yukio Edano, stated that Japan should seek 'a desirable mix of energy sources', as opposed to 'the best mix of energy sources' as had been the policy in the past.¹³ Minister Edano also advocated a more competitive energy market, enabling multiple suppliers to participate in it.

The structural changes to Japan's energy supply sources and distribution lines are expected to encourage a greater use of alternative, non-fossil energy sources. Among those most viable are wind, solar, and biofuels such as ethanol.¹⁴ However, those alternative sources, which are converted into electricity or fuel using currently available technologies, are insufficient to meet the current level of energy demands. Alternative energy sources might also exacerbate security concerns in other areas. For example, an increased demand for windmills and solar panels puts pressure on the supply of 'rare earth' elements essential for wind turbines and thin-film photovoltaic solar cells. This has recently caused concerns for resource security due to the limited supply of rare earth elements, which are predominantly imported from China.¹⁵ Likewise, increased biofuel production from corn crops has reportedly contributed to reduced food supply and the surge in food prices in the global market.¹⁶

Thus, the promotion of 'green innovation' has become central to the implementation of the *Energy Supply Structural Enhancement Act*, which aims to facilitate the use of non-fossil energy sources. The promotion of green innovation involves research and development in renewable energy, low carbon energy supplies, energy efficiency, and green energy infrastructure. Even though the 2011 *Energy White Paper* does not specifically indicate the promotion of green innovation as the future energy security focus,¹⁷ its significance has been recognised in Japan's nanotechnology policy.

The Fourth Science and Technology Basic Plan of Japan (for fiscal years 2011–2015) (Fourth Basic Plan) sets out four basic societal goals: recovery and reconstruction from the 2011 disaster; promotion of green innovation; promotion of life innovation; and systematic reform towards the promotion of innovation in

¹⁰ Japan Forum on International Relations (2006), pp. 11, 13.

¹¹ Agency for Natural Resources and Energy (2010), p. 9.

¹² Ministry of Economy, Trade and Industry (METI) (2011), ch. 3.

¹³ NHK (2012) and Maeda (2012).

¹⁴ Japan Forum of International Relations (2006), p. 19.

¹⁵ Kaneko (2012).

¹⁶ Graziano Da Silva (2012).

¹⁷ METI (2011).

science and technology.¹⁸ That no particular reference is made to nanotechnology as a goal of the Fourth Basic Plan represents a marked shift from the previous policy—the Third Science and Technology Basic Plan (for fiscal years 2006–2010), which emphasised the strategic prioritisation of research and development in nanotechnology and nanomaterials.¹⁹ However, the shift cannot be seen as downplaying nanotechnology research and development within Japan’s renewed energy security debate. Rather, the Fourth Basic Plan is premised upon the understanding that nanotechnology is so foundational to different societal goals that it no longer requires a separate strategy. In fact, it is now widely recognised in Japanese policy circles that nanotechnology is critical to efforts to find a solution to the nation’s energy and environmental challenges, particularly through its applications in solar electricity and solar fuels.²⁰

Nanotechnology, for example, has potential applications in increasing energy storage capacity and improving the efficiency of solar cells.²¹ Scientists are also searching for substitutes for rare earth metals by manipulating more abundantly available substances at the nano-scale.²² In Japan, the New Energy and Industrial Technology Development Organization (NEDO) has been supporting energy-related nanotechnology projects such as the development of ultra-high purity metal materials for power generation, carbon nanotube capacitors, and nanospace reaction environmental technology for functional materials.²³ Japan has also created a large Nanotechnology Consortium, bringing together private companies and regional universities in the Kansai region. The Consortium has fostered communication between industry and academia across a range of nanotechnology research activities, including those in energy-related fields.²⁴ Nanotechnological development enables Japan to foster its indigenous energy industry thereby reducing its reliance on the external supply of energy resources. This was also the vision for nuclear technology until it was shattered by the Fukushima nuclear disaster.²⁵

¹⁸ Council for Science and Technology Policy (2010).

¹⁹ Council for Science and Technology Policy (2006).

²⁰ Sato and Horie (2012).

²¹ Chen et al. (2011) and Jehng and Chen (2010).

²² Bourzac (2011).

²³ NEDO (2012).

²⁴ Osaka University Academia-Industry Liaison Consortium for Human Resource Development on Nano Science and Engineering (2012).

²⁵ Since the Liberal Democratic Party came back in power in December 2012, Prime Minister Shinzo Abe has advocated for a review of a nuclear-free energy strategy pursued by the Democratic Party of Japan-led administration of former Prime Minister Yoshihiko Noda: Yomiuri Shimbun (2013). For a detailed analysis of the political background in Japan’s nuclear policy shifts, see Claremont (2013), in this volume.

6.3 Nuclear Safety or Nuclear Security?

Lessons from the 2011 Fukushima disaster clearly indicate that energy security should not only mean maintaining a sufficient supply of energy resources as it is traditionally understood. Equally important is that it must encompass the management of risks involved in the use of modern energy generation technologies. Risk management has traditionally been considered a safety issue rather than a security matter. In the field of nuclear technology, the distinction between safety and security has in fact been explained by reference to the element of harmful intent, as illustrated by the policy discourse of the International Atomic Energy Agency (IAEA) on nuclear safety and security.²⁶ However, the nuclear disaster in Fukushima following the March 11 earthquake, which might have given rise to even more devastating and widespread exposure to radiation than it actually did, has arguably demonstrated the fine line between nuclear safety and security, where no harmful intent is present.²⁷

The traditional distinction between safety and security was eroded much earlier in other fields. In 2000, for example, the United Nations Security Council discussed the impact of HIV/AIDS on peace and security in Africa and adopted Resolution 1308, in which it observed that ‘the HIV/AIDS pandemic, if unchecked, may pose a risk to stability and security’.²⁸ Subsequently, the World Health Organisation (WHO) has elevated what had been traditionally understood as public health safety issues to ‘global public health security’ concerns, defining them as ‘the activities required, both proactive and reactive, to minimise vulnerability to acute public health events that endanger the collective health of populations living across geographical regions and international boundaries’.²⁹ Thus, even before the 2011 Fukushima nuclear disaster, it was conceivable that inadequate safety measures could reduce public confidence in the use of certain technologies to provide energy security, as the unexpected suspension of energy resource supplies had done in the past (for example, the 1973 Oil Crisis).

The inextricable link between safety and security, however, does not appear to have been sufficiently understood in the context of nuclear power generation prior to the 2011 Fukushima nuclear disaster. It has been reported that the failure to prevent the nuclear disaster was partly due to the inadequate design standards for nuclear safety—a result of failing to consider recent relevant scientific studies, particularly those concerning the risk of a large tsunami.³⁰ However, various problems with the Government’s response while the nuclear disaster was unfolding clearly indicate that a greater focus must be placed on accident management. This

²⁶ International Nuclear Safety Group (2010), paras 7–8. See further Cook (2013), in this volume.

²⁷ Kan (2012).

²⁸ UNSC Res 1308 (17 July 2000), Preamble.

²⁹ WHO (2007), p. 5. See also, WHO (2005).

³⁰ Nöggerath et al. (2011), pp. 38–43; Shiroyama (2012), p. 3. See also Nottage et al. (2013), in this volume.

must include emergency planning for worst-case scenarios, such as long-lasting station blackouts that occur simultaneously with vast destruction caused by severe natural disasters.³¹ Emergency planning is a modality of future-oriented security measures, accepting that emergencies are always possible. This practical approach seeks to govern how we respond to emergencies, rather than merely trying to prevent them from happening.³²

In Japan, the concept of severe accident management was introduced in 1992. This was a voluntary measure that could be taken by nuclear power station operators, without a legal framework of public regulation.³³ Japan's guidelines for severe accident management have not been reviewed since their inception in 1992.³⁴ Presumably due to the lax regulatory policy, Tatsujiro Suzuki, the vice-chairman of the Japan Atomic Energy Commission (JAEC), observes that 'probabilistic safety assessment – or probabilistic risk assessment as it is sometimes referred to – has not always been effectively used in the overall review process at nuclear power plants'.³⁵ This is reflected in the failure to revise and update Japan's severe accident management guidelines to encompass those emergency events that they conceived of after its initial drafting in 1992.

The Fukushima Nuclear Accidents Investigation Committee, established by Tokyo Electric Power Company (TEPCO), revealed in its final report the importance of a security perspective (or a lack thereof) for the nuclear emergency response.³⁶ Following the 1999 Tokaimura nuclear accident (also known as the JCO accident), the Japanese Diet enacted the *Act on Special Measures Concerning Nuclear Emergency Preparedness* (the 1999 Nuclear Emergency Act),³⁷ which sets out organisational and procedural rules to protect against loss of life and property from a nuclear disaster. However, the 2011 Fukushima nuclear disaster, in which nuclear hazards jeopardised civilian lives and health and seriously contaminated the environment, has proven that such preparatory measures envisaged by the 1999 Act were inadequate. This was particularly true in the case of a combined (or multi-faceted) emergency, to secure the channels of communication, supplies and equipment required during the emergency.³⁸

In Japan, a clear division was maintained between nuclear safety and nuclear security not only as a matter of policy, but also in institutional structures. Nuclear safety fell within the jurisdiction of the Nuclear Safety Commission, whereas the JAEC dealt with nuclear security issues, which it defines as the 'protection, detection and responses relating to criminal acts or acts of deliberate violations

³¹ Nöggerath et al. (2011), p. 44.

³² Adey and Anderson (2012), p. 101.

³³ Shiroyama (2012), p. 4.

³⁴ Suzuki (2011), p. 12.

³⁵ Suzuki (2011), p. 11.

³⁶ TEPCO (2012).

³⁷ Law No. 156 of 1999.

³⁸ Suzuki (2011), pp. 13–14.

against nuclear materials, other radioactive materials, related facilities and activities including transport'.³⁹ The focus of JAEC's nuclear security-related activities was the physical protection of nuclear and radioactive substances from malicious or deliberate acts, although the regulatory scope was expanded after the 11 September 2001 terrorist attacks in New York (9/11 terrorist attacks), to address increased fears of nuclear terrorism.⁴⁰

Following the 9/11 terrorist attacks, the US Nuclear Regulation Commission (NRC) issued the *Order for Interim Safeguards and Security Compensatory Measures*, which included detailed security requirements in Section B.5.b that addressed low-probability, high-consequence events.⁴¹ Although the details are classified for national security reasons, these security measures reportedly envisage a plethora of 'beyond-design-basis' events, including the possibility of an aircraft crash that would cause large-scale fires and explosions, consequently damaging nuclear facilities.⁴² Japan's Nuclear Safety Commission was aware of this development and even considered carrying out a nuclear safety impact assessment in the case of an aircraft crash. However, by adopting the probabilistic safety assessment method, the Commission decided that it was unnecessary to take into account such an event on the grounds that the probability of an aircraft crash did not reach the 10^{-7} threshold that was required for nuclear safety designs.⁴³ Thus, this probability threshold limited emergency planning for some unlikely events. The former Chairman of the US NRC, Nils J. Diaz, reflecting upon Japan's response to the Fukushima disaster, observed that 'B.5.b-type safety enhancements, if effectively and timely implemented in Japan, should have mitigated the events facing the operator of the Fukushima Daiichi reactors, and very specially dealt with "station blackout" and cooling of core and fuel pools'.⁴⁴

JAEC's final report on the Fukushima nuclear disaster notes that information regarding Section B.5.b requirements was not communicated to JAEC, thereby preventing nuclear security experts from discussing any additional measures to be adopted.⁴⁵ Following the Fukushima disaster, the Nuclear and Industry Safety Agency, operating within the Ministry of Economy, Trade and Industry (METI), established a contingency management working group and adopted 'Security Recommendations in Nuclear Materials'. The working group discussed, inter alia, enhancing protection against natural disasters, including alternative means of protection.⁴⁶ Ultimately, the Government announced on 15 August 2011, the creation of the Nuclear Safety and Security Agency, through which it was hoped

³⁹ JAEC (2012), p. 37.

⁴⁰ JAEC (2011).

⁴¹ Diaz (2011).

⁴² JAEC (2012), pp. 327–328.

⁴³ JAEC (2012), p. 328, fn 64.

⁴⁴ Diaz (2011).

⁴⁵ JAEC (2012), p. 330.

⁴⁶ JAEC (2012), p. 6.

that regulatory functions would be centralised across a range of nuclear-related issues. These were to include safety regulations, nuclear security measures, environmental monitoring operations, and crisis management from the very start of a nuclear accident.⁴⁷ Subsequently, legislation was enacted on 20 June 2012 to establish a new nuclear regulatory commission, with explicit reference to ‘national security’ as part of its objectives.⁴⁸

6.4 Lessons from Fukushima for Nanotechnology Regulation

Japan may well be better prepared to prevent and manage future nuclear disasters after revising its policy direction, by combining nuclear safety and nuclear security. However, nuclear technology is not the only source of concern for combined disasters in the modern, technologically-advanced world. As discussed above, nanotechnology is expected to play a foundational role in promoting green innovation as part of Japan’s future energy security. However, the resulting widespread use of engineered nanomaterials brings serious health and environmental risks due to the toxicity of certain engineered nanomaterials.

Because of this concern, the European Union has already introduced regulatory requirements to ensure the safe use of nanomaterials in cosmetics,⁴⁹ novel foods,⁵⁰ and biocidal products.⁵¹ The Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) regulation,⁵² which is the primary and over-arching instrument regulating the manufacture and importation of chemicals in Europe, has been reviewed regarding its application to nanomaterials.⁵³ In the United States, the Environmental Protection Agency has more cautiously stretched its regulatory arms

⁴⁷ Edano (2011).

⁴⁸ Law No. 47 of 2012. The reference to ‘national security’ in the new legislation raised ill-informed concerns for the possibility of justifying the development of nuclear weapons: Asahi Shimbun (2012).

⁴⁹ Bowman et al. (2010).

⁵⁰ P7_TC2-COD(2008)0028, adopted at second reading on 6 July 2011. The amended regulation, however, is not in force due to refusal by the European Union Council.

⁵¹ Regulation of the European Parliament and of the Council concerning the Making Available on the Market and Use of Biocidal Products, PE-CONS 3/12 (effective from 1 September 2013), Art. 4(4).

⁵² See generally, Fleurke and Somsen (2011), pp. 362–363, 373–375; Breggin et al. (2011), pp. 217–234; van Leeuwen and Vermeire (2007), pp. 516–543.

⁵³ European Commission has taken the position that substances are regulated under REACH irrespective of their form or size and therefore, in principle, include nanomaterials: European Commission (2008), p. 6. However, significant gaps have been identified, for example, in relation to the tonnage threshold and the scope of various exceptions: Eisenberger et al. (2010), p. 3.

to extend to engineered nanomaterials through ‘significant new use rules’ pursuant to Section 5(a)(B) of the *Toxic Substances Control Act*.⁵⁴ Since 1 January 2011, Australia has implemented new guidance on industrial nanomaterials under the National Industrial Chemicals Notification and Assessment Scheme (NICNAS), requiring a permit or a certificate to ensure the safe use of industrial nanomaterials.⁵⁵ In July 2012, New Zealand’s Environmental Protection Authority announced an amendment to the Cosmetic Products Group Standard to require labelling for the presence of nanomaterials in cosmetic products.⁵⁶

While these regulatory developments are significant, the focus on ‘safety’ fails to accommodate the potential health and environmental hazards of toxic engineered nanomaterials that could be dispersed in the case of a combined disaster. For example, if a tsunami hit a coastal town, toxic engineered nanomaterials (such as multi-walled carbon nanotubes that are loosely applied or contained in consumer products including building materials) would be washed away, eventually being released into the water. The destruction of buildings in the event of an earthquake or a fire would result in the release of engineered nanomaterials, even if those engineered nanomaterials were tightly embedded within a larger structure. These engineered nanomaterials or toxic ions originating therefrom, when inhaled, could cause asbestos-like symptoms and other health hazards such as cytotoxic and genotoxic effects.⁵⁷

Japan has not yet enacted nanotechnology-specific legislation. METI and the Ministry of Health, Labour and Welfare (MHLW) have, however, actively conducted studies that consider safety measures in relation to nanomaterials.⁵⁸ MHLW has issued a *tsuchi* (notice) on preventive measures, outlining practices designed to prevent workplace exposure to toxic substances during the manufacturing and treatment of nanomaterials.⁵⁹

The Independent Study Group on Environmental Impacts of Nanomaterials published the ‘Guideline for the Prevention of Environmental Impacts with regard to Industrial Nanomaterials’ in 2009.⁶⁰ The Guideline is unique because it focuses on exposure prevention and control, rather than on the reporting and registration of nanomaterials for use, which has been the regulatory focus in the rest of the world. According to this Guideline, the primary concern is the release of engineered nanomaterials into the environment and exposure to human beings, animals and

⁵⁴ 15 USC §§2603–2604 (1976). For details, see Naidu (2009).

⁵⁵ NICNAS (2011), pp. 2–3. Under this new guideline, additional data will be requested where an industrial nanomaterial is expected to involve exposure to human health or the environment ‘based on use scenario’.

⁵⁶ Cosmetic Products Group Standard 2006, as amended in July 2012, Sch 1, Section 2(8). Effective from 1 July 2015.

⁵⁷ Sahu and Casciano (2009) and Monteiro-Riviere and Tran (2007).

⁵⁸ METI (2009) and Ministry of Health, Labour and Welfare (2008a).

⁵⁹ Ministry of Health, Labour and Welfare (2008b).

⁶⁰ Independent Study Group on Environmental Impacts of Nanomaterials (2009).

plants. This focus is significant because in the event of exposure, damage may well be inflicted before a toxicity evaluation is completed and, if proven to be toxic after the release, insurmountable costs would be required to recover the toxic nanomaterials.⁶¹ While the specific measures required to prevent exposure differ according to the expected exposure route of specific nanomaterials, the Guideline recommends that manufacturers consider uses or designs that do not permit the release of engineered nanomaterials under any circumstances and, where release is inevitable, that they consider the use of alternative substances.⁶²

This regulatory approach focusing on the prevention and control of exposure is better aligned with the concept of accident management and a security-oriented response to emergencies. From this perspective, the existing legislative framework dealing with the response to an accidental release of chemicals in Japan should be adjusted to explicitly include engineered nanomaterials. Currently, however, the legislative measures in the event of an accident are limited to reporting obligations by business owners operating chemical plants,⁶³ or in the case of product safety, to reporting obligations by suppliers of consumer goods that cause product-related accidents.⁶⁴ Those obligations should be extended to nano-product manufacturers, nano-product business users (such as an owner of a building containing engineered nanomaterials), and waste disposal operators in the event of disasters.

It should also be acknowledged that an accidental release of toxic engineered nanomaterials on a large scale or in a wide area may activate the *Disaster Response Basic Act*,⁶⁵ so that local mayors and the police can direct the evacuation of local residents.⁶⁶ All of these emergency measures can help prevent an accidental release of toxic engineered nanomaterials from becoming a disaster that poses a threat to human lives and health, while at the same time allowing scientists to more freely experiment with using engineered nanomaterials as catalysts for scientific breakthroughs in alternative energy sources.

6.5 Conclusion

This chapter has reviewed how Japan's energy security policy has shifted following the 2011 Fukushima nuclear disaster, focusing on the increased significance of nanotechnology in the promotion of green innovation, and in the development of

⁶¹ Independent Study Group on Environmental Impacts of Nanomaterials (2009), p. 1.

⁶² Independent Study Group on Environmental Impacts of Nanomaterials (2009), p. 10.

⁶³ See, for example, Air Pollution Control Act, Law No. 97 of 1968, as last amended by Law No. 105 of 2011, Art. 17; Water Pollution Control Act, Law No. 138 of 1970, as last amended by Law No. 105 of 2011, Art. 14-2; Offensive Odor Control Act, Law No. 91 of 1971, as last amended by Law No. 122 of 2011, Art. 10.

⁶⁴ Compare, for example, Nottage (2011).

⁶⁵ Law No. 223 of 1961, as last amended by Law No. 41 of 2012.

⁶⁶ See also Ministry of Environment (2009), pp. 15–19.

indigenous energy industries within the country. The Fukushima nuclear disaster taught Japan costly lessons on the inadequacies of its safety regulations and the need for a security-oriented emergency response system. However, with the change in the direction of energy security policy, these lessons should be incorporated more widely into Japan's accident management mechanisms. The reform should not be limited to the future prevention and management of nuclear disasters but should also be applied to nanotechnology regulation.

While the expected contribution nanotechnology will make to Japan's future energy security is promising, the regulatory measures currently contemplated in many countries, including Japan, to ensure the safe use of engineered nanomaterials fail to address the health and environmental hazards that will occur if toxic engineered nanomaterials are dispersed in the event of disasters. This chapter has suggested an alternative regulatory approach that focuses on the prevention and control of exposure through accident management and a security-oriented emergency response. To that end, Japan's existing legislative framework for emergency response should be revisited and, where necessary, adjusted so as to prevent an accidental release of toxic engineered nanomaterials and minimise the exposure of dispersed engineered nanomaterials to human bodies and the environment.

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References

- Adey P, Anderson B (2012) Anticipating emergencies: technologies of preparedness and the matter of security. *Secur Dialogue* 43(2):99–117
- Agency for Natural Resources and Energy (2010) *Enerugi Kyoukyu Jigyousha ni yoru Hikaseki Enerugi-gen no Riyou oyobi Kaseki Enerugi-genryou no Yukouna Riyou no Sokushin ni kansuru Houritsu no Seitei no Haikei oyobi Gaiyou* [The background and summary of the Energy Supply Structural Enhancement Act]. <http://www.enecho.meti.go.jp/topics/koudoka/resource/101118haikei.gaiyou.pdf>. Accessed 10 May 2012
- Asahi Shimbun (2012) Legal revision agitates Japan in nuclear-weapons debate. *Asahi Shimbun*, 17 August 2012. http://ajw.asahi.com/article/behind_news/politics/AJ201208170063. Accessed 22 Aug 2012
- Bourzac K (2011) New magnets could solve our rare-earth problems. *MIT Technol Rev* (January 20). <http://www.technologyreview.com/energy/27112/page1/>. Accessed 13 June 2011
- Bowman DM, van Calster G, Friedrichs S (2010) Nanomaterials and regulation of cosmetics. *Nat Nanotechnol* 5:92
- Breggin LK, Falkner RF, Pendergrass J, Porter R, Jaspers N (2011) Addressing the risks of nanomaterials under United States and European Union regulatory frameworks for chemicals. In: Ramachandran G (ed) *Assessing nanoparticle risks to human health*. Elsevier, Oxford, pp 195–272
- Center for International Environmental Law (2009). Addressing nanomaterials as an issue of global concern. http://www.ciel.org/Publications/CIEL_NanoStudy_May09.pdf. Accessed 15 Oct 2011

- Chen T, Wang S, Yang Z, Feng Q, Sun X, Li L, Wang Z-S, Peng H (2011) Flexible light-weight, ultrastrong, and semiconductive carbon nanotube fibers for a highly efficient solar cells. *Angew Chem Int Ed* 50:1815–1819
- Claremont Y (2013) Disaster in Japan: a case study. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Cook H (2013) International nuclear law – nuclear safety, emergency response and nuclear liability. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Council for Science and Technology Policy (2006) The third science and technology basic plan of Japan. <http://www8.cao.go.jp/cstp/english/basic/3rd-Basic-Plan-rev.pdf>. Accessed 10 May 2012
- Council for Science and Technology Policy (2010) The fourth science and technology basic plan of Japan. <http://www8.cao.go.jp/cstp/english/basic/4th-BasicPolicy.pdf>. Accessed 10 May 2012
- Diaz NJ (2011) Reflections on Fukushima. In: Presented at the 19th international conference on nuclear engineering (ICONE19), Osaka, Japan. http://www.icone19.org/documents/2_Diaz_Speech-Japan-Reflections_on_Fukushima.pdf. Accessed 16 Aug 2012
- Dickie M, Soble J (2012) Edano plots Japanese energy reform. *Financial Times*, January 19. <http://www.ft.com/cms/s/0/7a0998cc-4265-11e1-93ea-00144feab49a.html#axzz1sloqWYOk>. Accessed 10 May 2012
- Edano Y (2011) Press conference by the Chief Cabinet Secretary, 15 August 2011. http://www.kantei.go.jp/foreign/incident/110815_1049.html. Accessed 16 Aug 2012
- Eisenberger I, Mentwich M, Fieldeler U, Gatz A, Simk M (2010) Nano regulation in the European Union. *Nano Trust – Dossiers* 17:1–6
- European Commission (2008) Follow-up to the 6th meeting of the REACH Competent Authorities for the implementation of regulation (EC) 1907/2006 (REACH). Document CA/59/2008 rev. 1. <http://pc.europa.eu/environment/chemicals/reach/pdf/nanomaterials.pdf>. Accessed 8 Aug 2012
- Fleurke F, Somsen H (2011) Precautionary regulation of chemical risk: how REACH confronts the regulatory challenges of scale, uncertainty, complexity and innovation. *Common Market Law Rev* 48:357–393
- Gottschalk F, Nowack B (2011) The release of engineered nanomaterials to the environment. *J Environ Monit* 13:1145–1155
- Graziano Da Silva J (2012) The US must take biofuel action to prevent food crisis. *Financial Times*, 9 August 2012. <http://www.ft.com/intl/cms/s/0/85a36b26-e22a-11e1-b3ff-00144feab49a.html#axzz28ntQOHTp>. Accessed 16 Aug 2012
- Independent Study Group on Environmental Impacts of Nanomaterials (2009) *Kougyouyou Nano Zairyuu ni kansuru Kankyou Eikyuu Boushi Gaidorain* [Guideline for the prevention of environmental hazard industrial in relation to nanomaterials]. http://www.env.go.jp/press/file_view.php?serial=13177&hou_id=10899. Accessed 10 May 2012
- International Nuclear Safety Group (2010) The interface between safety and security at nuclear power plants. International Atomic Energy Agency (IAEA), INSAG-24. http://www-pub.iaea.org/MTCD/publications/PDF/Pub1472_web.pdf. Accessed on 10 Oct 2011
- Japan Forum on International Relations (2006) The establishment of an international energy security system. <http://www.jfir.or.jp/e/pr/pdf/27.pdf>. Accessed 10 May 2012
- Japan Atomic Energy Commission (JAEC) Advisory Committee on Nuclear Security (2011) Fundamental approaches to ensuring nuclear security. Report to the Atomic Energy Commission. <http://www.aec.go.jp/jicst/NC/senmon/bougo/kettei110905.pdf>. Accessed 16 Aug 2012
- Japan Atomic Energy Commission (JAEC) Advisory Committee on Nuclear Security (2012) Strengthening of Japan's nuclear security measures. Report to the Atomic Energy Commission. <http://www.aec.go.jp/jicst/NC/senmon/bougo/kettei120309.pdf>. Accessed 16 Aug 2012

- Jehng W-D, Chen CW (2010) Improve the efficiency of silicon solar cells by ITO-silver electrode structure. *Electrochem Novel Mater Energy Storage Conver* 33(27):57–60
- Kan N (2012) Former Japanese PM Naoto Kan on the Fukushima Disaster: a changing view of nuclear power. *Foreign Affairs*, 8 March 2012. <http://www.foreignaffairs.com/features/letters-from/former-japanese-pm-naoto-kan-on-the-fukushima-disaster>. Accessed 8 May 2012
- Kaneko K (2012) Japan aims for half of rare earth supplies from outside China. *Reuters*, 12 November 2012. <http://www.reuters.com/article/2012/11/12/japan-india-idUSL3E8MC1QL20121112>. Accessed 20 Mar 2013
- Legewie J (2012) For better or worse, Japan might remain nuclear-free forever. *The Japan Times*, 21 May 2012
- Maeda R (2012) Cut nuclear reliance to zero: Japan Energy Minister. *Reuters*, 6 April 2012. <http://www.reuters.com/article/2012/04/06/us-japan-nuclear-idUSBRE83508V20120406>. Accessed 10 May 2012
- Ministry of Economy, Trade and Industry (METI) (2009) Nanomaterial Seizoujigyousha tou ni okeru Anzentaishaku no arikata Kenkyukai Houkokusho (An) [A draft workshop report on safety measures for nanomaterial manufacturers]. <http://www.meti.go.jp/committee/materials2/downloadfiles/g90204c04j.pdf>. Accessed 10 May 2012
- Ministry of Economy, Trade and Industry (METI) (2011) Energy white paper 2011. <http://www.enecho.meti.go.jp/topics/hakusho/2011/index.htm>. Accessed 10 May 2012
- Ministry of Environment (2009) Jichitai Kankyobukyoku ni okeru Kagakubushitsu ni kakaru Jikotaiou Manual Sakutei no Tebiki [A handbook for municipal environmental authorities on an accident response manual in relation to chemical substances]. <http://www.env.go.jp/press/press.php?serial=11044>. Accessed 10 May 2012
- Ministry of Health, Labor and Welfare (2008a) Hito ni taisuru Yugaisei ga Akirakadenai Kagaku Busshitsu ni taisuru Roudousha Bakuro no Yoboutekitaisaku ni kansuru Kentoukai (Nanomaterial ni tsuite) Houkokusho [The workshop report on the measures to prevent exposure of workers to chemical substances of unknown hazards to human beings (in relation to nanomaterials)]. <http://www.mhlw.go.jp/shingi/2008/11/dl/s1126-6a.pdf>. Accessed 10 May 2012
- Ministry of Health, Labor and Welfare (2008b) On preventive measures for the purpose of preventing workplace exposure during the manufacturing and treatment of nanomaterials. <http://www.hourei.mhlw.go.jp/hourei/doc/tsuchi/200207-a00.pdf>. Accessed 10 May 2012
- Monteiro-Riviere NA, Tran CL (eds) (2007) *Nanotoxicology: characterization, dosing and health effects*. Informa Healthcare, New York
- Naidu D (2009) *Biotechnology & nanotechnology: regulation under environmental, health, and safety laws*. Oxford University Press, Oxford
- National Industrial Chemicals Notification and Assessment Scheme (NICNAS) (2011) Guidance on new chemical requirements for notification of industrial nanomaterials. http://www.nicnas.gov.au/Current_Issues/Nanotechnology/Guidance%20on%20New%20Chemical%20Requirements-%20for%20Notification%20of%20Industrial%20Nanomaterials.pdf. Accessed 10 May 2012
- New Energy and Industrial Technology Development Organization (NEDO) (2012) NEDO projects: industrial technologies. http://www.nedo.go.jp/english/activities_nedoprojects_nano.html. Accessed 5 Sept 2012
- NHK (2012) How should Japan secure energy? *News Watch 9*. Broadcast 8 March 2012 at 21:00–22:00
- Nöggerath J, Geller RJ, Gusiakov VK (2011) Fukushima: the myth of safety, the reality of geoscience. *Bull At Sci* 67(5):37–46
- Nottage L (2011) Suppliers' duties to report product-related accidents under the new 'Australian Consumer Law': a comparative critique. *Commercial Law Q* 25(2):3–14
- Nottage L, Nasu H, Butt S (2013) Disaster management: socio-legal and Asia-Pacific perspectives. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4

- Osaka University Academia-Industry Liaison Consortium for Human Resource Development on Nano Science and Engineering (2012) <http://www.nanoscience.or.jp/>. Accessed 5 Sept 2012
- Sahu SC, Casciano DA (eds) (2009) *Nanotoxicology: from in vivo and in vitro models to health risks*. Wiley, West Sussex
- Sato M, Horie T (2012) Interview with the author at the Ministry of Economy, Trade and Industry, Tokyo, 12 March 2012
- Shiroyama H (2012) Fukushima Daiichi Genshiryoku Hatsudensho jiko no kyokun to kongo no anzenkisei no kadai [Lessons from the accidents at the Fukushima Daiichi Nuclear Power Stations and issues for future safety regulation]. In: Murayama M (ed) Saigai to ho: Fukugousaigai kara watashitachi ha nani wo manabu kotogadekiruka? [Disaster and the law: what can we learn from combined disasters?]. Meiji University International Collaborations Headquarters, Tokyo, pp 3–6
- Suzuki T (2011) Deconstructing the zero-risk mindset: the lessons and future responsibilities for a post-Fukushima nuclear Japan. *Bull At Sci* 67(5):9–18
- Tokyo Electric Power Company (TEPCO) (2012) Fukushima nuclear accidents investigation report. http://www.tepco.co.jp/en/press/corp-com/release/2012/1205638_1870.html. Accessed 16 Aug 2012
- UK Department for Environment, Food and Rural Affairs (2007) Characterising the potential risks posed by engineered nanoparticles: a second UK Government research report. <http://www.defra.gov.uk>. Accessed 13 June 2011
- UK Royal Commission on Environmental Pollution (2008) Novel materials in the environment: the case of nanotechnology. <http://www.official-documents.gov.uk/document/cm74/7468/7468.pdf>. Accessed 15 Oct 2011
- UK Royal Society & Royal Academy of Engineering (2004) Nanoscience and nanotechnologies: opportunities and uncertainties. <http://www.nanotec.org.uk/finalReport.htm>. Accessed 13 June 2011
- US Environmental Protection Agency (2007) Nanotechnology white paper, EPA 100/B-7/001. <http://www.epa.gov/osa>. Accessed 13 June 2011
- van Leeuwen CJ, Vermeire TG (2007) *Risk assessment of chemicals: an introduction*. Springer, Dordrecht
- World Health Organisation (2005) Revision of the International Health Regulations WHA58.3. <http://www.who.int/ipcs/publications/wha/en/index.html>. Accessed 5 Sept 2012
- World Health Organisation (2007) The world health report 2007 – a safer future: global public health security in the 21st century. <http://www.who.int/whr/2007/en/index.html>. Accessed 5 Sept 2012
- Yergin D (2006) Ensuring energy security. *Foreign Aff* 85(2):69–82
- Yomiuri Shimbun (2013) Abe vows to review nuclear-free policy. Daily Yomiuri Online, 1 February 2013. <http://www.yomiuri.co.jp/dy/national/T130131005426.htm>. Accessed 20 Mar 2013

Chapter 7

The March 2011 Tohoku Disaster in Japanese Science Fiction

Rebecca Suter

7.1 Introduction

Throughout the postwar period, Japanese science fiction has repeatedly considered the world of the possible. Within this context, the theme of natural disaster—how to prevent it and how to respond to it—has featured prominently in the genre. Unsurprisingly, therefore, in the aftermath of the Tohoku disaster of 11 March 2011, a large number of science fiction authors and critics felt that it was their responsibility to discuss the implications of what came to be referred to synthetically as ‘3/11’ in the realms of fantasy and science fiction. In essays and stories, they reflected on the contribution these genres could offer to the ongoing debate on the event.

This chapter discusses a selection of such works, published between July 2011 and March 2012 in a variety of print media, in order to reflect more broadly on the function of the speculative as a means of critical reflection on issues of scientific knowledge, public trust, and disaster management. It focuses on three categories: non-fiction, narrative fiction, and *manga* (Japanese comics).

7.2 Losing Trust in the Media, Gaining Trust in Fiction

The first case study is a volume curated by two renowned scholars of science fiction and cultural theory, Takayuki Tatsumi and Kiyoshi Kasai, which was published in September 2011 with the title *3/11 no mirai: Nihon, SF, sozoryoku*¹ (‘The Future of 3/11: Japan, Science Fiction, and the Power of Imagination’). The collection is

¹ Tatsumi and Kasai (2011).

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prefaced by a short piece by one of the founding fathers of Japanese science fiction, Sakyō Komatsu, who unfortunately passed away in July 2011 but was able to write an essay on 3/11 and its consequences in the first few months after the disaster.

Komatsu begins his article by noting how the Kanto earthquake of 1923 was portrayed and perceived as the first occasion in history in which Japan reacted to natural disaster as a modern country, and took full advantage of science and technology to protect its recently developed ‘modern life’ from the forces of nature. By contrast, Komatsu argued that the 1995 Kobe earthquake, while having a major impact on the cities involved, did not affect the image of Japan as a nation in any significant way.² In this respect, the 2011 earthquake and tsunami were unique in that they had an unprecedented impact not only on the national public, but also on the international image of Japan. This, for Komatsu, had to do both with its sheer scale and with the fact that it was broadcast in real time to a degree never seen before.

Furthermore, Komatsu noted, the Fukushima nuclear power plant incident affected public perception of nuclear power as a safe and clean source of electrical power, which in Komatsu’s opinion had prevailed until then, and prompted Japanese citizens to reconsider the country’s energy policies. The broader effect of this was that people were led to question the ability of science to protect and improve human life. At such a time, Komatsu believed, science fiction has much to offer in the way of critical reflection on science, nature and humanity through the power of imagination, something that has been central to the genre since its inception. He therefore advocated a greater involvement of science fiction authors in the production of commentary on the disaster that both supplements and criticises that of mainstream media—engaging it not directly, but through the medium of speculative fiction.

While Komatsu died too soon to fulfill his proposition, other authors took up the challenge; the collection *3/11 no mirai* is the result of that effort. In this respect, one of the most interesting pieces in the volume is an essay by another renowned science fiction author, Motoko Arai, which investigates the correlation between scientific information and science fiction.³

Arai begins the essay by describing her own surprise upon learning from the news that the Fukushima reactor could not be shut down immediately after the incident.⁴ She somehow thought, she explained, that nuclear reactors were something akin to a pan of boiling oil on a gas stove, which would cool down in a relatively short time once turned off:

An ordinary citizen simply cannot have a detailed, thorough knowledge of all the dangers of the contemporary world. We have come to an age in which that is plainly impossible. There are too many such ‘dangers’ in today’s world, and people cannot afford the time to study all they would need to know to be properly equipped to face them.⁵

² Komatsu (2011), pp. 1–2.

³ Arai (2011).

⁴ Arai (2011), pp. 250–252.

⁵ Arai (2011), p. 254, my translation.

In this sense, Arai feels that science fiction has something unique to offer to the public. On one hand, authors of science fiction often have a sound scientific background, which they can rely on to ‘ring an alarm bell’ for the general public. At the same time, as creative writers, they can do so in the form of entertainment, which has greater potential to reach people than scholarship does. As Arai observes:

Science fiction produces the kinds of stories that can ring an alarm bell to the world. . . . In fact, it has fulfilled that role for a long time now. SF. Science Fiction. Serious science is at the very root of the genre, embedded in its name. Thus scientifically minded writers sound a scientifically grounded alarm bell to the world, in the form of entertainment.⁶

The other resource that science fiction has to offer to the public in times of crisis, according to Arai, is an escape from reality (*genjitsu tohi*). To Arai, this does not mean denial of reality, but rather something akin to sleep—a temporary retreat into fantasy that allows people to recover their energies, and be better equipped to cope with a harsh reality.⁷

These two elements, fostering a critical understanding through entertainment and offering a temporary respite from trauma, lie at the core of contemporary Japanese science fiction’s response to the 3/11 disaster. Interestingly, this seems to have also changed the public perception of the genre of science fiction, its authors and readers, and related sub-cultures. A good example is of one of the most controversial forms of science fiction fandom, namely so-called *otaku*.

7.3 Radiation *Otaku*

The term *otaku* derives from the Japanese term used to refer another’s house or family, which is also used as an honorific second-person pronoun, meaning ‘you’. Interestingly, the word first became popular as a form of in-group jargon among readers of Arai herself. Imitating the characters of Arai’s novels, who used the term to mean ‘you’, fans of science fiction started calling each other ‘otaku’. As this usage gained popularity, the Japanese media and the public at large started using it to describe science fiction fans, as an equivalent of the English ‘geek’.

Today, the term *otaku* is used more broadly to refer to obsessive fans of *anime*, *manga*, videogames and other sub-cultural products, who have an incredibly detailed knowledge about the object of their fandom as well as an intense emotional investment in it. The phenomenon caught the attention of the media in the early 1980s, and was initially seen as a distinctive form of Japanese youth culture.⁸

In the 1990s, however, *otaku* became an object of public concern. A turning point was the so-called Miyazaki incident of 1989, in which a 26 year-old man named Tsutomu Miyazaki was found guilty of the serial kidnapping and murder of

⁶ Arai (2011), p. 254, my translation.

⁷ Arai (2011), pp. 257–260.

⁸ Kinsella (1998), pp. 309–310.

primary school girls. When the police arrested Miyazaki in his apartment, they found a large collection of *manga*, *anime*, videogames, and related merchandise such as action figures, and the media soon labelled him an *otaku*. As a consequence, *otaku* became associated in the collective imaginary with anti-social attitudes and criminal behaviour, and throughout the 1990s they were generally perceived and portrayed as socially dangerous.⁹

In the late 1990s and early 2000s, scholars of cultural studies such as Hiroki Azuma and Tamaki Saito re-evaluated the image of the *otaku* in the context of a broader discussion of fandom as a form of counter-culture.¹⁰ However, in the collective opinion, they retained a negative image, and continued to be seen as dangerously anti-social and disconnected from the community at large. According to Hosuke Nojiri, an award-winning sci-fi novelist and a self-described *otaku*, this negative image started to change in the aftermath of the Tohoku triple disaster. In Nojiri's view, the events surrounding 3/11 have contributed to bridging the gap between *otaku* and the Japanese public.

In an essay published in *3/11 no mirai*, Nojiri discusses his own experience as a 'radiation *otaku*' in the immediate aftermath of the Fukushima nuclear incident. He uses it as a starting point to reflect on the broader consequences of the incident on the public perception of *otaku* culture. Measuring radiation levels, Nojiri explains, was a not uncommon interest among *otaku* in the 1990s and 2000s, and was represented in the media as yet another of Japanese geeks' quirky anti-social activities.¹¹ At the time, Geiger counters could be bought in electronics shops in Akihabara or in online stores for as little as ¥3,000.¹² Nojiri, who had been measuring radiation as a hobby for many years, recalls how he felt excited at the idea of going to the site and doing measurements when the Fukushima nuclear incident happened. At the same time, he was troubled by the very fact that such a terrible tragedy would trigger his curiosity.¹³

In the end, however, Nojiri thought that his knowledge of radioactivity and his experience in measuring it over the course of several years, in a wide range of different areas and under different conditions, could be used in people's service. He possessed not only a range of measuring devices, but also detailed information on the average levels of radioactivity and deviations from the average readings in the Tohoku region in previous years. He therefore decided to visit Tohoku in mid-April 2011. In the essay, he describes his travel and his measurements, and follows them

⁹ Kinsella (1998), p. 311.

¹⁰ For an overview of the debate on *otaku* in English, see Azuma (2009) and Saito (2011).

¹¹ Nojiri (2011), p. 266.

¹² After 3/11, when a large proportion of the population in the affected areas tried to equip themselves with means of measuring radiation levels independently, stocks were quickly depleted and prices went up to over ¥200,000 for one item, as I discovered when I tried to purchase one for personal use even in July 2012.

¹³ Nojiri (2011), pp. 268–269.

with a broader reflection on the correlation between science, information, online social networks and *otaku* subculture.¹⁴

Nojiri notes that the 3/11 disaster was the first major incident that occurred in Japan in the era of online social networks.¹⁵ This facilitated the spread of information as well as of misinformation and conspiracy theories. The latter were also compounded by the fact that, even within the scientific community, there was little knowledge on the phenomenon of long-term exposure to low-level radiation, the kind that affected people in the disaster areas. The combination of inadequate communication and the scientific uncertainty of the issues at stake, Nojiri argues, fostered a general sense of distrust toward official sources of information within the Japanese public.¹⁶

This translated into a broader change in the public perception of *otaku*, who were previously seen as social misfits, but had now something to offer in the way of independent and very detailed knowledge on issues that had suddenly become of great public interest, such as radiation pollution. For this reason, Nojiri argues, the 3/11 disasters opened the way for a new, more positive perception of science fiction and related sub-cultural practices among the Japanese population.¹⁷

Both essays, by Arai and Nojiri, highlight the value of science fiction as a means to question consensus reality, which becomes particularly significant at times of crisis such as the Tohoku disaster. Building on their observations, the following section examines the use of the genre of science fiction as a medium for critical debate in an entertaining format, through a close reading of some significant pieces of fiction that were published in the immediate aftermath of the March 2011 disaster.

7.4 The Future of 3/11

One of the most interesting pieces published in the aftermath of the 3/11 disaster is the volume *Soredewa sangatsu wa mata—March Was Made of Yarn*, a multi-author collection curated by Luke Elmer and David Karashima.¹⁸ It was published simultaneously in Japanese by Kodansha, and in English by Harvill Secker, a division of Vintage Books. The volume comprises fourteen stories by renowned Japanese authors, including highly regarded novelists such as Yoko Ogawa, Meiko Kawakami, Kazushige Abe and Ryu Murakami, originally written in Japanese and translated into English for the Harvill Secker version, as well as three stories originally written in English, by J.D. McClatchy, Barry Yourgrau, and David Peace, translated into Japanese for the Kodansha version.

¹⁴ Nojiri (2011).

¹⁵ Nojiri (2011), pp. 267–268.

¹⁶ Nojiri (2011), pp. 274–276. See also Reich (2013) and Claremont (2013), both in this volume.

¹⁷ Nojiri (2011), p. 270.

¹⁸ Elmer and Karashima (2012a, b).

Similar to Haruki Murakami's sole-authored collection *Kami no kodomotachi wa mina odoru*,¹⁹ which was written in the aftermath of the 1995 Kobe earthquake, most of the stories in *March Was Made of Yarn* touch only marginally upon the Tohoku disaster, and often approach it in a metaphorical manner rather than describing it openly.

One of the texts that deals most directly with the disaster, although it does so through the medium of speculative fiction, is a short story by Yoko Tawada, entitled *Fushi no shima* ('The Island of Eternal Life' in the English version).²⁰ Tawada does not usually write in the genre of science fiction; most of her production focuses on her experience of living between Japan and Germany for 30 years, and the complex cultural and linguistic issues that arise as a result of such experience.²¹ Interestingly, however, when asked to write a short story for a collection by Karashima and Elder, she chose the genre of science fiction for her piece.

Set in the year 2017, the text opens with a reflection on national identity and cultural stereotypes that is reminiscent of Tawada's previous fiction, yet already introduces an uncanny note that prefigures the science-fictional tone of the rest of the story. The narrator, who could easily be identified with the author herself, is going through customs at a German airport on her way home from the United States. When she shows her Japanese passport, the inspector cringes, as if he was afraid of touching it, and only takes it into his hand after the narrator shows her German permanent residency permit and explains that she has not been to Japan in many years. This induces the narrator to reflect on the impact of the 2011 disaster on her relationship with her own Japanese identity:

I felt ashamed of trying to prove my innocence by insisting I hadn't been to Japan since *that* had happened. Back in 2011 the word *Japan* elicited sympathy, but since 2017 sympathy had changed to prejudice. If I got an EU passport I wouldn't need to think about Japan every time I crossed a national border, but somehow I couldn't bring myself to apply for one. It seemed strange even to me the way I hung on to my old passport just when having one had become such a bother.²²

This is followed by a retrospective account of the period between the March 2011 disaster and the time of the narration. In the months after 3/11, as scientists predicted that another major earthquake could shake the country anytime soon and nuclear plants are at risk of further incident, a grassroots anti-nuclear movement gained momentum in Japan. The government ignored their pleas to reconsider its energy policies, until the third anniversary of the disaster, on 11 March 2013, when a group of terrorists kidnapped the Emperor and the Prime Minister, formed a

¹⁹ 'All God's Children Dance' (2000), translated into English with the title 'After the Quake' (2002).

²⁰ The nuances of Japanese title, both its assonance with the word 'Fukushima' and its complex reference to death (*fushi*, immortality or eternal life, in Japanese literally means not-dead), are lost in the English version, which appears to locate the text more within the realm of the marvelous or the fairy tale than in that of speculative fiction and language play.

²¹ Bernofsky and Selden (2002), p. VII.

²² Tawada (2012), pp. 3–4.

military government, and imposed the closure of all nuclear power plants in the country. Meanwhile, a powerful anti-nuclear movement also developed in North Korea, ultimately leading to reunification with South Korea.²³

In 2015, the terrorists, who had by then gained control of the whole country, refashioned the Japanese government as a private corporation, named Z Group, and turned the state into a *de facto* dictatorship, abolishing education and free press and obstructing access to the Internet. In the same year, as a result of global radiation fear, international flights to and from Japan were terminated, and so were postal services. The country thus became completely isolated from the rest of the world.

In 2017, the country experienced another major earthquake, which could only be observed through satellite images. The Great Pacific Earthquake generated a tsunami that washed over all of the Tokyo area, down to the Izu peninsula, although due to the complete information blackout since 2015, no details are known about what happened to the population living in the area, or to the rest of the country.

However, the narrator informs us that a Portuguese writer has been somehow able to enter the country, and published an account of what is happening there. The book, entitled *The Strange Journey of the Grandson of Fernão Mendes Pinto*, is translated into all European languages and has become a major source of information about Japan. The narrator stresses the unreliable nature of the account, noting several incongruous details, such as the fact that the author's alleged grandfather, Fernão Mendes Pinto, lived in the sixteenth century, or the fact that the author describes his journey as motivated by missionary spirit, yet he entered the priesthood only a few days before his departure.

There follows an account of what has become of Japan in 2017. According to the unnamed Portuguese novelist, all those who were over a hundred years old at the time of the Fukushima incident and were exposed to radiation have become unable to die as a result. This does not mean, however, that they have rejuvenated; they have simply lost the ability to die, and have to trudge on, exhausted and dejected, possibly forever. Young people, on the other hand, are severely ill with radiation sickness, and old people have to take full care of them, aggravating their own burden.

After the closure of all nuclear plants, Japan has abandoned electrical power entirely, and as a result has reverted to a primitive economy. People walk everywhere, use only primitive tools, and go around naked in summer. While at a different time this might have exposed the country to the danger of colonial conquest, a large mass of radioactive water now protects Japan from any potential invasion:

Their nakedness might have made them appear uncivilized to the outside world, their land ripe for colonization, had foreign ships still been coming to Japan. Yet neither black nor white ships appeared in Japanese ports. The sea off Yokohama was dead quiet since no one ate fish or other seafood, or went swimming any longer. Having lost all contact with human beings, the water lay dark and silent.²⁴

²³ Tawada (2012), p. 6.

²⁴ Tawada (2012), p. 10.

Since televisions and computers have disappeared, woodblock prints and storytellers are the main sources of information and entertainment. At night, people gather around chanters who recite the plots of *manga* and *anime* series to the accompaniment of string instruments, while doctors collect fireflies and perform scientific experiments in the insect light, in the hope of finding a cure for the mysterious radiation sickness.

While the first part of the text reads as Tawada's own reflection on the impact of the disaster on her sense of identity as a bicultural Japanese, the second part of the story offers an ironic commentary, in an entertaining format, on a number of current issues—from the dangers of nuclear power to advanced capitalism, from colonialism to popular culture. What is most interesting, however, is the way this section is framed by multiple layers of doubt, as the first (Japanese-German) narrator summarises what the second (Portuguese) narrator says, explicitly questioning its veracity and concluding that '[l]ying is perhaps a skill that writers-adventurers have to cultivate'.²⁵ At the same time, because of the complete absence of other forms of media, this piece of narrative fiction has become the only available source of information about Japan. This is an interesting reversal of the situation described by Komatsu and Nojiri, who pointed out how the 3/11 disaster was extensively covered by both mainstream media and online social networks. At the opposite end of the spectrum, Tawada plays on the ultimate unreliability of any account, yet at the same time proposes fiction as a valuable alternative to supposedly 'true' accounts, as a medium that can offer poignant critical reflections through the power of imagination.

7.5 Lady Pluto and Count Uranos

Another intriguing example of commentary on 3/11 in the form of science fiction is a series of short stories in *manga* format written by Moto Hagio. Hagio is one of the most renowned authors of *shojo manga* (girls' comics) in Japan, and a founding member of the so-called *24nengumi* ('group 24'), a collective of female *mangaka* that revolutionised the world of girls' comics in the 1970s. Aiming to question the rigid division of themes between the genres of boys' and girls' manga, they claimed the right for young female authors and readers to tackle different themes than romance, which at the time was perceived and portrayed as the only apt topic for girls' comics. Inspired by this principle, they produced works in a variety of genres, such as adventure or historical drama. They were also prolific authors of science fiction, as testified by Hagio's co-founder of the group, Keiko Takemiya, and her popular science fiction manga series, *Tera e* (Toward Terra, 1977–1980).

Now in her 60s, Hagio is a professor of *manga* and media theory at Joshibi University of Art and Design, and is still active as an author of girls' comics. In the

²⁵ Tawada (2012), p. 8.

aftermath of 3/11, like many other artists and intellectuals, Hagio decided to address the disaster in her writing. Her first story on the topic, entitled 'Na no hana' ('Rapeseed flowers') was first published in the magazine *Gekkan Flowers*, aimed at an audience of teenage and young adult women, in July 2011. The text's narrative and graphic strategies are combined with realistic representations, including the appearance of real place names and an extensive use of the Fukushima dialect, with dream sequences that add a fantastic atmosphere to the narrative.

The comic is narrated from the perspective of an 11 year-old girl from Fukushima prefecture, Naho Abe, who was evacuated together with her family after her hometown was contaminated by radiation. The main plot revolves around the family's preparations for a trip to the family house in the contaminated zone, where they will be allowed to spend a maximum of 2 hours in order to gather some belongings. An underlying subtext to the narrative is Naho's refusal to accept the idea that her grandmother, who has gone missing during the tsunami, is in fact dead.

This realistic narration is interspersed with Naho's dreams, in which she repeatedly sees a European-looking girl in a field of flowers. After several such oneiric encounters, Naho comes to realise that the girl is a survivor of the Chernobyl disaster, and the fields that surround her are beds of rapeseed flowers, a plant that had been used as mean of containing the radionuclides that contaminated the soil after the 1986 nuclear incident. The comic ends with Naho's father bringing back a seed scattering machine from the family house, and the girl expressing her hope to return to her hometown and plant rapeseed flowers there.

The success of the story prompted Hagio to write further short manga addressing the Fukushima nuclear incident through a fantastical framework. She thus published in *Gekkan Flowers* three stories, entitled 'Puruto fujin' ('Lady Pluto', October 2011), 'Ame no yoru: Uranos hakushaku' ('Rainy night: Count Uranos', February 2012), and 'Salome 20XX' (March 2012). The three stories were finally republished in volume form (*tankobon*) in March 2012,²⁶ together with a sequel to 'Rapeseed flowers', entitled 'Na no hana moso: ginga tetsudo no yoru' ('Rapeseed flower fantasy: night on the Milky Way railway') written originally for the volume. In the sequel, Naho, after reading Kenji Miyazawa's fantasy novel *Ginga tetsudo no yoru* (*A Night On The Galactic Railroad*),²⁷ dreams of travelling with her brother on a magic train, where she briefly meets her lost grandmother, and is able to say farewell to her and achieves some sort of closure. Similar to the previous one, the text constantly confuses the realistic and fantastic register, and mixes reality and dream to powerful emotional effects.

The other three stories are more completely fantastical in nature. All three are set in a European-looking fictional environment, a staple of *shojo* manga of Hagio's generation, which relied heavily on exoticised historical settings as a means of distancing contemporary Japanese society and creating its own fantasy worlds.²⁸

²⁶ Hagio (2012).

²⁷ Miyazawa (1927).

²⁸ For a discussion of exoticism in girls' comics of the 1970s, see Suter (2009).

The protagonists are personified chemical elements, Plutonium in two of the stories, and Uranium in the other one. The remaining part of this chapter examines ‘Lady Pluto’ and ‘Rainy Night: Count Uranos’, and the way they talk about radioactivity through a combination of science fictional and fairy tale modes. For the sake of consistency, all citations will be from the Kodansha volume version.

‘Lady Pluto’ opens with a group of characters dressed like European noblemen and noblewomen from the Renaissance period, who have gathered for the trial of a mysterious woman named Lady Pluto. Asked to state her case, Lady Pluto describes the scientific, artistic and social progress of humanity and points out that all modern great inventions require energy to sustain them. She then announces that she herself, Lady Pluto, is the best possible source of such energy.

Provocatively dressed in a low-cut blouse, short skirt, and high heels, with long painted nails, starry eyes and full lips, Lady Pluto lures her audience with sensual moves, all the while explaining the mechanism of nuclear power generation and promoting it as highly desirable. When one of the noblemen reveals to the audience that she is Plutonium, a highly dangerous radioactive element, Lady Pluto retorts that radioactivity is not as bad as they paint it, offering the examples of radon thermal baths, which are said to be highly beneficial to health, and X-ray scans that have fostered medical progress.²⁹

With similar verve, when the aristocrats note that the radiation emitted by plutonium, in the form of alpha rays, is far more dangerous than other elements, Lady Pluto reminds them that there are many other natural poisons in nature, such as arsenic and potassium cyanide. A heated debate arises among the aristocrats, as some of the noblemen stress the benefits of this abundant, stable source of electrical power, and others emphasise the harmfulness of nuclear waste.³⁰

In the end, the noblemen decide to bury Lady Pluto where she cannot harm anyone, and leave her there until she naturally dies out. Lady Pluto, however, laughs at their naivety, and informs them that she has a half-life of twenty-four thousand years. As she explains what a radioactive element’s half-life is, demonstrating it graphically with the aid of a magic globe that she summons out of nowhere, the noblemen around her wither and die, until she is left entirely alone, mourning the extinction of humanity.³¹

‘Count Uranos’, also set in a sumptuous European-style palace, opens with a dinner party attended by people in a variety of costumes from different ages and national cultures, from Renaissance Europe to traditional Japan, from Victorian England to what could be described as a contemporary globalised style. They are waiting for a mysterious character in a Rococo outfit, with a mask on his face. The man is introduced as Count Uranos, an important and controversial figure in the contemporary world. His arrival elicits mixed reactions of fascination and fear

²⁹ Hagio (2012), p. 44.

³⁰ Hagio (2012), pp. 48–50.

³¹ Hagio (2012), p. 60.

among the characters, until a young man finally reveals that the man is Uranium, a highly radioactive element.³²

Like Lady Pluto, Count Uranos is attractive, elegantly dressed, and speaks in very polite language and a charming style. Furthermore, he offers luxurious presents to his hosts: three-carat diamond earrings, a Ferrari sports car, palaces, theatres, hospitals, and even an airport. A young woman named Ann, dressed in a contemporary outfit and sporting a short haircut, is utterly hostile to Uranos, and keeps warning her friends that his apparent generosity must come at a price. When she is asked what she desires, Ann demands clean, safe land, food, and water, not contaminated by radiation. Amidst the general shock, Count Uranos admits that the underside of the powerful, bottomless source of energy he possesses is radiation pollution.

The characters then evaluate the pros and cons of other sources of energy, noting that petrol produces CO₂ emissions, while solar and wind power are not reliable enough to sustain the current rate of technological progress.³³ As the general opinion seems to lean in favour of Count Uranos, a character steps up to describe the potential dangers of nuclear science if it falls in the wrong hands, and reminds his friends of the bombing of Hiroshima and Nagasaki. In addition, Ann cites the nuclear plant accidents of Three Mile Island in 1979, Chernobyl in 1986, and Fukushima in 2011, and reminds everyone that the radiation pollution resulting from the Fukushima incident was a thousand times higher than that caused by the atomic bomb dropped at Hiroshima in 1945.³⁴

The dialogues are humorous and surrealistic, with characters explaining complex scientific and political issues in a light, comical way, often screaming, jumping around, and hitting each other. The overall tone, however, is dark and ominous, and the descriptions of nuclear energy and radioactivity are scientifically sound and sophisticated. In the end, one of the characters tries to shoot Uranos, but he is not so easily killed. Shocked by their aggressive reaction, Uranos notes that it was humans who awoke him, and insists that he means no harm, but simply wants to help humanity realise its full potential.³⁵ Resigned, all the characters follow Uranos outside the building, through the night streets of a ghost city, under a gentle, possibly radioactive rain.

7.6 Conclusion

Through fantastical debates between humans and personified chemical elements, Hagio's comics introduce a variety of concepts pertaining to nuclear energy, its advantages and its dangers. The medium of science fiction allows them to discuss

³² Hagio (2012), p. 70.

³³ Hagio (2012), pp. 78–79.

³⁴ Hagio (2012), p. 83.

³⁵ Hagio (2012), p. 84.

sophisticated concepts in an entertaining, easily accessible format, which enables them to reach a broad audience in an effective way. The same is true of Yoko Tawada's story, which enables readers to confront at a distance some of the deepest fears aroused by radiation pollution.

In different yet similar ways, these two writers fulfil Sakyo Komatsu's and Motoko Arai's call for science fiction authors to perform a social function in the wake of the 3/11 disaster. Through their works, they sound a 'scientifically grounded alarm bell' to the world 'in the form of entertainment' which enables them to reach a wide audience. More importantly, by distancing reality through the fantastic genre, the stories display the critical spirit that lies at the core of both serious science and serious fiction, and most of all, of serious science fiction.

References

- Arai M (2011) Higashi Nihon daishinsai ni tsuite. In: Tatsumi T, Kasai K (eds) 3.11 no mirai: Nihon, SF, sozoryoku. Sakuhinsha, Tokyo, pp 249–261
- Azuma H (2009) Otaku: Japan's database animals. University of Minnesota Press, Minneapolis (trans: Abel J, Kono S)
- Bernofsky S, Selden Y (2002) Translator's note. In: Tawada Y (ed) Where Europe begins. New Directions, New York, pp VII–IX
- Claremont Y (2013) Disaster in Japan: a case study. In: Butt S, Nasu H, Nottage L (eds) Asia-Pacific disaster management. Springer, Heidelberg (this volume). doi:[10.1007/978-3-642-39768-4](https://doi.org/10.1007/978-3-642-39768-4)
- Elmer L, Karashima D (eds) (2012a) March was made of Yarn. Harvill Secker, London
- Elmer L, Karashima D (eds) (2012b) Soredemo sangatsu wa mata. Kodansha, Tokyo
- Hagio M (2012) Na no hana. Shogakukan, Tokyo
- Kinsella S (1998) Amateur Manga subculture and the *Otaku* panic. J Jpn Stud 24:289–316
- Komatsu S (2011) Yobun: 311 no mirai e.cbs. In: Tatsumi T, Kasai K (eds) 3/11 no mirai: Nihon, SF, sozoryoku. Sakuhinsha, Tokyo, pp 1–3
- Miyazawa K (1927) Ginga tetsudo no yoru. Kadokawa shoten, Tokyo
- Nojiri H (2011) Genpatsujiko, netto no konjun to robasutona bunmei. In: Tatsumi T, Kasai K (eds) 3/11 no mirai: Nihon, SF, sozoryoku. Sakuhinsha, Tokyo, pp 278–284
- Reich M (2013) A public health perspective on reconstructing post-disaster Japan. In: Butt S, Nasu H, Nottage L (eds) Asia-Pacific disaster management. Springer, Heidelberg (this volume). doi:[10.1007/978-3-642-39768-4](https://doi.org/10.1007/978-3-642-39768-4)
- Saito T (2011) Beautiful fighting girl. University of Minnesota Press, Minneapolis (trans: Vincent K, Lawson D)
- Suter R (2009) From Jusuheru to Jannu: girl knights and Christian witches in the Work of Miuchi Suzue. Mechademia 4:241–256
- Tatsumi T, Kasai K (eds) (2011) 3.11 no mirai: Nihon, SF, sozoryoku. Sakuhinsha, Tokyo
- Tawada Y (2012) The Island of eternal life. In: Elmer L, Karashima D (eds) Soredemo sangatsu wa mata. Kodansha, Tokyo, pp 3–11

Chapter 8

BRR Aceh–Nias: Post-Disaster Reconstruction Governance

Tjokorda Nirarta Samadhi

8.1 Introduction: A Major Natural Disaster at the Start of the New Government of Indonesia

President Susilo Bambang Yudhoyono's administration was in only its second month in office when, on Boxing Day 2004, a tsunami of epic proportions hit Aceh in the westernmost province of Indonesia. The Government had only just completed a Master Plan of Aceh Reconstruction and was on the verge of issuing it when an earthquake devastated the Nias Islands on 28 March 2005.

The devastation brought by both disasters was immense and it quickly became clear that simply replacing homes, schools, hospitals and other infrastructure would be insufficient. The rehabilitation and reconstruction program would need to help rebuild the social structures that once thrived along the shores of Aceh and within the hinterlands of Nias. The trauma of losing friends, family and livelihoods required that the recovery program focus not only on physical but also non-physical development and rehabilitation, and on rebuilding an economy to a level that would ensure a firm foundation for future redevelopment and growth.

On the whole, the disaster response reconstruction has, in my view, been largely successful. Current Aceh and Nias socio-economic conditions bear few traces of the devastating disasters. This is remarkable in part because decisions on how to handle post-disaster responses were made in trying political and economic conditions. The President had just won the first ever direct presidential election in Indonesia,

This chapter draws from *10 Management Lessons for Host Governments Coordinating Post-disaster Reconstruction* (2009), which is part of the BRR Book Series, a set of unpublished manuscripts prepared by the BRR Book Writing Team of which the author was a member.

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claiming more than 60 % of the vote, but the House was dominated by opposition parties. Rampant corruption afflicted the economy.¹ However the Rehabilitation and Reconstruction Agency of Aceh and Nias or *Badan Rehabilitasi dan Rekonstruksi Aceh–Nias* (BRR) post-disaster reconstruction operation in Aceh and Nias was not an easy undertaking.

This chapter shares some of the lessons learned about post-disaster reconstruction governance in Aceh and Nias. It seeks to, albeit briefly and intuitively, consider these lessons alongside the reconstruction processes in post-disaster Tohoku. This chapter will show that the particular socio-economic and socio-cultural contexts of disaster locations should determine the disaster response and reconstruction management. It also demonstrates that responses that might work in one socio-economic and socio-cultural context will not always work in another.

8.1.1 Aceh Tsunami, 26 December 2004

The earthquake that triggered the Aceh Tsunami was one of the largest in recent history, measuring 9.1 on the Richter scale. Its cause was the convergence of two tectonic plates beneath the ocean floor, which occurred on 26 December 2004. These two tectonic plates ruptured along a 1,600 km length of what is known as the Sunda mega-thrust. The epicenter of this earthquake was 250 km southwest of the Indonesian Province of Aceh. The rupture—a slippage of up to 10 m—caused the ocean floor to lift and drop, pushing the entire water column up and down, and generating a series of powerful waves. Within half an hour of the earthquake, tsunami swept violently over the shorelines of Aceh and up to 6 km inland. They also hit surrounding islands, including the northern part of Nias. In Aceh, a total of 126,741 lives were lost and, in the wake of the disaster, an additional 93,285 people were declared missing.² Some 500,000 survivors lost their homes, while as many as 750,000 people lost their livelihoods. Nias ‘escaped’ this tsunami, with the rising water claiming 260 deaths there.³

Private citizens and the non-government sector bore 78 % of the destruction brought by the earthquake and tsunami, with 139,195 homes destroyed or severely damaged, along with 73,869 hectares of land with varying degrees of productivity. 13,828 fishing boats and 27,593 hectares of brackish fish ponds were swept away, and the tsunami forced the closure of 104,500 small-to-medium businesses.⁴ In the

¹ For example, in 2005, Transparency International, ranked Indonesia 137 out of 159 countries on its Corruption Perceptions Index: Transparency International (2005). Since 2007, with banking sector improvements and domestic consumption, the national economic growth has been 6 % annually, helping the country weather the 2008–2009 global recession.

² BRR (2009b).

³ BRR (2009d).

⁴ BRR (2009b).

public sector, 669 government buildings, 517 health facilities and hundreds of educational facilities were either destroyed or so severely damaged that they could no longer be used. The loss to the environment included 16,775 hectares of coastal forests and mangroves, and 29,175 hectares of reefs.⁵

8.1.2 Nias Earthquakes, 28 March 2005

The Nias Islands (usually referred to simply as ‘Nias’) are one of several island chains off the west coast of Sumatera formed as a result of collisions between the Eurasian and Indian continental plates. This group of islands is part of the North Sumatera Province. It sits on top of the subduction zone—the world’s sixth most quake-prone area. Historical records show that these islands have been regularly shaken by earthquake tremors, earning them the name ‘the dancing islands’.

On 28 March 2005, an earthquake measuring 8.7 on the Richter scale hit Nias. The earthquake was the result of the rupturing of two tectonic plates, located directly beneath the Simeulue and Nias islands, slipping 350 km. Fortunately, the earthquake did not prompt a tsunami. However, the earthquake was devastating, leaving around 80 % of the mainland Nias island in ruins, killing 979 people, displacing 47,055 survivors and severely damaging the islands’ infrastructure.⁶ Combined with the Indian Ocean (Boxing Day) tsunami, the 2005 earthquake took Nias back to square one in terms of socio-economic development and exacerbated its poverty and isolation.

However these unexpected natural disasters drew the attention of the Indonesian government and the international community to the plight of Aceh and Nias. Perversely, the disasters prompted significant socio-political and socio-economic change that is likely to serve both Aceh and Nias well into the future.

8.1.3 Socio-Economic and Socio-Cultural Challenges in Aceh and Nias

Before turning to discuss the disaster management policies adopted and applied in Aceh and Nias, I briefly describe the socio-economic and socio-cultural situation of Aceh and Nias before the tsunami and earthquake. The particular contexts of Aceh and Nias made rehabilitation and reconstruction more difficult than they might have been in other parts of Indonesia.

In Aceh, the challenges and obstacles were profound even before the tsunami hit. Many Acehnese were said to despise the central Indonesian government and the

⁵ BRR (2009b).

⁶ BRR Nias (2008).

military, engaging in serious decades-long armed conflicts over management of the province and its resources, with some Acehnese even calling for independence from the Indonesian Republic. Aceh was, in fact, under martial law when the tsunami struck. The prolonged conflict led to Aceh being a poor and undeveloped region, despite being very rich in natural resources such as oil, natural gas and minerals.

The conflict had also led to a breakdown in local government institutions in Aceh. During the conflict, government offices were burned down by warring parties. A number of civil servants were also killed in confrontations between the Indonesian National Armed Force (TNI) and the Free Aceh Movement (*Gerakan Aceh Merdeka*, GAM). In addition, civil political reaction to the conflict often led to strikes being called in government offices. As a result, public services were frequently disrupted and governance commonly stalled in the several years leading up to the tsunami. There were also concerns about misallocation of resources by the Aceh local government. A large portion of the regional budget was spent on the operations of government agencies and institutions rather than on the development of public services and facilities.

The poverty rate in Aceh prior to the tsunami was 28.69 % of its population of four million. This rate was very high compared to the national average of 16.69 %, according to March 2008 Central Bureau of Statistics data. Furthermore, the National Development Planning Agency had classified 16 districts of Aceh as 'underdeveloped', excluding Banda Aceh, Sabang, Lhokseumawe and Langsa cities. Aceh's Human Development Index (HDI) of 69 before the tsunami was below the national index, which was 69.6.⁷ Aceh was the fourth poorest province in Indonesia. But despite this poverty and underdevelopment, revenue obtained from exploitation of its natural resources was higher than any other Indonesian province.

The Acehnese distrust of the national government and disdain for military presence on the one hand, and the devastating tsunami on the other, are, of course, entirely separate issues. Yet, despite the devastation and loss of life, the tsunami brought hope for a 'new' Aceh and an end to the military conflict. Many Acehnese were tired of the prolonged conflict and associated stress, and viewed the emergency response and the subsequent reconstruction as opportunities for a brighter future.⁸

Nias had not experienced conflict like Aceh's. It had, however, long been left behind other parts of Indonesia in terms of social and economic development, well before the 2004 and 2005 tsunami and earthquakes. This was despite its potential as a tourist destination due to its beautiful beaches and unique culture and traditions. Its location on the periphery of the Indonesian archipelago made it susceptible to neglect by the Indonesian government. Indeed, Nias is home to two of North Sumatra's poorest districts—Nias and South Nias—which had Human

⁷ BRR (2009b).

⁸ Kuntoro Mangkusubroto has made this point repeatedly, including during a casual conversation (March 2012) after I presented the draft version of this chapter in a staff seminar at the Indonesian President's Delivery Unit.

Development Indexes of 66.1 in 2005⁹—much lower than the national average of 69.6. In Nias generally, the poverty rate, literacy, health, and access to clean water and electricity also lagged well behind in national comparisons.¹⁰ The developmental gap between the northern coastal area (including the Nias Islands) and other regions in North Sumatera had continued to widen since 1975. In 2000, the poverty rate in the western coastal areas, including Nias, reached its highest ever point of 14.5 %, compared to the provincial average of 11.5 %. According to data from the Central Bureau of Statistics, approximately 226,000 people on the Nias Islands were living below the poverty line in 2004.¹¹

Even before the tsunami and earthquake, regional government institutions were very weak and lacked public credibility, and the influence of traditional institutions and local churches was declining in Nias. Long-standing divisions along clan and familial lines made mobilising the local community for development difficult. Local communities were also unaccustomed to participating in public decision-making and the implementation of development projects, hindering the growth of community leadership and unity. On a positive note, then, the disasters, and the ensuing rehabilitation and reconstruction, forced Niasans to embrace new values and perspectives, forging a greater sense of community and shared purpose in the islands.

8.2 The Post-Disaster Management: The Lessons Learned

8.2.1 *A Coordinating Agency with Adequate Powers*

For the then newly inaugurated government, a disaster of the magnitude of the Boxing Day tsunami presented a significant test of national and local disaster response capability. Compounding the difficulties were the silos of the sectoral bureaucracy, which prevented effective coordination, even though laws regulating disaster management in force at the time of the tsunami had sought to mainstream preventative disaster management as a strategic task of Government.¹² A Presidential Regulation on emergency relief was revised to allow better response to the complex large-scale disasters of Aceh and Nias.¹³ However, the national government needed to move quickly to clarify which agency would coordinate the

⁹The HDI data for South Nias in 2005 is not available since this administrative area was only established in 2003. Previous HDI is for the whole island: see World Bank (2007).

¹⁰World Bank (2007).

¹¹BPS Sumatera Utara (2005).

¹²UNDP Bappenas (2008).

¹³Presidential Regulation No. 83 of 2005 on the National Coordinating Agency on Disaster Management.

post-disaster reconstruction program, what it was empowered to do, and when its mandate began and ended.

8.2.1.1 Speedy Recovery Key to a Sense of Normalcy

Drawing a line between the relief and reconstruction phases of a disaster is important. Emergency relief focuses on preventing further death and disease following a disaster, and providing humanitarian relief to victims. Reconstruction, in contrast, seeks to rebuild affected communities, which requires complex coordination, a longer timeframe, and deep understanding of local circumstances. In the case of Aceh and Nias, the Indonesian Government officially concluded the emergency relief phase on 26 March 2005. Emergency relief was handled largely by the military, which had been trained to deal with chaotic situations.

Three days after the tsunami hit Aceh, President Susilo Bambang Yudhoyono, through Minister of Social Affairs Bachtiar Chamsyah, issued 12 directives on disaster response management, all of which were aimed at returning normalcy to Aceh as quickly as possible.¹⁴ Four of them were essential to managing post disaster reconstruction in Aceh and Nias, providing for the:

- Opening and restoration of communication networks between regions and cities;
- Cleaning up destroyed cities of debris and mud;
- Proper management of aid from both domestic and international sources; and
- Involvement of all elements of civil society, including the Indonesian Military, International Committee of the Red Cross (ICRC) and NGOs, in disaster response activities.

The President's directives led to the National Team for Aceh Disaster Management—established on 30 December 2004 by then Vice President Jusuf Kalla¹⁵—to devise a three-month emergency response plan, primarily involving the military, including foreign military personnel. The military was the best trained and prepared to deal with the post-disaster situation.¹⁶

¹⁴ BRR (2009a).

¹⁵ The Vice President, *ex officio*, was the Chairman of the Coordinating Body for Disaster Mitigation and Refugee Management (Bakornas PBP), established the National Team for Aceh Disaster Management, and appointed the Coordinating Minister of Public Welfare Alwi Shihab as its head. Subsequently, the head of this National Team appointed military general Bambang Darmono as its Executive Commander.

¹⁶ Japan allowed its self-defence force to become involved in reconstruction only after its experience with the Hanshin-Awaji earthquake (1995): see Norio et al. (2011). On 13 April 2011, Japanese Prime Minister Naoto Kan sent 100,000 self-defence officers to participate in the Great East Japan Earthquake rescue work. The total number of troops mobilised, including those providing logistics, was 180,000—the largest number of self-defence forces dispatched by Japan since World War II.

The military cleared away most of the debris and buried all deceased within the 3-month emergency period. The military also significantly improved transportation infrastructure, repairing 35 % of the 235 km road from Banda Aceh to Meulaboh (which opened access to the western coast of Aceh) and 17 of the 53 destroyed bridges. It also constructed a number of temporary shelters or barracks to replace tents. Reconstruction had, therefore, already begun during the emergency period, even in the absence of a recovery and reconstruction plan. The underlying approach of post-disaster reconstruction of Aceh and Nias was performing recovery operations quickly to enable the restoration of normalcy.¹⁷

8.2.1.2 A Reconstruction Agency with Substantial Power

While the tsunami-affected regions were, of course, keen to rebuild as soon as possible, the provincial and regional governments in Aceh and Nias lacked the capacity to perform or coordinate the work. With around 900 actors involved in reconstruction efforts, the potential for geographical and sectoral overlaps was high. The scale of damage differed from region to region, and the various aid organisations had different strengths and priorities. One risk was that some regions might receive offers from many organisations to help their development, while other regions might receive very few, if any.

A preliminary issue was whether an existing local or central government agency or agencies should take charge of reconstruction, or whether a new entity should be established to coordinate it. In the event, the Indonesian government decided to establish a single agency to coordinate and oversee the post-disaster reconstruction phase with broad powers and authority.¹⁸ There were several reasons for establishing a new central agency. First, the tsunami had debilitated local government—it had killed one-third of local civil servants and destroyed many government records and buildings. This left little choice but to coordinate

¹⁷ In a meeting between the BRR Institute and Kyoto University (17 October 2012), Eddy Purwanto, former Chief Operating Officer of BRR and executive director of the reconstruction operation, said metaphorically that he would kill anyone who tried to sell the idea of community participation approach during the first semester of the reconstruction since the speed of construction works was, at that stage, much more important than quality. During that crucial semester, professional contractors and experienced construction workers were needed to bring a semblance of normalcy. In the subsequent reconstruction stage, more community participation was sought.

¹⁸ Comparing a number of post-disaster reconstructions, including Aceh–Nias, Fengler et al. (2008) concluded that an independent agency with substantial powers was only a ‘second-best’ solution. The best solution was for the local government to deal with such an operation. In the context of Aceh–Nias, however, there was no better alternative because existing institutions would have had significant difficulties managing the reconstruction process successfully. An extreme example of a government’s lack of capacity would be the post-disaster reconstruction of Haiti, where not only the local government was paralysed, but the national government was overwhelmed to the point of being incapable of conducting a swift and coordinated recovery effort: see, for example, Bellerive and Clinton (2009).

rehabilitation efforts at the central level. Second, Indonesia lacked an existing central government institution able to coordinate such a massive rehabilitation and reconstruction effort without undermining its responsibilities elsewhere in the country. Third, as mentioned, a longstanding resentment of the central government existed in Aceh stemming in part from a decades-long secessionist insurgency. This would have made it difficult for any existing central government agency to operate effectively in Aceh, particularly on short notice.

The Government of Indonesia established the BRR as this single entity in one of the disaster-hit areas of Banda Aceh. Initially established by emergency law,¹⁹ it was formally endorsed by parliament with the enactment of legislation in October 2005.²⁰ This statute granted BRR absolute power over the rehabilitation and reconstruction program, with status and authority equivalent to that of a line ministry. Its initial mandate was to implement rehabilitation and reconstruction projects financed by the Indonesian Government; and coordinate projects financed by donors, NGOs, and other organisations.

As a statutory authority, the BRR had credibility to engage effectively with both domestic ministries and large international donors. Strong ongoing support for the BRR from the Indonesian President was also critical, especially when the BRR disagreed with other government institutions or ministries or when the BRR sought to direct donors to shift or expand their reconstruction programs.

Presidential Decree No. 34 of 2005 specified BRR's organisational structure. It consisted of three primary bodies: an advisory board, supervisory board and executing agency. Members of the advisory board were prominent citizens or statespersons, while supervisory board members were mostly drawn from local Aceh leaders, both formal and informal, NGO representatives and the like. Kuntoro Mangkusubroto was the head of the Executing Agency widely referred to as the BRR. The organisation of this Executing Agency varied depending on the task at hand and challenges on the ground.

Different from other government agencies, the BRR's three main organs were all accountable to the President. This meant that, organisationally, the Advisory Board and the Supervisory Board were not formally 'above' the Executing Agency. The reason President Susilo Bambang Yudhoyono, gave for this structure was: 'To let Kuntoro work without any interference'.²¹

¹⁹ Interim Law No. 2 of 2005, issued by the Indonesian President.

²⁰ Law No. 10 of 2005.

²¹ The President used the Javanese term 'dirusuhi', which I have translated as 'interference'. The President's simple remark is actually a statement of support. Kuntoro Mangkusubroto had initially intended to decline the BRR leadership. At the National Development Planning Agency office, where Sri Mulyani—the then head of the Agency—had invited the ambassadors of Japan and the United States and USAID Director William M. Frej to a meeting, she asked the ambassadors what they thought if Kuntoro Mangkusubroto did not lead the BRR. The two envoys adamantly rejected the prospect. They were most fearful of uncertainties and distrust from the international community toward the Aceh and Nias recovery efforts. Sri Mulyani did not react immediately but rather called the President in front of the ambassadors. She described the mood of the meeting to the President. He answered, 'Well, give Kuntoro what he needs'. See BRR (2009a).

The Indonesian Government established the BRR with a four-year mandate to coordinate rehabilitation and reconstruction activities in Aceh and Nias from April 2005 to April 2009. Setting a terminal point for the BRR was important both to instill a sense of urgency within the BRR itself to achieve its reconstruction targets and milestones, and to ensure that the BRR did not unnecessarily usurp the economic and social development responsibilities of local government agencies.

8.2.1.3 Tohoku: The Reconstruction Agency for the Reconstruction of Great East Japan Earthquake

One year after the March 2011 Great East Japan Earthquake, three northeastern prefectures of the Tohoku region most severely affected by the disaster, Iwate, Miyagi and Fukushima, were still encumbered with more than 20 million tons of debris.²² Removing and disposing of the wreckage has been a slow process, as well as an enormous obstacle to rebuilding efforts. One problem is that few governments in other regions in Japan are willing to accept the rubble. Authorities of 29 prefectures, or 65 % of participants in an Asahi Shimbun survey performed on February 2012, stated that local governments in their respective areas were not considering accepting any of the debris.²³ Tokyo and six prefectures were expected to accept around 830,000 tons of rubble. This represents only about 20 % of the target.

One and a half years after the disaster, municipal governments in Iwate, Miyagi and Fukushima lack more than 700 reconstruction workers.²⁴ Although attempts have been made to hire workers from outside the three prefectures, ‘the prospect of securing sufficient manpower remains dismal’.²⁵ The excess rubble and shortage of construction workers demonstrate some of the complexities of coordinating large-scale disaster relief and reconstruction efforts.

Critics claim that Prime Minister Naoto Kan has not successfully convinced the public that he has a vision for Tohoku reconstruction.²⁶ In the aftermath of the disaster, he established the Reconstruction Design Council—several academics and professionals tasked with devising a comprehensive reconstruction plan, incorporating a variety of issues ranging from nuclear energy to tax policy. The resulting policies were then formulated in the Basic Guidelines for Reconstruction issued in July 2011, under the *Basic Act on Reconstruction in response to the Great East Japan Earthquake*.²⁷ The Guidelines established the main drivers

²² Iwate Prefecture has 4.75 million tons of debris, the equivalent of 11 years of garbage produced by its households. By March 2012 it had managed to dispose of only 8 % of the debris: Sumikawa (2012). Miyagi Prefecture has 15.69 million tons of debris, the equivalent of 19 years of household trash. Only 5 % of the debris had, at time of writing, been removed. Fukushima Prefecture is left with 2.08 million tons.

²³ Sumikawa (2012).

²⁴ Iwaasa and Nakane (2012).

²⁵ Iwaasa and Nakane (2012).

²⁶ Curtis (2011).

²⁷ Law No. 76 of 2011.

of reconstruction efforts as the municipal governments, and set a reconstruction timeframe of 10 years, with the first five years being a ‘concentrated reconstruction period’. A Reconstruction Agency was established on 10 February 2012 under the *Act on Establishment of Reconstruction Agency*.²⁸ This Agency, headed by the Prime Minister and managed by Minister for Reconstruction Tatsuo Hirano, is expected to lead the reconstruction process by promoting and coordinating central government policies and activities, as well as supporting reconstruction projects planned and implemented by the municipalities. However, mobilising municipalities to assume the daunting task of reconstruction has not been an easy task.

As of the end of June 2012, 40 % of the reconstruction budget of about 15 trillion yen (US\$189 billion) remained unused, ‘despite the continuing suffering of disaster victims and companies in Tohoku region’.²⁹ The Reconstruction Agency observed that the municipalities responsible for reconstruction lacked the manpower, time and expertise to carry out the much needed infrastructure projects. Municipalities did not even devise reconstruction blueprints.

Drawing on the experiences of the handling by the Chinese government of the Sichuan earthquake in 2008³⁰ and by the Indonesian Government in Aceh and Nias,³¹ it seems that coping with large-scale disasters requires the centralisation of power. The Japanese government appears to have had less power to act in response to the East Japan earthquake-tsunami disaster than the Chinese or Indonesian governments, thereby making the resolution of many issues difficult. The complexity of a large-scale disaster requires an international, coordinated, and efficient response. Effective post-disaster relief and reconstruction requires the mobilisation of all available resources—public, private, domestic and overseas. The response must be driven by rational strategies, efficient, and based on sound relief and reconstruction plans. For these reasons, a coordinating agency with centralised power in the face of large-scale disaster is indispensable.

8.2.2 *Maintain a Crisis Mindset, Build a Robust Coordination and Strong Implementation Capability*

According to BRR:

Reconstruction is not business as usual, and agencies must adapt their processes to reflect this reality. Government procedures that may be appropriate under normal circumstances must be redesigned to take account of the emergency. Staffing norms must be overturned to attract the most capable people, from both within and outside government.³²

²⁸ See Norwegian Environment Technology Center (2012).

²⁹ Zakoda (2012).

³⁰ Shi et al. (2009).

³¹ Jayasuria and McCawley (2011).

³² BRR (2009c).

Coordination among different government agencies must be redefined to create a more collaborative spirit.

The BRR managed its own budget for the reconstruction of Aceh and Nias. Other ministries and state agencies, as well as local governments, had specific funding to support reconstruction within their respective sectors and administrative areas. This funding and these budgets needed to conform to business-as-usual national budget system and governance standards. Ministries and state agencies were, therefore, required to synchronise programs and harmonise their budgets under the coordination of the BRR.

Hence, the coordinating agency needed to continuously learn from mistakes and adjust to changing circumstances. ‘This is not a real estate project’, Kuntoro Mangkusubroto, head of the BRR once declared. ‘In a real estate project, we would start from zero and begin working in an orderly and systematic fashion’.³³ In other words, rebuilding an area devastated by natural disaster vastly differs from construction in normal conditions. The entire reconstruction community, both governmental and non-governmental, needed to institutionalise a ‘crisis mindset’ and develop a culture of speedy delivery if affected communities were to quickly recover and gain a sense of normalcy.

8.2.2.1 Breaking Down Bureaucratic Silos

The BRR pushed for accelerated public-sector administrative and decision-making processes wherever possible, as many of these processes were not designed to be used during emergencies. Important procedural safeguards were maintained as much as possible, however, and transparency about how and when exemptions were made for expediency was paramount. The BRR also advocated reconstruction projects being delivered collaboratively among agencies, national and sub-national institutions as well as non-governmental entities.

The coordinating agency, which, as mentioned, chose to establish its main office in a disaster-hit area, successfully streamlined some important processes to accelerate decision-making and implementation results. Weekly workshops involving all reconstruction actors were held to fast-track project approvals. A dedicated treasury office of the Finance Ministry (*Kantor Pelayanan Perbendaharaan Negara Khusus*)³⁴ was established to expedite the disbursement of around US\$900 million of budgeted government reconstruction funds annually.

Tim Terpadu (Integrated Services Team) was a ‘one-stop shop’ that aggregated administrative services usually provided by various ministries at a single location in Banda Aceh. The Team’s main purpose was to help international agencies navigate

³³ BRR (2009b).

³⁴ This was a special treasury office located at the provincial level, temporarily established for service during the reconstruction period. The format of the service was later adopted as a standard regular service for the treasury offices throughout Indonesia.

the Indonesian Government bureaucracy more quickly so that reconstruction programs could be delivered expeditiously. Services included immigration, taxation, customs and excise. While many important business-as-usual bureaucratic processes needed to be complied with, the BRR helped provide some shortcuts, whilst also ensuring that the relevant ministries could perform their key functions. The relevant ministries were willing to participate in such BRR-organised schemes given their responsibilities to collaboratively support the humanitarian efforts and reconstruction operation.

All tiers of the Indonesian Government have obligations to mitigate risks of financial mismanagement and corruption. As a ministerial agency disbursing government funds, the BRR was bound by these rules. It won hard-fought financial and procurement exemptions to expedite decision-making and implementation, but limitations remained. Circumvention of regular tender processes was permitted only for housing and infrastructure projects, and only when progress was at its most dire. For other projects, the procurement timeframe was reduced by half from a government average of 60 days to 17–45 days — an achievement in itself, but still frustrating in the context of a crisis. Emergencies naturally prompt a search for bureaucratic shortcuts, but it is important to maintain accountability and transparency and to not compromise financial safeguards.

In 2006, the BRR devolved authority to six field offices to move decision-making closer to affected communities. Decentralised decision-making was instituted to enable quicker responses to issues raised by donors and affected communities. Field offices come under daily pressure from beneficiaries to show results, and decentralisation enabled the agency to maintain its sense of urgency and to be more responsive to beneficiary needs as they emerged and evolved. The challenge of maintaining integrity and accountability amidst changing organisational structures was addressed through innovative solutions such as *post facto* review. Such reviews checked project implementation against government-mandated guidelines after the fact so as not to slow implementation. Non-compliant procedures had dire consequences such as withdrawal of government funding and sanctions for those involved.

8.2.2.2 Taking Responsibility for Achieving Reconstruction Targets

Coordinating agencies are responsible for the overall achievement of reconstruction targets, regardless of which agency—national or international, governmental or non-governmental—is responsible for specific projects. If the coordinating agency also controls financial resources, it also holds direct responsibility for funds under its management. In that capacity it may need to execute some programs and projects directly if third-party implementing agencies fall short.

The BRR's mandate was to achieve the overall reconstruction targets for Aceh and Nias, and it was held responsible by both the Indonesian Government and the public for these targets. It also had the responsibility of allocating the Indonesian Government's reconstruction budget of US\$2.1 billion. The reconstruction that was

initially placed within the regular delivery channels of line ministries and local government progressed slowly in the first year. Some projects were even programmed and implemented in areas that were not the disaster areas. In these instances, the BRR had little choice but to discard a pure coordinating model. It took on a direct implementing role for the projects funded through the Government's budget.

8.2.2.3 Building Capacity to Fill Implementation Gaps

Given that centralised line ministries have many roles and responsibilities apart from post-disaster reconstruction, many of them are unable to handle reconstruction programs with the same degree of priority and urgency as the post-disaster reconstruction coordinating agency or donor-funded programs in affected areas. Consequently, delays often arise with projects funded by host governments and implemented through the host government's main implementing agencies, such as line ministries. The coordinating agency will often need to take on a direct implementing role to prevent critical reconstruction programs from falling behind schedule.

A coordinating agency can take three steps to mitigate these risks. First, it can focus on filling project gaps left by other agencies. The BRR's policy was to use Government funds for projects which had no other available implementation partners, so as not to crowd out other players. This eliminated any real or perceived competition with other agencies. Second, a coordinating agency can manage coordinating and implementing roles separately. The BRR's implementation units were kept separate from the core BRR organisation, with only a dotted-line reporting relationship with the respective coordinating sector heads at BRR, that is, sector deputies. This enabled the coordinating unit to distance itself from implementation. Third, it can take a tough stance on corruption. BRR blacklisted contractors who were unable to deliver on Government reconstruction contracts or were caught trying to engage in misconduct. Questionable procurement practices also led to revoked contracts and reopened bids.

8.2.2.4 Integrity and Accountability in the Use of Disaster Reconstruction Funds

Reconstruction after a large-scale disaster like Aceh–Nias required significant funding. It was expected that even the slightest whiff of corruption would have lessened donors' willingness to continue funding reconstruction programs.³⁵ To maintain donor confidence and minimise leakage, the coordinating agency needed to develop a comprehensive anti-corruption program to pre-empt corruption and

³⁵ See Jha et al. (2010).

demonstrate integrity. To this end, BRR established both a pre-emptive program of education and prevention. BRR also dedicated resources to build a credible investigative unit and clear links with prosecutorial agencies. Most importantly, the coordinating agency instilled a belief that it was serious about corruption.

From its inception, the BRR treated corruption not merely as an aspect of good governance project, but rather as a core strategic threat to the entire reconstruction program. This approach led the agency to proactively confront the threat of corruption. The BRR sought to attack corruption from the top whilst also encouraging community participation by creating complaints channels that were easy to access and secure.

Of course, it is extremely hard to eliminate all leakages in a start-up organisation like the BRR, particularly given its rapidly growth—from 50 people to 1,000 people in only 20 months—and the intense pressure upon it to act quickly with minimal internal controls having been put in place.

From the outset and throughout the reconstruction period, the BRR relied upon its leadership team acting as role models for the rest of the Agency. It selected leaders with impeccable track records, who each publicly declared their individual wealth. All employees, not only those engaged in procurement activities, were required to sign and comply with an ethical agreement (Integrity Pact) as a term of their employment.

From day one, the BRR head made it clear in public statements that he would not tolerate corruption within the BRR. To support this pledge, the BRR built and ran an effective anti-corruption unit using its own and other resources. It hired respected international experts to design its anti-corruption program. It also invited Transparency International to look at the program and worked with Indonesia's Corruption Eradication Committee (*Komisi Pemberantasan Korupsi* or KPK) on corruption investigations and educational campaigns.

The BRR also cooperated closely with various audit agencies of the Government, such as the Financial and Development Supervisory Board (*Badan Pengawasan Keuangan dan Pembangunan* or BPKP), and asked the Supreme Audit Agency (*Badan Pemeriksa Keuangan* or BPK) to audit the BRR's financial statements. It also welcomed wider audits of its processes and initiated forensic audits to target suspect areas.

8.2.2.5 Tohoku: Disaster Reconstruction Funds Ending Up in the Wrong Hands

Allocating funds from the state budget for Aceh–Nias reconstruction and the BRR was relatively straightforward. However around two-thirds of the reconstruction was generated from off-budget sources.³⁶ By contrast, the budget of the Tohoku

³⁶ BRR (2009c).

reconstruction funds came primarily from the state budget.³⁷ The Basic Guidelines for Reconstruction in response to the Great East Japan Earthquake demonstrate the complexities of the budgeting process:

[T]he extra financing for the pension fund utilized as the financial resources for recovery and reconstruction in the first supplementary budget of the fiscal year 2011 shall be compensated by reconstruction bond when formulating the third supplementary budget, and the parties will examine measures to finance it.³⁸

A year and a half after the calamitous earthquake and tsunami savaged north-eastern Japan, efforts to rebuild damaged areas appear to be slowing, at least partly due to a lack of vision for what a rebuilt Tohoku region should look like. The mandated role of the Japanese Reconstruction Agency as a support institution, coupled with strong line ministries' control over reconstruction activities falling within their portfolios, has hindered effective collaboration among national agencies and municipalities in delivering the reconstruction. Instead of making swift decisions, some observers claim that the Reconstruction Agency provides another layer of bureaucracy. Further, the agency opted to locate its headquarters in Tokyo rather than Tohoku.³⁹

The time needed to coordinate with different administrative levels is causing problems. For example, the Fisheries Agency is responsible for the port reconstruction in Ishinomaki. Raising sunken land around and along the port is the responsibility of the prefectural government. Sewers and water lines are the responsibility of the city government. The Japanese Reconstruction Agency could not, however, act as a comprehensive contact point to facilitate the collaborative implementation of complicated projects. In situations where local officials at the municipalities and national executives in Tokyo are at odds, the Reconstruction Minister of the Reconstruction Agency can only issue non-binding recommendations to other ministries.⁴⁰

Bureaucratic hindrances are not, of course, only found in Japan. The BRR would have encountered similar problems were it not for its chairman, Kuntoro Mangkusubroto. Based on his extensive experience in Government, he was aware that the silo bureaucratic culture and sectoral ego often led to Government ineffectiveness in delivering development projects and public services. In an interview for Harvard's JF Kennedy School of Government about the BRR he said:

And what [I felt] the law should state was that this special organization had special authority to do reconstruction . . . Meaning that if I wanted to build 1,000 homes there, that was my authority. I didn't have to meet with the Minister of Public Works. I didn't have

³⁷ The reconstruction budget for 2011–2015 is ¥19 trillion, and in November 2011, the Diet approved a tax increase on individual incomes and corporate profits that will be in effect for 25 years to cover at least ¥10.5 trillion, the rest coming from government spending cuts.

³⁸ Reconstruction Headquarters (2011), p. 8.

³⁹ Norwegian Environment Technology Center (2012).

⁴⁰ Nikkei (2012).

to meet with the Minister of Housing . . . Bureaucracy means that you have to wait for all the other ministers, to ask permission, [and] I didn't need that kind of thing.⁴¹

The weak authority of the Japanese Reconstruction Agency was underlined in a report on the reconstruction budget aired on the Nippon Hoso Kyokai (NHK) channel on 9 September 2012. NHK employed an outside expert, Professor Yoshimitsu Shiozaki of Kobe University, to audit the reconstruction budget for the Great East Japan Earthquake. Of the ¥9.2 trillion budgeted so far, Shiozaki indicated that at least ¥2.45 trillion had gone to projects unrelated to the reconstruction of Tohoku.⁴² Also, ¥12 billion was spent on seismic renovations of government agency facilities in Tokyo and its surrounds instead of local government facilities in disaster areas. Even a project by the Japan Atomic Energy Agency to research nuclear fusion received ¥4.2 billion. In a third supplementary budget for the 2011 fiscal year, ¥500 billion was earmarked for a post-disaster reconstruction support fund to finance companies setting up factories, but subsidies were also provided to businesses that built plants outside the afflicted areas. Reconstruction Minister Tatsuo Hirano has requested the Finance Ministry to conduct a fact-finding survey, and the Government Revitalization Unit of the Cabinet Office has launched its own investigation.

8.3 Conclusion

Aceh and Nias now enjoy a level of economic and social development higher than existed before the tsunami and earthquakes of 2004 and 2005. The underlying spirit of reconstruction promoted by the BRR was to 'build back better'. The BRR has largely succeeded in this, with significant assistance from local governments.

Both the Indonesian and Japanese governments have made significant progress with post-disaster response and reconstruction. Both countries have used the post-disaster reconstruction as an opportunity to develop the affected regions and to experiment with formulations for improved governance. Dedicated reconstruction agencies have been established and substantial budgets have been allocated for reconstruction. Blueprints for reconstruction have been drafted, and special policies and regulations have been issued to facilitate reconstruction. In the end, it is a combination of the socio-cultural, socio-political and socio-economic systems of the nation that determines the path, process and progress of reconstruction.

The lessons learned by the BRR during its four and a half years of Aceh–Nias reconstruction have been recorded in a number of publications.⁴³ In this chapter, these lessons learned have been used to intuitively evaluate ongoing reconstruction efforts in Tohoku. Based on the Indonesian experience, the Japanese Government

⁴¹ Giles (2012).

⁴² Brasor (2012).

⁴³ See Jayasuria and McCawley (2011), TGLLP (2012), and Giles (2012).

might enhance the pace and quality of the post-disaster reconstruction of Tohoku if it could perform three tasks. The first is to locate the Reconstruction Agency for Great East Japan Earthquake headquarters in the disaster region and close to the reconstruction projects, the relevant municipalities and the survivors. This will help the agency to understand real reconstruction needs and processes, and enable it to provide effective facilitation. The second is to provide the Reconstruction Agency for Great East Japan Earthquake with an authority to coordinate and synchronise the reconstruction program within a five-year period of ‘concentrated reconstruction’, and devise longer term plans, such as the FutureCity and Country of Co-Creation, for augmentation in national ministries, agencies, prefectures and municipalities.⁴⁴ Finally, it could provide the Reconstruction Agency for the Great East Japan Earthquake with authority to implement necessary projects that do not fall within any other institutions’ roles, responsibilities, interests or jurisdictions.

References

- Bellerive J-M, Clinton WJ (2009) Finishing Haiti unfinished works. The New York Times, August 2010. <http://canadahaitiaction.ca/node/460>. Accessed 17 Aug 2010
- BPS Sumatera Utara (2005) Statistik kesejahteraan rakyat Propinsi Sumatera Utara 2004. BPS Propinsi Sumatera Utara, Medan
- Brasor P (2012) Scrutiny of Tohoku reconstruction needed. The Japan Times Online. <http://www.japantimes.co.jp/text/fd20120923pb.html>. Accessed 15 Oct 2012
- BRR (2009a) Book 0: Tsunami. Limited publication to mark the closing of the BRR. Aceh-Nias, Jakarta
- BRR (2009b) Book 1: Story. Limited publication to mark the closing of the BRR. Aceh-Nias, Jakarta
- BRR (2009c) Book 2: Finance. Limited publication to mark the closing of the BRR. Aceh-Nias, Jakarta
- BRR (2009d) Book 5: Nias. Limited publication to mark the closing of the BRR. Aceh-Nias, Jakarta
- BRR Nias (2008) Winding down the recovery, paving the way towards a sustainable development. BRR Nias, Gunungsitoli
- Cabinet Secretariat (2012a) FutureCity Initiative. Cabinet Secretariat. <http://futurecity.rro.go.jp/en/about/>. Accessed 21 June 2012
- Cabinet Secretariat (2012b) Rebirth of Japan: a comprehensive study. Cabinet Secretariat. http://npu.go.jp/policy/pdf/20120821/20120821_en.pdf. Accessed 15 Oct 2012
- Curtis G (2011) Japanese leadership fails at post-disaster reconstruction test. East Asia Forum. <http://www.eastasiaforum.org/2011/08/14/japanese-leadership-fails-at-post-disaster-reconstruction-test/>. Accessed 2 Oct 2012
- Executing Agency for Rehabilitation and Reconstruction (BRR) of Aceh-Nias (2009) 10 management lessons for host governments managing post-disaster reconstruction. Limited publication to mark the closing of the BRR Aceh-Nias. Jakarta
- Fengler W, Ihsan A, Kaiser K (2008) Managing post-disaster reconstruction: international experience in public financial management. World Bank, Washington. doi:10.1596/1813-9450-4475

⁴⁴ See FutureCity Initiative proposed by the Japan Cabinet Secretariat (2012a). See Cabinet Secretariat (2012b) for the National Policy Unit discussion at the cabinet on 31 July 2012.

- Giles DW (2012) Rebuilding Aceh: Indonesia's BRR spearhead post-tsunami recovery. Harvard Kennedy School, August 2013. http://www.hks.harvard.edu/var/ezp_site/storage/fckeditor/file/pdfs/centers-programs/programs/crisis-leadership/Harvard%20BRR%20Case%20Study_PrePub_2012%2010%2020.pdf. Accessed 12 Aug 2013
- Iwaasa K, Nakane K (2012) Tohoku understaffed for reconstruction work. The Yomiuri Shimbun, September 2012. <http://www.yomiuri.co.jp/dy/national/T120911004289.htm>. Accessed 24 Sept 2012
- Jayasuria S, McCawley P (eds) (2011) Asian Tsunami: aid and reconstruction. Edward Elgar, Cheltenham
- Jha AK, Barenstein JD, Phelps PM, Pittet D, Sena S (2010) Safer homes, stronger communities: a handbook for reconstructing after natural disasters. World Bank, Washington
- Nikkei (2012) Locals worry reconstruction agency can't cut red tape. <https://recoveringtohoku.wordpress.com/2012/02/10/locals-worry-reconstruction-agency-cant-cut-red-tape-nikkei-21012/>. Accessed 15 Oct 2012
- Norio O, Ye T, Kajitani Y, Shi P, Tatano H (2011) The 2011 Eastern Japan Great Earthquake Disaster: overview and comments. *Int J Disaster Risk Sci* 2(1):34–42. doi:10.1007/s13753-011-0004-9
- Norwegian Environment Technology Center (2012) Rebuilding Japan: Tohoku reconstruction awaits a gov't that can make decisions. <http://www.netc.no/netc/archives/1151>. Accessed 24 Sept 2012
- Reconstruction Headquarters (2011) Basic guidelines of reconstruction of the Great East Japan Earthquake. Cabinet Office, Tokyo
- Shi PJ, Liu LY, Wang JA, Xu W, Fang WH, Wang M (2009) Experiences and lessons of large-scale disaster governance in China: perspective to the response of Wenchuan earthquake disaster. In: Paper presented at the International Human Dimensions Program (IHDP) 2009 Open Meeting, Bonn, 26–30 April 2009
- Sumikawa T (2012) Stricken prefectures stuck with mountains of quake debris. The Asahi Shimbun, March 2012. <http://ajw.asahi.com/article/0311disaster/analysis/AJ201203100013>. Accessed 3 Oct 2012
- Transparency International (2005) Corruption perceptions index 2005. http://www.transparency.org/policy_research/surveys_indices/cpi/2005. Accessed 15 Oct 2012
- Tsunami Global Lesson Learned Project (2012) Handbook for disaster recovery practitioner. TGLLP (in press)
- UNDP, Bappenas (2008) Inisiatif harmonisasi hukum untuk desentralisasi perencanaan pembangunan dalam penanggulangan bencana. UNDP dan Bappenas, Jakarta
- World Bank (2007) Managing resources to build back and create a better future for Nias: Nias public expenditure analysis 2007. World Bank, Jakarta
- Zakoda E (2012) Report: 40% of Tohoku rebuilding budget remains unused. The Asahi Shimbun, June 2012. <http://ajw.asahi.com/article/0311disaster/recovery/AJ201206290076>. Accessed 24 Sept 2012

Chapter 9

Disaster Management Law in Indonesia: From Response to Preparedness?

Simon Butt

9.1 Introduction

Indonesia is particularly susceptible to natural and man-made disasters. In the last decade it has been hit by some of the world's most devastating earthquakes, tsunamis and floods. Most notable was the 2004 Indian Ocean (Boxing Day) earthquake—one of the largest ever recorded on a seismograph¹—which struck just off the west coast of Sumatra, Indonesia. This earthquake generated a tsunami that killed over 230,000 people in 14 countries. Indonesia suffered most, with 167,700 people killed, more than 500,000 displaced, and an estimated US\$4.5 billion in property damage.²

Earthquakes and tsunamis are not the only disaster threats Indonesians face, however. Between 1980 and 2010, Indonesia experienced 321 natural disasters, causing 192,474 deaths (at an average of 6,209 per year), causing an estimated loss of US\$23 billion (an average of US\$761 million/year).³ The World Bank estimates that around 40 % of Indonesia's 240 million people are at significant risk of personal injury, death or financial loss,⁴ with 396 of Indonesia's almost 500 cities and counties being highly susceptible to natural disasters.⁵ The impact of these disasters—loss of life, injury, displacement, and property damage—is often extreme, for several reasons. One is that parts of Indonesia, notably Java, are

¹ news.com.au (2009).

² Guerin (2006). See Samadhi (2013), in this volume.

³ Prevention Web (undated). The World Risk Index notes that worldwide in 2002–2011, 4,130 disasters occurred, causing more than a million deaths and economic losses of at least US\$1.195 trillion: Jakarta Globe (2012).

⁴ Jakarta Globe (2012).

⁵ Muryanto and Susanto (2012).

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densely populated, so when natural disasters strike they often affect large numbers of people. Another is that Indonesia is a developing country where construction standards are generally poor. Also, coordinating emergency responses can be enormously difficult given Indonesia's vast and often treacherous geography, spanning 17,000 islands across 5,000 km.

In the face of these disasters and risks, Indonesia has drawn recent international praise for disaster management. In November 2011, President Susilo Bambang Yudoyono received the first United Nations (UN) Global Champion of Disaster Risk Reduction Award for prioritising disaster mitigation during his two terms in office. In the same month, UN International Strategy for Disaster Reduction (UNISDR) Chief Margareta Wahlstrom wrote in Indonesia's leading English-language daily, the *Jakarta Post*, that:

Indonesia is an example of how to align disaster management with other development priorities. . . Disaster response, post-disaster recovery and disaster risk reduction are now given equal importance and the country is much better prepared for small and major disasters.⁶

Wahlstrom noted that Indonesia was the first country to act on the internationally-accepted norms and priorities of the 'Hyogo Framework Action 2005–2015: Building the Resilience of Nations and Communities to Disasters for Action'. The Indonesian Government had also increased by tenfold the national budget for disaster risk reduction from US\$2.14 million in 2010 to US\$21.4 million in 2011.⁷

Almost 1 year later, in October 2012, Indonesia hosted in Yogyakarta the Asia Ministerial Conference on Disaster Risk Reduction.⁸ During the meeting, President Yudoyono emphasised that natural disasters posed the most potent threat to Indonesia's national security and safety. He said that Indonesia had actively engaged in bilateral, regional and international cooperation to improve its disaster risk reduction capacity. At the bilateral level, Indonesia had cooperated with countries like Australia and Germany. Regionally, Indonesia was active on the Association of South East Asian Nations (ASEAN) Committee for Disaster Management and the ASEAN regional forum on disaster relief exercises. At the international level, it has worked closely with the UNISDR.⁹

To an outside observer, these accolades and statements might appear to indicate that Indonesia has made significant improvements to its disaster management and response systems since the 2004 Boxing Day tsunami. This chapter argues, however, that while Indonesia has made significant progress, particularly through the enactment of the 2007 Disaster Management Law (DML), much remains to be done. The DML is often rightly praised for its emphasis upon risk reduction as well as emergency response. However, implementation of the DML has been patchy,

⁶ Wahlstrom (2011).

⁷ Wahlstrom (2011).

⁸ Muryanto and Susanto (2012).

⁹ Muryanto and Susanto (2012).

and disaster management is now hindered by institutional complexities, largely because of the ‘regionalisation’ of disaster management—a product of the decentralisation that took place in Indonesia after the fall of Soeharto in 1998. I begin by describing some of the more devastating natural and non-natural disasters that have afflicted Indonesia. I then summarise the DML and its implementation.¹⁰

9.2 A ‘Supermarket of Disasters’¹¹

Indonesia is particularly exposed to earthquakes given its location at the intersection of the Eurasia Plate, the Ancient Australia–Indian Continent and the Pacific Ocean Floor. As an archipelagic state with more than 80,000 km of coast, around 65 % of its population living within 50 km of the coast, and 75 % of its cities located in coastal areas, Indonesia is also susceptible to tsunamis.¹² In addition to the earthquake in Nias in 2005 (discussed by Samadhi 2013, in this volume), other Indonesian earthquakes have led to significant loss of life in the past decade. Examples include Yogyakarta in 2006 (almost 6,000 people died, over 30,000 were injured and around 1.5 million were displaced), and Padang in 2009 (more than 1,000 people were killed). Indonesia has more than 100 active volcanoes and has experienced massive volcanic eruptions, including the 1815 eruption of Mount Tambora—the largest volcanic eruption in recorded history—and the famous 1883 Krakatoa explosion that killed tens of thousands.¹³

Indonesia’s geography makes a large portion of its islands vulnerable to seawater rises from global warming. Its heavy rainfall, large number of rivers and poor infrastructure lead to regular flooding resulting in significant economic loss. For example in 2007, flooding in Jakarta, the nation’s capital, led to an estimated loss of US\$879 million in economic damage and lost productivity.¹⁴

Indonesia also faces significant non-natural or human-made disasters. Indonesia is well known for deliberately-lit forest fires, through which millions of hectares of land have been cleared, and for the carbon emissions and smoke pollution some of those fires bring (particularly for nearby countries such as Singapore and Malaysia). Significant land clearing and fertiliser and pesticide use have also caused significant land and mudslides. Given its high population density, Indonesia is also particularly vulnerable to epidemics, including dengue fever, malaria, avian flu and tuberculosis.¹⁵

¹⁰ All translations in this chapter are my own unless indicated.

¹¹ Indonesia was described as a ‘supermarket of disasters’ by an NGO staff member in Aceh, as quoted in James (2008), p. 426.

¹² Djalante et al. (2012), p. 795.

¹³ For illuminating coverage of this event, see Winchester (2005).

¹⁴ World Bank (2011).

¹⁵ James (2008).

One of the most notorious disasters, which appears to have been human-made, is the Lapindo mud volcano, often referred to in Indonesia as ‘Lusi’ (Lumpur Sidoardjo, or Sidoardjo Mud). The eruption occurred at a natural gas drill site in Sidoardjo, East Java. The volcano has been in a ‘vigorous eruptive state’ since it began on 29 May 2006, and at its peak was releasing 180,000 m³/day.¹⁶ The mud flow, currently around 7 km², is likely to continue for 26 years.¹⁷ There is significant disagreement over Lusi’s cause. The company responsible for the drilling, PT Lapindo Brantas, claims that the volcano was caused by the Yogyakarta earthquake, which occurred only 2 days earlier.¹⁸ Many others, however, argue that the Yogyakarta earthquake was too small and far away to have been the cause.¹⁹ They point to drilling without sufficient protective casing as the probable cause.

Meanwhile, 13,000 families have been forced to leave their homes,²⁰ and the damage to infrastructure and the local economy has been significant.²¹ Although the President issued a regulation in 2007 requiring PT Lapindo Brantas to compensate some victims,²² payments have been slow. Even as of April 2012, PT Lapindo Brantas was said to still owe Rp 1.023 trillion (US\$127 million) to victims and was seeking a government loan.²³

Politics have ‘muddied the waters’ in the allocation of blame and the imposition of liability. PT Lapindo Brantas is a subsidiary of the Bakrie Group, which is controlled by the family of Aburizal Bakrie, who was Minister for Social Welfare when Lusi began. Ironically, this Ministry was primarily responsible for overseeing government efforts to assist the affected communities. A public figure with considerable political clout, Bakrie has since served as Chairperson of the Golkar Party (Soeharto’s former parliamentary vehicle, which continues to fare reasonably well in national elections) and may run for President in 2014. Because Bakrie is said to be heavily in debt, minimising the amount of compensation paid to Lusi victims appears to be in his interest.

9.3 Legal Reform: 2007 Disaster Management Law (DML)

Prior to the DML’s enactment in 2007, disaster management in Indonesia was handled primarily by the National Coordination Board for Disaster Management (*Badan Koordinasi Nasional Penanggulangan Bencana*: BAKORNAS PB).²⁴

¹⁶ Davies et al. (2011).

¹⁷ Davies et al. (2011).

¹⁸ McMichael (2009), p. 80.

¹⁹ McMichael (2009), p. 80.

²⁰ Davies et al. (2011).

²¹ McMichael (2009).

²² Government Regulation 14 of 2007; Government Regulation 48 of 2008.

²³ Jakarta Post (2012b).

²⁴ Established by Presidential Decree 111 of 2001.

Although headed by the Vice President, the Board's mandate was limited in two main ways. First, as its name suggests, the Board's activities were largely limited to *coordinating* activities in relation to disasters.²⁵ The 'on the ground' response itself was carried out by officials from one of several government ministries, usually at the direction of the Board.²⁶ Second, the Board was not charged with ensuring disaster preparedness or risk mitigation. Rather, its main function was helping to manage 'mopping up' after a disaster had already occurred. This limitation was also conveyed in common mistranslation of '*Penanggulangan Bencana*' into English as 'Disaster Management'. A more accurate translation should be 'Disaster Handling' or 'Disaster Response'.

In addition to these two limitations, the Board's budget was insufficient, and even though it had a permanent secretariat, it was staffed largely by seconded officials.²⁷ At the provincial and city/district levels of government were Provincial Coordinating Boards for Disaster Management (*Satlak PB*) (chaired by the Governor of the province) and District or City Implementation Units for Disaster Management (chaired by the district head or mayor). The capacity of many of these Units and Provincial Boards was limited, including in some areas of Java, Indonesia's most densely populated and developed island. Conspicuous was the lack or inadequacy of pre-disaster preparedness activities. Writing about the performance of these institutions in respect of the 2006 Yogyakarta earthquake, which is located in Bantul, Kumumasari and Alam commented:

the capacity that existed in Bantul local government during the 2006 earthquake was very weak [because the relevant *Satlak PB*] had not been trained and was not experienced in pre-, during and post disaster management. . . Such limitations became obstacles for the Bantul local government in managing the disaster. There were almost no programs undertaken by local government to identify disaster prone areas in subdistricts in Bantul. Even though Bantul is located in an area prone to disasters such as landslides, tornadoes, drought, flood, fire and earthquake, there was no sign of disaster awareness in local government or the community. Even worse, availability of an early warning system and capacity to understand it were very limited.²⁸

As Samadhi (2013), in this volume has observed, Indonesia's legal progress in disaster management can be largely attributed to the 2004 Boxing Day tsunami. Quite clearly, many Indonesians were deeply affected by the extent and severity of the disaster. Combined with the attention of international donors such as the UN and the World Bank, and the news media, the Indonesian central government came under pressure to enact new disaster-related laws. The national parliament's

²⁵ Government of Indonesia (undated), p. 6.

²⁶ These included the Ministries of Energy and Minerals, Social Affairs, Health, Public Works, Finance, Transportation, Commerce and Information, and the Armed Forces Commander, the Chief of the National Police, and the Chairman of the Red Cross: Kusumasari and Quamrul (2012), p. 764.

²⁷ UNDP and BNPB (undated), p. 6.

²⁸ Kusumasari and Quamrul (2012), p. 765.

legislative response was the Disaster Management Law (DML),²⁹ enacted in April 2007. This statute was followed by various government-issued implementing regulations, most notably Government Regulation No. 21 of 2008 on Disaster Management, brought into force in February 2008.³⁰

9.4 Outline of the DML

Part (c) of the DML's Preamble recognises that Indonesia's pre-existing disaster management framework (described above) was insufficient for well-planned, coordinated and integrated disaster management. This was, in part, because Indonesia's geographic, geological, hydraulic and demographic conditions make the nation susceptible to natural and non-natural disasters, resulting in fatalities, environmental and property damage, and psychological effects, all of which 'can hamper national development' (Part (b) of the DML's Preamble). To this end, the DML provides a new emphasis on risk management, requiring national and regional governments to undertake disaster prevention and reduction activities. Of course, it also outlines mechanisms for emergency response to disasters and rehabilitation.

The DML applies to natural disasters—which are defined to include earthquakes, tsunamis, volcanic eruptions, floods, droughts, typhoons and landslides (Art. 1(2)). It applies to non-natural disasters—which include technological failures and epidemics (Art. 1(3)). It also applies to so-called 'social disasters', which are defined as social conflicts between community groups and terrorism (Art. 1(4)).

Part (a) of the Preamble and the General Elucidation to the DML emphasise that the state is responsible for protecting the people, including against disasters, in the interests of public welfare. The DML gives citizens rights to education and training in disaster management, to obtain information about disaster management policies, and to participate in decision-making about disaster management activities (Art. 26 (1)). It also imposes obligations upon community members, including performing disaster management activities as necessary, avoiding disputes that may lead to a breakdown in order, and maintaining sustainable environmental practices (Art. 27). Importantly, the DML allows citizens to claim compensation from the central and regional governments for loss arising from natural disasters (Art. 69). Government Regulation No. 22 of 2008 on Disaster Aid Financing and Management requires the government to provide money to relatives of persons killed by disasters, including to cover burial costs (Art. 25); compensation for mental or physical disability

²⁹ Law No. 24 of 2007 on Disaster Management.

³⁰ See also Government Regulation No. 22 of 2008 on Disaster Aid Financing and Management, Government Regulation No. 23 of 2008 on Participation of International Institutions and Foreign Non-governmental Organisations in Disaster Management, and Presidential Regulation 8 of 2008 on National Disaster Management Authority.

caused by disasters (Art. 26); soft loans to disaster victims who have lost their livelihoods (Art. 27); and basic necessities such as temporary accommodation, food, clothing, water, sanitation and healthcare. The DML also imposes liability on those who undertake high risk developments without first performing a disaster risk assessment (Art. 75), hinder Disaster Management Agency and Regional Disaster Management Agency (both discussed below) access to human resources, equipment and supplies (Art. 77) or misuse funds allocated for disaster management (Art. 78).

9.5 Central Government Responsibilities and the Disaster Management Authority (DMA)

The DML divides responsibility for various aspects of disaster management between the central and regional governments, although it requires them to jointly fund disaster management. The central government is responsible for disaster risk reduction and its integration within international development programs, protecting the community against the effects of disasters, guaranteeing the rights of disaster-affected communities and displaced people by reference to minimal service standards, disaster recovery, and allocating sufficient funds for disaster management in the national budget (Art. 6). In performing these functions, the government can stipulate disaster management policy (including in cooperation with other countries, agencies or international bodies). It can classify and declare the severity of disasters (based on consideration such as the number of victims, damage to facilities and infrastructure and the like) (Art. 7).

The DML requires the establishment of the national Disaster Management Authority (DMA or *Badan Nasional Penanggulangan Bencana (BNPB)*) as the primary institution for disaster management in Indonesia (Art. 10).³¹ The DMA is headed by a ministerial-level official who reports directly to the President at least once a month even when no disasters have occurred (Art. 12(d)). The DMA is to provide guidelines and directives on disaster management, including on prevention, emergency response, rehabilitation and reconstruction (Art. 12(a)). When performing these functions, the DMA must act with justice and fairness (Art. 12(a)). The DMA must also formulate and stipulate disaster management policy (Art. 13(a)); coordinate disaster management activities (Art. 13(b)); monitor and evaluate disaster management (Arts. 14(b) and (c)); and determine displacement handling policy (Art. 13(a)).

The DML divides disaster management into three phases: pre-disaster, emergency response, and post-disaster (Art. 33). During the pre-disaster phase, the DMA is to coordinate with central and local governments on disaster by:

³¹ Established by Presidential Decree No. 8 of 2008.

- Management planning, including identifying the threat of particular disasters, community vulnerabilities, predicted impacts, risk reduction options and allocation of tasks and resources (Arts. 36–37);
- Prevention and mitigation, including monitoring the management of natural resources and technology which could lead to a disaster, spatial planning, environmental management and building the resilience of the community (Arts. 38 and 47); and
- Preparing emergency responses, including mechanisms to ensure swift and appropriate efforts when disasters strike such as drills, installing and testing early warning systems, providing basic supplies, conducting repairs, evacuating locations and the like (Art. 45).

During the emergency response phase, a quick assessment of damage to infrastructure and loss of life should be performed, followed by evacuation (if necessary), search and rescue, provision of basic necessities and protection of vulnerable groups (Art. 48 and 49). To this end, the DMA and Regional DMAs (discussed below at Part 9.6) are to have unfettered access to human resources, equipment and supplies, and have power over various sectors and institutions to assist in disaster response (Art. 50).

In the post-disaster period, the DML requires the DMA to perform rehabilitation and reconstruction (Art. 57). Rehabilitation includes repairing facilities and infrastructure, including housing, psychological assistance and healthcare; restoring of public and socio-economic order; and the like (Art. 58).

9.5.1 Challenges for Central Government

Although the DMA is recognised as having improved overall disaster management in Indonesia, a remaining challenge is coordination with other national institutions.³² The DMA cooperates with and relies upon a multitude of Ministries, Agencies and other governmental institutions to perform disaster management functions. These include the:

- Ministry of Public Works, on spatial planning and mitigation activities, such as building flood dykes and evacuation routes;
- National mapping agency, on mapping hazard areas;³³
- Police, army, and the Red Cross, on search and rescue;
- Minister of Social Affairs, on displaced people;
- Coordinating Ministry for People's Welfare, on coordination of disaster management programs and activities across government ministries and agencies;
- Defence Ministry, on maintenance of security in disaster-affected areas;

³² Djalante et al. (2012), p. 784.

³³ Government of Indonesia (undated), p. 75.

- Forestry Ministry, on forest and land fire mitigation and plans;
- Geological Agency, for volcanic and land mass movement hazards; and
- Agency for Meteorology Climate and Geophysics for meteorological, climate and geophysical hazards, and tsunami Early Warning Systems.

DMA officials often express concern that many of these national institutions are preoccupied with their own portfolios and resist being coordinated by the DMA.³⁴ DMA officials sometimes complain that they have insufficient information about other agencies' budgets for disaster management activities.³⁵ Another concern is that many national level Ministries and agencies, as well as local governments, still consider disaster management to be about responding to disasters rather than prevention and mitigation.³⁶ Further, some central government officials appear to have perpetuated myths about the causes of disasters. For example, former Communication and Information Minister Tifatul Sembiring claimed, during a Friday prayer meeting in Padang soon after the 2009 earthquake, that immorality caused natural disasters and that they would continue to occur for as long as television programs destroyed morals.³⁷ Combined with pre-existing beliefs in Padang that 'if you talk about a tsunami it will happen', this has arguably distracted communities from doing what is necessary to prepare themselves for looming disasters.³⁸

9.6 Regional Government Responsibilities and Regional Disaster Management Authorities (RDMAs)

The DML shifts significant authority for disaster management to local governments, which share responsibility for disaster management activities and financing with the central government.³⁹ This should be seen as part of the devolution of power from the central government to regional governments that began soon after Suharto lost power in 1998. Under this decentralisation process, 'the widest possible autonomy' was granted to regional governments. Since Indonesia began decentralising in 2001, the number of Indonesian provinces has expanded from 29 to 33 and cities/districts from 292 to around 500.⁴⁰ All 530 or so of these local governments have their own legislatures and executive governments. To exercise this autonomy, local legislatures and executives have

³⁴ Government of Indonesia (2011), p. 30.

³⁵ Djalante et al. (2012), p. 784.

³⁶ Government of Indonesia (2011), p. 5.

³⁷ BBC (2009).

³⁸ Bachelard (2013).

³⁹ Djalante et al. (2012), p. 784.

⁴⁰ Butt and Lindsey (2012), p. 62.

both been granted powers to enact laws on any subject matter except for several matters exclusively reserved for the central government: foreign affairs, defence, internal security, the justice sector, national monetary and fiscal policy and religion. The grant of regional authority, therefore, included power to establish policies and regulations on disaster management.

Generally, the performance of many local governments in policy-making and regulatory functions has been criticised by observers and donors alike. Undoubtedly, many regional governments have exercised their new powers with genuine concern to improve the well-being of their constituents.⁴¹ However, there are reliable indications that others have misused their new authority for personal gain, with many local government officials being prosecuted for corruption.⁴² Many local governments are said to lack the capacity and experience to exercise these functions effectively.

The DML requires regional governments to establish Regional Disaster Management Authorities (RDMA) to operate at both provincial and city/district levels.⁴³ Run by senior officials, RDMA handle disaster management in their respective areas, and coordinate, command and implement disaster management within their respective territories (Arts. 18, 22(e) and 23(4)). The DML allocates to regional governments some of the same responsibilities as it allocates to the central government. These include guaranteeing the rights of people affected by disasters, providing community support for displaced people, mitigating the effects of disasters, reducing disaster risks, integrating disaster management into development plans, and allocating sufficient funds in local government budgets for disaster management (Art. 8). Regional governments can also stipulate disaster management policies (Art. 9), including over emergency handling, rehabilitation and reconstruction (Art. 21(a)). In addition, it appears that RDMA have responsibilities to develop, monitor and evaluate *local* disaster management policies (Art. 22). Presumably, the intention here is to take advantage of region-specific knowledge and capacity, including to access remote areas; local knowledge of geography and past disasters; and community involvement in risk reduction and preparing action plans.

9.6.1 Challenges for Local Governments

Establishing more than 530 RDMA, as required by the DML, is a massive undertaking. Although significant progress has been made, the process is, at time of writing, far from complete. All of Indonesia's provinces have now enacted laws

⁴¹ Butt (2010).

⁴² Butt (2012).

⁴³ Home Affairs Minister Decree No. 46 of 2008 required the establishment of BPBDs in all provinces by the end of 2009.

to establish provincial RDMA. ⁴⁴ However, as of 2011 only 144 of Indonesia's districts and cities had followed suit. ⁴⁵ In areas where RDMA had not yet been established, the pre-2007 mechanisms remained: District or City Implementation Units for Disaster Management. The primary function of these Units is to coordinate emergency response; they engage in very little, if any, pre-disaster preparedness or risk mitigation. ⁴⁶

The DMA commonly points out that many RDMA have limited personnel, logistical capacity, equipment and funding. Many RDMA do not have a physical office, ⁴⁷ and many of their members are inadequately trained in key aspects of disaster management. Notably, the DMA asserts that many RDMA remain focused on preparing for disaster response, rather than mitigation activities.

In general [many RDMA] still face limitations in terms of resources. The capacity of the human resources has not been sufficient and there is also budget constraint and gross lack of the required facilities and infrastructures. Disaster Management Study Centers at universities in the regions, which are expected to support the capacity building of [RDMA], have not been well developed. The involvement and participation of the relevant stakeholders in the regions can be considered as not yet significant. In addition to the lack of understanding of disaster risk reduction and disaster management issues, there have yet to be uniformity in the terms and concepts of risks, risk maps, risk analysis, risk map elements, risk analysis parameters and relevant other things. Disaster-related information conveyed to the media and the public is often convoluted since it is not systematic and the language used is often too technical. ⁴⁸ [*mistakes in original*]

The DMA also reports that only around 20 % of districts and cities have prepared disaster contingency and preparedness plans, as the DML requires. According to the DMA, it is unknown whether even these plans are comprehensive, widely known, or even tested—let alone practised. As the DMA observes in its National Progress Report on the Implementation of the Hyogo Framework for Action (2009–2011), contingency plans are often 'just documents' that have never been evaluated, even though for all hazards they must be evaluated every 3 or 6 months. ⁴⁹ Further, very little—if any—collaboration occurs between regional governments on disaster management, so that when disasters permeate regional borders, there are no or insufficient plans in place to handle them. ⁵⁰

As for specific disaster mitigation activities, progress has been patchy. Some local governments have required that new buildings be sturdy enough to withstand earthquakes; ⁵¹ that debris be removed to prevent flooding (one of the main causes

⁴⁴ Jakarta Post (2012a).

⁴⁵ Djalante et al. (2012), p. 788.

⁴⁶ Jakarta Post (2009).

⁴⁷ Jawa Pos (2012).

⁴⁸ Government of Indonesia (2011), pp. 9–10.

⁴⁹ Government of Indonesia (2011), p. 33.

⁵⁰ Djalante et al. (2012), pp. 790–91.

⁵¹ See, for example, Jakarta Bylaw 7 of 2010.

for flooding in Jakarta);⁵² and that spatial plans prohibit houses being built on hills in landslide-prone areas or too close to volcanoes. However, some RDMAs have been established within existing agencies or departments rather than as separate offices. For example, some have been established in fire departments. This tends to entrench perceptions that disaster management is only about response, not preparation or risk mitigation.⁵³

Even though regional governments are legally required to allocate disaster management funds in their own budgets, not all provinces and districts or cities have been able or willing to do so. As a result, many RDMAs lack the necessary facilities and infrastructure to effectively assess disaster risks, prevent risks (if possible), and to respond to disasters—let alone fund rehabilitation and reconstruction efforts. This leads to significant reliance on the national government and international donors for financial assistance.

9.7 Conclusion: Regionalisation and Coordination of Disaster Management: Too Many Cooks?

Effective disaster management requires cooperation between governments and the various institutions that comprise them. Regional authorities will often possess local knowledge about previous disasters and logistics that are indispensable to effect disaster prevention, mitigation and response. However, effective disaster management also requires a strong central authority with power to take control where necessary. As shown by Samadhi (2013), in this volume, the Rehabilitation and Reconstruction Agency of Aceh and Nias (*Badan Rehabilitasi dan Rekonstruksi Aceh-Nias*: BBR) was granted significant powers that were critical to the Agency's largely successful efforts to rehabilitate Aceh and Nias after devastating tsunamis and earthquakes.

While the DMA is most certainly more powerful than its predecessor, BAKORNAS PB, decentralisation poses fresh problems for effective disaster management in Indonesia. The central and regional governments have very similar powers and responsibilities relating to disaster management, including policy-making, mitigating risks, and helping citizens during and after natural disasters. These powers and responsibilities are very vaguely worded in the DML, which mostly does not seek to allocate responsibility as between regional and central governments, or even as between provincial and city or district governments.

Of significant concern is that the DMA does not formally exercise significant control over the RDMAs, meaning that it cannot compel compliance, for example, with directives on disaster prevention and mitigation. Without local and central government cooperation and coordination, this jurisdictional overlap and gap could

⁵² Jakarta Post (2011).

⁵³ Djalante et al. (2012), p. 788.

lead to both the central and regional governments seeking to impose different policies and directives. This can cause, at worst, confusion leading to possible institutional paralysis or, at best, inefficient disaster management and avoidable deaths and property loss. Also possible is that local and central government authorities might, in an attempt to avoid financial implications of disaster management, seek to ‘pass the buck’ to the other. This, too, is likely to lead to insufficient disaster preparedness and, ultimately, greater loss if a disaster occurs.

References

- Bachelard M (2013) City waits in denial of the big one. *Sydney Morning Herald*, 29 March 2013
- BBC (2009) Indonesia minister says immorality causes disasters. *BBC News Online*, 28 November 2009. <http://news.bbc.co.uk/2/hi/asia-pacific/8384827.stm>. Accessed 4 Dec 2012
- Butt S (2010) Regional autonomy and the proliferation of Perda in Indonesia: an assessment of bureaucratic and judicial review mechanisms. *Sydney Law Rev* 32(2):177
- Butt S (2012) *Corruption and law in Indonesia*. Routledge, London
- Butt S, Lindsey T (2012) *The constitution of Indonesia: a contextual analysis*. Hart Publishing, Oxford
- Davies R, Mathias S, Swarbrick R, Tingay M (2011) Probabilistic longevity estimate for the LUSI Mud Volcano, East Java. *J Geological Society* 168(2):517–523
- Djalante R, Thomalla F, Sinapoy M, Carnegie M (2012) Building resilience to natural hazards in Indonesia: progress and challenges in implementing the Hyogo Framework for Action. *Nat Hazard* 62:779–803
- Government of Indonesia (2011) National progress report on the implementation of the Hyogo Framework for Action (2009–2011)
- Government of Indonesia (undated) National disaster management plan 2010–2014
- Guerin B (2006) After the tsunami, waves of corruption. *Asia Times Online*, 20 September
- Jakarta Post (2009) Officials admit poor disaster management in regions. *Jakarta Post*, 16 April 2009
- Jakarta Post (2011) Agency says Jakarta floods caused by garbage, heavy rains. *Jakarta Post*, 17 March 2011
- Jakarta Globe (2012) Indonesia falls to 33rd in world risk index on Disaster Vulnerability. *Jakarta Globe*, 12 October 2012
- Jakarta Post (2012a) Regions urged to establish disaster management agencies. *Jakarta Post*, 7 January 2012
- Jakarta Post (2012b) Lapindo still owes Rp 1 trillion. *Jakarta Post*, 18 April 2012
- James E (2008) Getting ahead of the next disaster: recent preparedness efforts in Indonesia. *Dev Pract* 18(3):424–429
- Jawa Pos (2012) Kondisi BPBD Masih Memprihatinkan. *Jawa Pos*, 16 February 2012
- Kusumasari B, Quamrul A (2012) Bridging the gaps: the role of local government capability and the management of a natural disaster in Bantul, Indonesia. *Nat Hazard* 60(2):761–779
- McMichael H (2009) The Lapindo mudflow disaster: environmental, infrastructure and economic impact. *Bull Indonesian Econ Stud* 45:73–85
- Muryanto B, Susanto S (2012) Cooperation needed in disaster risk reduction. *Jakarta Post*, 24 October 2012
- News.com.au (2009) World’s biggest recorded earthquakes. *News.com.au*, September 30 2009. <http://www.news.com.au/world-old/worlds-biggest-recorded-earthquakes/story-e6frfkyi-1225781172084>. Accessed 5 Dec 2012

- Prevention Web (undated) Indonesia – disaster statistics. <http://www.preventionweb.net/english/countries/statistics/index.php?cid=80>. Accessed 20 Apr 2013
- Samadhi TN (2013) BRR Aceh-Nias: post-disaster reconstruction governance. In: Butt S, Nasu H, Nottage L (eds) Asia-Pacific disaster management. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- UNDP and BNPB (undated) Lessons learned: disaster management legal reform – the Indonesian experience. <http://www.undp.or.id/pubs/docs/Lessons%20Learned%20Disaster%20Management%20Legal%20Reform.pdf>. Accessed 4 Dec 2012
- Wahlstrom M (2011) Disaster risk reduction and sustainable development. Jakarta Post, 19 November 2011
- Winchester S (2005) Krakatoa: the day the world exploded: August 27, 1883. HarperCollins, New York
- World Bank (2011) Disaster risk management in East Asia and the Pacific: Indonesia. <http://go.worldbank.org/2HG6ADX8H0>. Accessed 4 Dec 2012

Chapter 10

The Legal System in China and the Handling of Accidents and Disasters

Vivienne Bath

10.1 Introduction

China is prone to natural disasters. For example, in 2012, torrential rains in Beijing resulted in the deaths of 77 people¹ and earthquakes followed by floods and landslides in Yunnan Province caused substantial property damage and at least 80 deaths.² Reports on recent disasters indicate that the response to major disasters is prompt, particularly by the armed forces.³ They also show that the Chinese Government is prepared to draw on assistance from foreign governments and international organisations as well as from international and domestic non-governmental organisations.⁴ The Chinese system of disaster management is primarily administrative, and relies extensively on bureaucratic cooperation and administrative planning and coordination, much of it on an ad hoc basis. It is supported by a range of laws and legislative instruments. However these do not provide a comprehensive statement of legal roles and responsibilities or provide a clear explanation of the legal framework that should underpin disaster planning and response. A significant weakness, for example, is the lack of provision for independent external review of the operation of the system or of the conduct of government and other agencies in relation to disaster management. This chapter examines the Chinese emergency management system,

¹ Chin and Tejada (2012).

² Xinhua (2012).

³ United Nations Economic and Social Council, Economic and Social Commission for Asia and the Pacific (ESCAP); Commission on Disaster Risk Reduction (2008), pp. 5–7.

⁴ For example, the European Commission recently announced a joint European Union-China project to manage disaster risks (European Commission 2012).

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with a focus on the relationship between law and administrative structures in the preparation for and response to disasters and their consequences.

10.2 Overview of the Disaster Management System in China

10.2.1 Administrative and Governmental Structures

China has a unitary legal, judicial and administrative system, in which there are both horizontal and vertical lines of authority and responsibility. At the central government level, the National People's Congress, generally represented by its Standing Committee, is the main legislative body of the Chinese Government.⁵ The main executive body is the State Council, headed by the Premier, under which are the central ministries, commissions, state administrations, offices and other institutions.⁶ Beneath these bodies are the provincial governments, the governments of provincial level cities (Beijing, Tianjin, Chongqing and Shanghai), and the governments of the autonomous regions.⁷ Further down in the hierarchy, there are large and small municipalities, prefectures, counties and so on. All of these levels of government have important roles to play in disaster management.

The Chinese government system is unitary, not federal. However, all central and local people's congresses, as well as their administrative departments, have the power to enact legislation or issue instruments which have the force of law. At the central level, the National People's Congress and its standing committee have exclusive authority to enact laws (*falü*).⁸ The State Council issues administrative regulations (*xingzheng fagui*), which supplement and implement laws⁹ and central level ministries can also issue rules (*guizhang*).¹⁰ Provinces and large municipalities issue local regulations (*difanxing fagui*),¹¹ while local government agencies may also issue rules (*guizhang*).¹² These may be supplemented by interpretations or provisions issued by the Supreme People's Court or the Supreme People's Procuratorate.¹³ In addition, the Chinese Communist Party—despite having no formal role in the government

⁵ National People's Congress (1982) *Constitution of the People's Republic of China (Constitution)*, Art. 58.

⁶ Constitution (1982), Arts. 85, 86.

⁷ Constitution (1982), Arts. 95, 96.

⁸ Constitution (1982), Arts. 62, 67. See also National People's Congress (2000), Law of the People's Republic of China on Legislation (Law on Legislation), Art. 7.

⁹ Constitution (1982), Art. 89; Law on Legislation (2000), Art. 56.

¹⁰ Constitution (1982), Art. 90; Law on Legislation (2000), Art. 71.

¹¹ Law on Legislation (2000), Arts. 63–64.

¹² Law on Legislation (2000), Arts. 73–74.

¹³ For example, Supreme People's Court (2008).

structure other than a brief reference in the Preamble to the Constitution—plays an important role in both the development and implementation of policy.¹⁴

In addition to legislative instruments, government bodies may also issue opinions, guidelines and plans which significantly influence administrative action. This is particularly relevant in relation to emergency planning and disaster responses, which are coordinated more by plans and guidelines than by formal laws and regulations. Since there is no separation of powers in China, many of these administrative agencies play a role in preparing for and responding to emergencies. Rules, plans and guidelines issued by these agencies are often primarily directed at employees of the entity, and limited in scope to the agency's area of responsibility. The issue of inter-agency coordination across the different horizontal and vertical lines of authority is a major issue for the Chinese government generally including in the area of disaster management.

10.2.2 Legal and Administrative Structures Relating to Disaster Management

The development of legal and administrative structures for the handling of emergencies has been influenced by a series of major natural disasters, which led the Central Government to institute policy changes in the early twenty-first century. These changes included the issue of national plans and the promulgation of laws intended to widen the focus of emergency management, more clearly define the role of government, improve information flow and ensure that all phases of emergencies, including preparation and prevention are dealt with.¹⁵ The 2009 White Paper entitled *China's Actions for Disaster Prevention and Reduction*¹⁶ refers to the gradual institutionalisation of disaster reduction efforts through legislation,¹⁷ and as evidence of this effort refers to 'more than 30 laws and regulations concerning disaster prevention and reduction'.¹⁸ This list is restricted to legislation relating specifically to disasters of various kinds, including some environmental legislation. The White Paper does not, however, refer to institutional responses to issues specific to earthquake victims, or to women, people with disabilities, minorities and other vulnerable groups in its brief description of the construction of a legal framework to deal with disasters. The focus is on the immediate physical

¹⁴ See, for example, Ministry of Land and Resources (2008), Preamble, recognising the leadership of the party in earthquake relief, National Disaster Relief Committee, MAC, United Nations Development Programme (2009), p. 7.

¹⁵ Zhang (2012), p. 237.

¹⁶ Information Office of the State Council (2009). See also Zhang (2012).

¹⁷ Information Office of the State Council (2009), Part III.

¹⁸ Information Office of the State Council (2009), Part III.

and practical aspects of disaster response and this approach is replicated in the legislation which deals with emergencies, as discussed in more detail below.

Laws concerning disaster prevention and reduction can be divided into three categories: (1) laws and regulations which specifically deal with emergencies and disasters; (2) laws and regulations which include provisions relating to disasters, although they deal mainly with other issues; and (3) regulations and rules which are issued as ad hoc regulatory responses to specific disasters.

In the first category, the main law which deals with emergencies is the *Emergency Response Law of the People's Republic of China (Emergency Response Law)*, promulgated in 2007. In addition, laws such as the 1997 *Law on the Prevention and Mitigation of Earthquake Disasters* (amended in 2008) and the *Flood Control Law* (1997) deal with the handling of specific types of natural disasters.

In the second category, the *Water Law* (2002), *Meteorology Law* (1999), *Forestry Law* (1984, amended 1998), *Law on the Prevention and Control of Water Pollution* (1996, amended 2008), and other laws dealing with pollution, the environment and other areas of regulation contain provisions which relate to disasters.

In both categories, laws issued by the National People's Congress or its Standing Committee are supplemented by administrative regulations issued by the State Council. These include regulations on the role of the military in disaster relief,¹⁹ earthquake monitoring and predictions,²⁰ weather modification,²¹ and flood control.²² Thus the *Regulations on Natural Disaster Relief* issued by the State Council in 2010 supplement the very sketchy provisions of the *Emergency Response Law* on disaster relief. The *Regulations on Prevention of Meteorological Disasters*, also issued by the State Council in 2010, implement Chapter V of the *Meteorology Law of the People's Republic of China* (1999), which deals with the prevention of meteorological disasters.

In the third category, ad hoc regulations or decrees are issued by a range of different government agencies at different levels of government in response to specific emergencies. For example, in the aftermath of the Wenchuan earthquake in Sichuan Province in 2008, a range of different provisions were issued on such subjects as recovery and reconstruction,²³ donations²⁴ and deferrals of loans.²⁵

¹⁹ *Regulations on the Army's Participation in Emergency Rescue and Disaster Relief*. State Council and Central Military Commission (2005).

²⁰ See, for example, *Regulations on Administration of Earthquake Predictions* (1998) and *Regulations on Administration of Earthquake Monitoring* (2004).

²¹ *Regulations on Administration of Weather Modification* (2002).

²² *Regulations on Flood Control* (1991, amended 2005).

²³ *Regulations on Post-Wenchuan Earthquake Recovery and Reconstruction* (2008).

²⁴ *Opinions on Issues Related to the Use of Funds Donated for Earthquake Relief in Wenchuan Areas*, Ministry of Civil Affairs (2008b); *Administrative Measures for the Donations for Disaster Relief*, Ministry of Civil Affairs (2008a).

²⁵ People's Bank of China and China Banking Regulatory Commission (2008), *Notice on Policies Relating to Deferred Repayment of Loans Borrowed before Wenchuan Earthquake*.

The *Emergency Response Law* sets out the overall legal framework for the prevention of, the preparation for, and the handling of emergencies, as well as for post-emergency rehabilitation in relation to the four types of emergency listed in the law. An emergency is defined as a natural disaster, calamitous accident, public health incident or public security incident which occurs abruptly, may cause serious social harm, and necessitates the adoption of measures to handle the situation.²⁶ The wide definition of emergency is a result of the poor government response to the severe acute respiratory syndrome (SARS) epidemic in 2003, which drew to the attention of the Central Government the need to have appropriate mechanisms in place to deal with epidemics as well as natural disasters.²⁷

The *Emergency Response Law* deals with the prevention of emergencies and the preparation of responses to emergencies; monitoring and early warning; emergency handling, relief and rescue; post-emergency rehabilitation; and reconstruction. The law also contains provisions creating legal liability for acts or omission of government officials, enterprises and private citizens.

Natural disasters, calamitous accidents and public health accidents are classified into four grades of severity (pursuant to standards set by the State Council or a designated department), based on the degree of social harm and repercussions. The emergency response system, as described in Article 4, is characterised by a system of unified leadership, integrated coordination, management of emergencies by their classification, responsibility by level of government, and, above all, territorial jurisdiction. The nature and extent of the emergency determines the level of government which is responsible for responding. The State Council takes charge of responses to especially serious emergencies, with ultimate power to declare a state of emergency in the hands of the Standing Committee of the National People's Congress or the State Council.²⁸

Article 8 of the *Emergency Response Law* requires each local government to establish a 'command' for emergency response. This is comprised of leaders of the Government, relevant government departments and the local Army and Armed Police units stationed in the locality. The command leads and coordinates response efforts, subject to guidance from competent departments at higher levels. However, Article 9 provides that the State Council and local people's governments at or above county level are the leading administrative organs for responses. Thus, the command is an essentially ad hoc response to an immediate crisis.

Under the principle of territorial jurisdiction, local government is primarily responsible for emergency responses, with citizens, enterprises and other organisations also required to participate.²⁹ Local government must take measures which are commensurate with the social harm caused, but in doing so is required to choose, where possible, measures that protect the rights and interests of citizens and

²⁶ *Emergency Response Law*, Art. 3.

²⁷ Zhang (2012), p. 237.

²⁸ *Emergency Response Law*, Arts. 7, 8, 69.

²⁹ *Emergency Response Law*, Art. 11.

enterprises. No further guidance is provided to local government on how to make these decisions.³⁰ Special authority is granted to local government to requisition property on a temporary basis pursuant to Article 12, but the property must be returned in a timely manner or compensation must be paid for damage or loss.

The role of the People's Liberation Army (PLA) and the People's Armed Police in participating in emergency response commands, and in rescue, relief and handling is recognised in the legislation.³¹ The relationship between civil and military authorities is clarified by the 2005 *Regulations on the Army's Participation in Emergency Rescue and Disaster Relief*, which set out the scope of the army's involvement and the process for requesting its assistance in rescue and other operations.³² A focus of these regulations is the financial aspect of the army's involvement. Article 13 specifies that the costs are to be borne by the State treasury, or by the relevant local government. According to the *Emergency Response Law*, foreign governments and international organisations may also assist, although the provisions referring to them are very general in their terms.³³

The *Emergency Response Law* is fairly general in its terms. Primarily, it requires the establishment of systems and plans to ensure an immediate response to emergencies. The law also imposes responsibilities, mainly on local governments, to monitor sources of danger, prepare for emergencies and take post-emergency actions.³⁴ These obligations are set out in general terms, presumably to allow for a high degree of administrative flexibility. However, notwithstanding the principle of territorial jurisdiction (that is, the delegation of responsibility to lower level governments on the basis of their local expertise), the law creates a planning structure which is essentially top-down. Under Article 17, the State Council is responsible for both formulating the overall precautionary plans to respond to national emergencies, and compiling special plans to respond to specific emergencies. Procedures for making and modifying specific precautionary plans are also formulated by the State Council.³⁵

Departments of the State Council, local people's governments and their relevant departments make local plans on the basis of the laws, regulations, rules and precautionary plans.

There are five country-wide plans for dealing with different types of disasters, issued under the auspices of the State Council. These include plans to deal with Disaster Reduction (1998); Unexpected Public Emergencies (2005); Natural Disasters (2006) and Earthquakes (2006). The National 11th Five-Year Plan on Comprehensive Disaster Reduction was issued in 2007.³⁶

³⁰ *Emergency Response Law*.

³¹ *Emergency Response Law*, Arts. 8, 14. For a description of the role of the PLA, see Liao (2012).

³² Issued in 2005 jointly by the State Council and the Central Military Commission.

³³ *Emergency Response Law*, Art. 15.

³⁴ *Emergency Response Law*, Art. 20.

³⁵ *Emergency Response Law*, Arts. 17, 37. The *Opinions of the General Office of the State Council on Strengthening the Emergency Response Management at the Grassroots Level* were issued just before the *Emergency Response Law* was passed.

³⁶ Tan et al. (2011).

As noted above, provincial and local authorities are also required to prepare emergency plans. In addition, government ministries and departments issue plans to deal with particular contingencies within their areas of responsibility. Examples include the plans created under the 2011 *Administrative Measures for Emergency Response to the Market Supply of Necessities of Life*, issued by the Ministry of Commerce, and the 2008 *Provisions on the Expressway Traffic Emergency Management Procedures*, issued by the Ministry of Public Security. Post-disaster reconstruction and recovery plans should also be formulated in response to specific disasters. For example, in the aftermath of the Wenchuan earthquake, the Central Government issued plans relating to reconstruction, including the *Overall Plan for Post-Earthquake Wenchuan Recovery and Reconstruction* and the *Town/City System Plan for Post-Wenchuan Recovery and Reconstruction*.³⁷ The result, however, is that there are a large number of emergency plans of different kinds in effect around China.

The *Emergency Response Law* sets out only very general guidelines as to what precautionary and response plans should cover. They are, however, intended to be comprehensive. Article 18 states that a precautionary plan should specify the organisational structure and responsibilities of the command responsible for responding to emergencies; mechanisms for prevention and early warning relating to emergencies; procedures for dealing with emergencies; emergency safeguard measures and measures for post-emergency rehabilitation and reconstruction.

As contemplated in the legislation, therefore, the plans are primarily designed to prescribe the administrative structure and response to disasters. Further insight can be obtained into the responsibilities of the relevant level of government from other provisions of the *Emergency Response Law*. For example, Articles 44 and 45 require relevant government departments to launch the emergency plan, collect information, monitor the emergency, mobilise response teams, assemble rescue materials, guarantee public safety, and inform the public of steps to avoid or mitigate damage.

The *Emergency Response Law* does not identify specific government departments which bear responsibility for emergency response although, as indicated above, the State Council is the administrative body responsible for disaster management pursuant to Article 8. The White Paper refers to the following specialist central organs which act ‘under the unified leadership of the State Council’: the National Disaster Reduction Committee; the State Flood and Drought Control Headquarters; the State Earthquake Control and Rescue Headquarters; the State Forest Fire Control Headquarters; and the National Disaster Control and Relief Coordination Office.³⁸ The National Disaster Reduction Committee, which coordinates overall disaster response, including relief work, information dissemi-

³⁷ Issued by the Planning Committee of Post-Wenchuan Earthquake Restoration and Reconstruction in 2008, and by the China Academy of Urban Planning and Design in 2008. See Ge et al. (2010).

³⁸ Information Office of the State Council (2009), Art. III.

nation, assistance to victims, consultation with and coordination of assistance to local governments, is based within the Ministry of Civil Affairs.³⁹ The Ministry of Civil Affairs issues rules and regulations on disaster-related issues—including donations for disaster relief and the creation of pilot disaster reduction communities.⁴⁰ The National Disaster Reduction Committee itself has only a small permanent staff who engage in policy research, disaster monitoring and disaster coordination.⁴¹ In case of an emergency, the full Committee is convened. It includes representation from 36 different agencies, including central government ministries, the Red Cross and the army.

At the local level, the provincial government is the highest administrative agency and should establish an emergency management office, although much of the work is performed by the Civil Affairs Bureau, the Finance Bureau, the army and other departments such as Public Safety, Housing and Construction.⁴² Efforts have also been made to improve disaster preparedness and responses at the grass-roots (or lower) level. The potentially conflicting delegations of responsibility to so many different bodies—when combined with the many different horizontal and vertical lines of authority relating to disaster preparedness and response—present significant practical issues.

10.3 Effectiveness of the System and Responsiveness of Authorities

Assessments of the government response and the re-organised system for handling emergencies reflected in the *Emergency Response Law* and the White Paper show that there are significant strengths in the operation of the disaster response management in China. Government authorities have made improvements to the system in the aftermath of major emergencies. For example, in the case of the Wenchuan earthquake, a report by the United Nations (UN) Economic and Social Council, Economic and Social Commission for Asia and the Pacific (ESCAP) commended the rapid response by the army, police and Government; the participation of international search and rescue teams and medical teams, and the receipt of substantial donations from both domestic and international donors.⁴³

³⁹ See summaries in Chai (2012), slide 8; Yan and Bao (2011), pp. 2, 4.

⁴⁰ *Administrative Measures for the Donations for Disaster Relief* (2008a); *Interim Measures on the Creation and Establishment of Whole Country Comprehensive Disaster Reduction Pilot Communities* (2012).

⁴¹ Ge et al. (2010), p. 19.

⁴² Yan and Bao (2011), p. 2; Ge et al. (2010), p. 19.

⁴³ United Nations Economic and Social Council, Economic and Social Commission for Asia and the Pacific (ESCAP): Committee on Disaster Risk Reduction (2008), pp. 5–7.

The report also praises the management of technology to provide maps and reports and telecommunications assistance. Zhang notes that authorities had learnt from previous experiences—information about the earthquake was passed to relevant authorities promptly and the seriousness of the situation was recognised early. The scope of the emergency was swiftly upgraded and the Central Government quickly took control of the rescue and relief operation.⁴⁴ A study comparing post-disaster reconstruction in Indonesia (post-tsunami) and Wenchuan (post-earthquake)⁴⁵ comments favourably on guidelines established in China under the *Overall Plan for Post-Earthquake Wenchuan Recovery and Reconstruction*,⁴⁶ and the establishment of a twinned assistance program, which provided financial support and created a cohesive framework for reconstruction work. The plan focussed on the introduction of economic incentives, counterpart assistance from other areas of China and the consideration that was given to the interests and sensitivities of minority groups in the affected area through the repair and restoration of historic buildings.⁴⁷ The Government organised and monitored procurement and construction, ensuring that rebuilding was prompt and professional.⁴⁸ In particular, the Central Government's ability to mobilise financial resources to assist in rescue and recovery greatly assisted reconstruction.⁴⁹

The Wenchuan earthquake also, however, exposed significant weaknesses in the disaster management system, some of which have since been addressed. Changes made include the establishment of rescue teams including representatives from local authorities and professional search and rescue team members; emphasising the implementation of emergency plans through training exercises; prioritising preparation and warning systems and implementing routine disaster education.⁵⁰ The Government, mainly at the central level, has improved monitoring of potential hydrological, geological and earthquake disasters. Regular central and local government meetings to improve disaster preparedness are held routinely.⁵¹ Emergency response operations have reportedly become faster and more efficient.⁵²

The Chinese government also responded to the Wenchuan earthquake by attempting to strengthen the legislative framework in relation to disaster management. The promulgation of the *Emergency Response Law* was followed by the 2008 *Law of the People's Republic of China on the Prevention and Mitigation of*

⁴⁴ Zhang (2012), p. 240.

⁴⁵ Chang et al. (2012); see also Pandey (2012), p. 81.

⁴⁶ State Council (2008).

⁴⁷ Ge et al. (2010), p. 21.

⁴⁸ Chang et al. (2012), pp. 13–14.

⁴⁹ Tan et al. (2011).

⁵⁰ Zhang (2012), pp. 241–242.

⁵¹ United Nations Economic and Social Council, Economic and Social Commission for Asia and the Pacific (ESCAP): Committee on Disaster Risk Reduction (2008), p. 15.

⁵² Zhang (2012), p. 243.

Earthquake Disasters,⁵³ *Regulations on Natural Disaster Relief and Regulations on Prevention of Meteorological Disasters*,⁵⁴ *2010 Interim Measures for the Administration of Contingency Plans for Environmental Emergencies*, *2011 Measures for the Reporting of Information Pertaining to Environmental Emergencies*,⁵⁵ and *2011 Administrative Measures for Emergency Response to the Market Supply of Necessities of Life*,⁵⁶ as well as a range of regulations and rules issued by the central ministries and local governments. All levels of government have formulated or revised emergency plans.⁵⁷

10.4 Structural Issues

The legislative and administrative structure governing disaster management in China presents a number of issues—both conceptual and practical. The first of these relates to government structures. As noted above, emergency responses in China are essentially handled by commands which are established at various levels of government on an ad hoc basis and required to operate pursuant to the precautionary plan. Local authorities cannot, however, look for guidance or assistance to a single substantial permanent emergency response unit.⁵⁸ Different entities are responsible for different types of emergencies. For example, floods are handled by the State Flood Control and Drought Relief Headquarters (under the Ministry of Water Resources), while the State Earthquake Resistance and Rescue Headquarters deals with earthquakes.⁵⁹ The inclusion of public security incidents in the *Emergency Response Law* (for which the army, the police and the People's Armed Police are primarily responsible) also detracts from the law's focus on disaster management. As the number and intensity of 'mass incidents' in China continues to increase, the resources dedicated to public security issues—an estimated US\$95 billion in the 2011 budget—are set to surge.⁶⁰

As Yan and Bao note,⁶¹ in dealing with emergencies, the Chinese administrative system requires coordination on horizontal and vertical levels. Thus coordination is required between local governments on the same level; between the State Council and local governments; between ministries and bureaux on the same level, and between central Ministries and provincial or local bureaux with the same

⁵³ Standing Committee of the National People's Congress (2008).

⁵⁴ State Council (2010a, 2010b).

⁵⁵ Ministry of Environmental Protection (2010, 2011).

⁵⁶ Ministry of Commerce (2011).

⁵⁷ For example, see China Daily (2012).

⁵⁸ Zhang (2012), p. 243.

⁵⁹ Shi et al. (2007), p. 9.

⁶⁰ Lam (2011); see also Wang (2012).

⁶¹ Yan and Bao (2011).

responsibilities (for example, the Ministry of Public Security and a provincial public security bureau). This contributes to the complexity of the overall system and clearly creates the potential for disputes between different government agencies, particularly in relation to funding and the allocation of resources.

The system operates on the basis of top-down management of disasters, with the Central Government leading plans, responses, coordination and finance, even though under the *Emergency Response Law* local governments have been ordered to plan and respond more actively to emergency situations. Indeed, orders from the centre to increase grassroots involvement⁶² with the aim of developing community involvement in emergency responses are highly prescriptive in tone and do not allow local authorities much discretion. Commentators argue that this top-down manner of organisation leads to passivity at the local level in disaster response.⁶³ Zhang notes that this problem is reflected in the compilation of local response plans, which tend to replicate higher level plans rather than being formulated at a local level in response to local conditions and risks.⁶⁴

10.4.1 *Disadvantaged Groups*

The *Emergency Response Law* and other laws and regulations relating to emergencies and disasters do not, on the whole, refer to laws or policies in other fields. Legal requirements on the development and implementation of disaster management plans, for example, do not refer to Chinese laws relating to women, minorities or people with disabilities and China's disaster response has been criticised for its inadequate attention to the special needs of these groups, and for inadequate consideration of the disparate impact of reconstruction policies.⁶⁵ The flexibility afforded to the administrative branch of government to formulate plans and respond quickly to emergencies leaves little space for mechanisms to ensure that China's own laws and policies on disadvantaged groups, the environment and so on are fully taken into account.

For example, in 2009, the UN Development Programme (UNDP) office in China published two reports on the Wenchuan earthquake—the first with the National Disaster Reduction Committee (NDRC) (entitled *Research Report on Disaster Rescue and Relief in Wenchuan Earthquake*),⁶⁶ and the second with the China

⁶² General Office of the State Council (2007), *Opinions on Strengthening the Emergency Response Management at the Grassroots Level*; Ministry of Civil Affairs (2012), *Interim Measures on the Creation and Management of Whole Country Comprehensive Disaster Reduction Pilot Communities*.

⁶³ Yan and Bao (2011).

⁶⁴ Zhang (2012), p. 243.

⁶⁵ United Nations Development Programme and China Law Society (2009).

⁶⁶ National Disaster Reduction Committee, MAC, United Nations Development Programme (2009).

Law Society (entitled *Assessment on Legal Issues in Earthquake Stricken Areas*).⁶⁷ The first report focused entirely on the physical and administrative aspects of response, rescue and recovery. It did not mention the impact of the earthquake on particular groups or victims. The second report dealt primarily with post-disaster reconstruction and looked in detail at the issues presented for disadvantaged groups by the reconstruction process and the ability of the legal system adequately to protect the rights of women, the disabled and other vulnerable groups. Thus the report outlines the administrative policies which prioritise children, the elderly and people with disability in rescue and resettlement,⁶⁸ but also highlights problems with the administrative management of the disaster, and the failure of law and policy to mitigate its effects on women and other vulnerable groups, who are often disproportionately affected by natural disasters for a number of reasons.⁶⁹ For example, women and other vulnerable groups were given no voice in policy-making in the aftermath of the Wenchuan earthquake although there were many matters which directly affected them. These included basic issues such as the supply of feminine products, such as women's sanitary items, and legal issues such as protection of women's rights in relation to the receipt of poverty relief, and protection of their interests in land reallocation. Other issues with a particular impact on women included 'fake' divorces (resulting from government policies that provided additional benefits to sole parents) and the provision of *in vitro* fertilisation or other services for parents wanting children after losing their children in the earthquake. A related issue was the question of providing jobs for people with disabilities, on which relief plans placed little emphasis.⁷⁰

Non-government organisations (NGOs) and UN agencies have since commenced projects specifically designed to assist women and other vulnerable groups in earthquake recovery. However, this has not remedied the disenfranchisement of these groups in the immediate aftermath of the earthquake, which occurred notwithstanding national laws offering them equal treatment and protection.⁷¹

10.4.2 Legal Support

A related issue is the role of the courts and the legal system in disaster management, particularly during the reconstruction period. The Supreme People's Court has played a relatively limited, but nevertheless important, role in the emergency context. For example, after the Wenchuan earthquake, the courts and court administration helped facilitate death declarations, which were important in dealing with

⁶⁷ United Nations Development Programme and China Law Society (2009).

⁶⁸ United Nations Development Programme and China Law Society (2009), p. 5.

⁶⁹ Trohanis et al. (2011).

⁷⁰ United Nations Development Programme and China Law Society (2009).

⁷¹ United Nations Development Programme (2009).

issues of succession, particularly when bodies could not be located.⁷² Similarly, lawyers and judicial officials provided some legal aid to persons requiring assistance, although it has been argued that the provision of legal aid was inadequate in view of the number of people who needed legal advice and assistance.⁷³

The experience in the aftermath of the Wenchuan earthquake indicates, however, that there is a need for consideration to be given to the rapid resolution of legal problems. Problems arising after the Wenchuan earthquake included entitlement to aid, pensions, compensation and possible claims against the Government or other persons. Victims needed not just legal aid, but an appropriate and efficient mechanism to clarify the terms of rules and policies which had a major impact on persons affected by disasters.⁷⁴ The power of the Supreme People's Court to issue interpretations could have been used to assist in this regard. A further legal issue relates to the right and the ability of victims to bring administrative or criminal claims against governments or government officials for negligence or malfeasance in relation to natural disasters rather than relying on government compensation payments. In this regard, the courts and the legal system have been far from helpful, as discussed in more detail below.

10.4.3 *Non-government Organisations*

The top-down nature of governmental response to disasters arguably excludes or marginalises NGOs, notwithstanding their importance being recognised by the public and in the *Emergency Response Law*.⁷⁵ Traditionally, the Chinese Government has tended to be ambivalent in relation to NGOs and is torn between suspicion of the independence of NGOs and acceptance that NGOs play a useful role in relation to the collection of donations for disaster relief. This results in a failure to utilise fully the resources and expertise of NGOs in responses to disasters.⁷⁶ However, the Government has shown an increased recognition that NGOs can play a useful role and a willingness to allow local and international NGOs to participate in disaster reconstruction.⁷⁷ Participation is thus permitted not only through contribution of aid money, but also through programs to provide livelihood, legal and other assistance to affected communities.⁷⁸

⁷² Supreme People's Court (2008), *Notice on Lawfully Accomplishing the Civil Trial and Enforcement during the Period of Earthquake Relief, Disaster Relief, Recovery and Reconstruction*.

⁷³ United Nations Development Programme and China Law Society (2009), pp. 21–23.

⁷⁴ United Nations Development Programme and China Law Society (2009), pp. 33–34.

⁷⁵ Feng (2009), p. 7.

⁷⁶ Feng (2009), pp. 243–244; Tan et al. (2011) and Yin (2009).

⁷⁷ Ge et al. (2010), p. 19.

⁷⁸ United Nations Development Programme (2009).

10.5 Accountability

A fundamental issue in relation to disaster management in China is the question of the accountability of government and government officials in respect of actions and omissions which may have caused or contributed to disasters and in relation to acts taken in the course of disaster management. To what extent are the victims of disasters, or the relatives of the dead or injured, entitled to take legal action in respect of malfeasance or neglect by government officials or others? Is the public entitled to full disclosure in regard to the causes and effects of disasters?

The Chinese legal system imposes accountability upon government officials in a number of ways—first, through the administrative system which regulates officials, and secondly through provisions in the laws governing emergencies and disasters which impose legal liabilities on government units and officials, as well as private enterprises and persons, and relevant provisions of the criminal law. For example, a recent report refers to the forthcoming trial of the party chief of Mianyang Normal University for taking bribes and payments during the reconstruction period after the Wenchuan earthquake.⁷⁹

The 2009 *Interim Provisions on the Implementation of Accountability of Leaders and Cadres of the Party and the Government*, issued by the General Office of the CPC Central Committee and General Office of the State Council, provide for investigation and punishment of leading Party cadres or government officials who have engaged in various kinds of malfeasance or dereliction of duty. Penalties for cadres or officials range from formal apologies, to removal from office.⁸⁰ Public accountability is provided to some extent by the requirement that decisions under the Provisions should generally be made public.⁸¹ In the context of disaster management, the Provisions specifically include mishandling ‘a mass incident or emergency, which has resulted in the deterioration of the situation and baneful influences’.⁸² The Provisions have reportedly been utilised to punish officials for such acts as illegal land seizures.⁸³ One issue, however, is that under the Provisions, punishment can be imposed primarily for acts of malfeasance rather than omissions. This is likely to perpetuate the problems inherent in the emergency response structure, which encourage local authorities and officials to wait for orders from above before taking action.

The Provisions operate in conjunction with Party rules and with the *Administrative Supervision Law*,⁸⁴ which deals with investigation and punishment of all government officials. The *Administrative Supervision Law* provides specifically

⁷⁹ Choi (2013).

⁸⁰ General Office of the CPC Central Committee, General Office of the State Council (2009), Art. 7.

⁸¹ General Office of the CPC Central Committee, General Office of the State Council (2009), Art. 20.

⁸² General Office of the CPC Central Committee, General Office of the State Council (2009), Art. 5(5).

⁸³ China Daily (2012).

⁸⁴ Standing Committee of the National People’s Congress (2010).

for the involvement of the public in making complaints and providing information relating to misconduct or malfeasance.⁸⁵ The supervisors appointed under the law are also required to report publicly on their work.⁸⁶

In both cases, the main problem from the perspective of the public and victims is that the investigation of malfeasance, the final determination and the imposition of punishment are all internal to the bureaucratic or Party system, with action instituted by, and penalties imposed from within, the bureaucracy or Party.

The *Emergency Response Law* and other laws dealing with disasters impose liability upon governments, government departments, persons directly in charge, and persons directly responsible for various acts. These acts include, for example, failing to take the required preventative measures, thus causing an emergency; failing to give the alarm; misappropriating rescue funds and so on.⁸⁷ These offences apply not just to governments and officials but also to ‘related units’, which face suspension of their business licences for failure to take preventative measures, to organise emergency rescues, to remove hidden dangers, or adequately to perform routine maintenance.⁸⁸ These offences are, however, formulated in very general language, with the exception of provisions relating to misappropriation of funds. The decision in relation to prosecution or punishment is made by the relevant government authorities, not by the victims or other affected persons.

In view of the focus in the relevant legislation on internal action, an important component of accountability is the availability of information to the public and victims, through the media or the internet, and publicity. In principle, the Chinese state supports open government, including in relation to emergencies. The 2007 *State Council Regulations on the Disclosure of Government Information* explicitly require the publication of emergency plans, and information on the distribution and use of emergency funds.⁸⁹ In contrast, Article 54 of the *Emergency Response Law* provides that ‘no unit or individual shall fabricate or disseminate false information on the development or handling of an emergency’. Although the purpose of this provision is to deal with false rumours, it also has the potential to allow authorities to use the provision to suppress critics, or to prevent the release of information criticising the government response. The drafting and content of this clause was very controversial, for exactly this reason.⁹⁰ Its potential for use in the suppression of information is illustrated by reports that at least 12 people were detained in China in April 2013 for spreading ‘false information’ about the spread of H7N9 (bird flu) in China, although it is not clear whether they were detained pursuant to Article 54.⁹¹

⁸⁵ Standing Committee of the National People’s Congress (2010), Art. 6.

⁸⁶ Standing Committee of the National People’s Congress (2010), Art. 27.

⁸⁷ *Emergency Response Law*, Art. 63.

⁸⁸ *Emergency Response Law*, Art. 64.

⁸⁹ *Emergency Response Law*, Arts. 10, 11 and 12.

⁹⁰ Duan et al. (2007), Bandurski (2007), and Xinhua (2007).

⁹¹ Weekly Times Now (2013).

In addition, officials who are criticised in the aftermath of a disaster do not necessarily welcome their exposure to public commentary. One example was the public commentary on the preparation and response of the Beijing Government to heavy rains, which resulted in floods that killed more than 70 people. Steps were quickly taken by government authorities to silence the discussion.⁹²

A frequently cited example of the failure of the Chinese system to provide accountability to victims is the difficulties experienced by the parents of children killed in their classrooms during the Wenchuan earthquake when their schools collapsed. The parents were unable to obtain information on school construction, or an explanation for the collapse of the buildings. It was suggested that the schools were poorly built, and that the planning process was deficient because of local government negligence or corruption. However, attempts to obtain redress through legal means were unsuccessful due to the refusal of the courts to accept cases; the complaining parents were silenced by the authorities and activists who attempted to pursue the matter were charged and imprisoned themselves.⁹³ An internal review process is not necessarily a substitute for an open legal process and the firm steps taken to close down the public debate strongly suggest that none of the various mechanisms intended to ensure the availability of information or provide for those whose conduct caused or exacerbated the effect of a natural disaster to be made accountable to victims and the public were effective.

10.6 Conclusion

Considerable work has been put into improving and shaping the preparedness for and responses to emergencies in China over the last 10 years. The focus of reform has been on practical responses to disasters, primarily under the direction and leadership of the Central Government—which has promptly coordinated and responded to disasters by involving the army and other arms of the Government, and using its superior financial resources. Serious attempts have been made to improve preparedness, particularly by engaging lower levels of government in disaster response, resulting in significant improvements in responses to natural disasters.

However, there are systemic weaknesses in the legal framework supporting the disaster response system to which the government should turn its attention. In summary, the system imposes responsibility on local authorities, but response planning is driven and controlled from the centre. Secondly, notwithstanding detailed provisions in the administrative plans, responses to specific disasters are essentially ad hoc, and local authorities are not able to rely on support from a substantial permanent disaster management body. Thirdly, the many different

⁹² Shi (2012), Li (2012) and Wang (2012).

⁹³ Branigan (2008) and The Economist (2009).

agencies and levels of government with responsibility over different aspects of emergency response present a significant problem in coordination. The legal framework, which does not provide a clear allocation of administrative responsibility or establish a permanent body other than the State Council with the final authority to make decisions, does not provide an adequate answer. Fourthly, the law fails to set out clear principles or criteria to be observed in establishing disaster precautionary or response plans. Lower level authorities are given a great deal of responsibility, but the actual amount of autonomy they have in preparing appropriate responses is unclear. Fifthly, the emphasis on practical responses means that the legal regime does not make clear that whole-of-government policies such as the protection of women, minorities and the disabled must be reflected in planning. The important question of environmental damage and sustainability, for example, is given only lip service on the *Emergency Response Law*. Finally, the system does not provide for a mechanism of independent review or for a method by which victims or members of the public can make government or government officials accountable for their actions or omissions in relation to disasters.

References

- Bandurski D (2007) China's emergency response law quietly takes the stage, targets "fake information". In: China Media Project. <http://cmp.hku.hk/2007/09/03/602/>. Accessed 20 Nov 2012
- Brangan T (2008) Suffer in silence. The Guardian, 26 August 2008. <http://www.guardian.co.uk/world/2008/aug/26/chinaearthquake.china>. Accessed 20 Nov 2012
- Chai M (2012) Natural disaster management in China. Presented at the Symposium on Humanitarian Coordination in Asia and the Pacific, 9–11 May 2012. <http://www.the-ecentre.net/resources/workshop/materials/349/P.R.CHINA%20CIVIL%20AFFAIRSpdf.pdf>. Accessed 20 Nov 2012
- Chang Y, Wilkinson S, Potangaroa R et al (2012) Resourcing for post-disaster reconstruction: a comparative study of Indonesia and China. *Disaster Prev Manag* 21(1):7–21
- Chin J, Tejada C (2012) Beijing raises flooding death toll. The Wall Street Journal, 27 July 2012. <http://online.wsj.com/article/SB10000872396390443931404577550721627514422.html>. Accessed 20 Nov 2012
- China Daily (2012) System working to hold violators. China.org.cn, 18 October 2012. http://www.china.org.cn/china/2012-10/18/content_26829237.htm. Accessed 20 Nov 2012
- Choi CY (2013) Official faces trial over 11m Yuan in kickbacks in Sichuan quake projects. South China Morning Post, 12 April 2013
- Duan H, Ye D, Wang B et al (2007) China's emergency response law draws controversy. *Caijing Magazine*. <http://english.caijing.com.cn/2006-07-10/100014029.html>. Accessed 20 Nov 2012
- European Commission (2012) The EU and China launch joint project for managing disaster risks. http://europa.eu/rapid/press-release_IP-12-608_en.htm?locale=en. Accessed 20 Nov 2012
- Feng H (2009) Disaster management in China. Paper presented at the consortium of non-traditional security studies in Asia 3rd Annual Conference, Singapore. <http://www.rsis-ntsasia.org/activities/conventions/2009-singapore/Han%20Feng.pdf>. Accessed 20 Nov 2012
- Ge Y, Gu Y, Deng W (2010) Evaluating China's national post-disaster plans: The 2008 Wenchuan Earthquake's recovery and reconstruction planning. *Int J Disaster Risk Sci* 1(2):17–27

- Information Office of the State Council (2009) China's actions for disaster prevention and reduction. Xinhuanet news, 5 May 2011. http://news.xinhuanet.com/english/2009-05/11/content_11351284.htm. Accessed 20 Nov 2012
- Lam W (2011) Beijing's blueprint for tackling mass incidents and social management. China Brief 11 (5):3–5. [http://www.jamestown.org/programs/chinabrief/single/?tx_ttnews\[tt_news\]=37696&tx_ttnews\[backPid\]=25&cHash=ea32c96b432552f2f027619725a91714](http://www.jamestown.org/programs/chinabrief/single/?tx_ttnews[tt_news]=37696&tx_ttnews[backPid]=25&cHash=ea32c96b432552f2f027619725a91714). Accessed 20 Nov 2012
- Li R (2012) Newspaper flood report upsets city officials. South China Morning Post, 7 August 2012. <http://www.scmp.com/article/1014196/newspaper-flood-report-upsets-city-officials>. Accessed 20 Nov 2012
- Liao D (2012) A review of the key legal dynamics of Chinese Military Involvement in Domestic Disaster Relief (MI/DDR). J Homeland Secur Emerg Manag 9(1), Article 12
- National Disaster Reduction Committee, MAC, United Nations Development Programme (2009) Research Report on Disaster Rescue and Relief in Wenchuan. <http://www.undp.org.cn/modules.php?op=modload&name=News&file=article&catid=18&topic=60&sid=44456&mode=thread&order=0&thold=0>. Accessed 20 Nov 2012
- Pandey SN (2012) The Chinese disaster management mechanism. J Defence Stud 6(1):44–58
- Shi J (2012) Beijing party boss Guo Jinlong a populist politician who's star is rising. South China Morning Post. <http://www.scmp.com/print/news/china/article/1041840/beijing-party-boss-guo-jinlong-populist-politician-whos-star-rising>. Accessed 20 Nov 2012
- Shi P, Liu J, Yao Q et al (2007) Integrated disaster risk management of China. Paper presented at the 1st conference organised under the Auspices of the OECD International Network on the Financial Management of Large-Scale Catastrophes, Hyderabad, 26–28 February 2007. <http://www.oecd.org/insurance/insurance/38120232.pdf>. Accessed 20 Nov 2012
- Tan NT, Huang Y, Wang L (2011) Disaster management in China and Taiwan models, policies, and programs for social recovery. J Global Social Work Pract 4(1). <http://www.globalsocialwork.org/vol4no1/Tan.html>. Accessed 20 Nov 2012
- The Economist (2009) Salt in their wounds: bereaved partners treated like criminals. The Economist, 14 May 2009. <http://www.economist.com/node/13650027>. Accessed 20 Nov 2012
- Trohanis ZE, Svetloskova Z, Carlsson-Rex H (2011). Making women's voices count in natural disaster programs in East Asia and the Pacific. <https://openknowledge.worldbank.org/handle/10986/10091>. Accessed 20 Nov 2012
- United Nations Development Programme (2009) Listening to the voices of the vulnerable group. Early Recovery & Disaster Risk Management Project in China Newsletter. <http://www.un.org.cn/public/resource/11d79842054c8180c0b6cff861a84760.pdf>. Accessed 20 Nov 2012
- United Nations Development Programme, China Law Society (2009) Assessment on legal issues in earthquake stricken area. <http://www.undp.org.cn/downloads/cpr/1.pdf>. Accessed 20 Nov 2012
- United Nations Economic and Social Council, Economic and Social Commission for Asia and the Pacific (ESCAP): Committee on Disaster Risk Reduction (2008) Implementation of the Hyogo Framework for Action in Asia and the Pacific – case study: the national disaster management system of China and its response to the Wenchuan Earthquake. http://www.unescap.org/idd/events/cdr-2009/CDR_2E.pdf. Accessed 20 Nov 2012
- Wang Y (2012) A failure of priorities. Caixin Online. http://english.caixin.com/2012-10-22/100450518_1.html. Accessed 20 Nov 2012
- Weekly Times Now (2013) China targets bird flu rumours. Weekly Times Now. http://www.weeklytimesnow.com.au/article/2013/04/11/566395_world-news.html. Accessed 15 Apr 2013
- Xinhua (2007) Draft emergency response law bans false information on accidents. People's Daily Online, 27 June 2007. http://english.people.com.cn/200706/25/eng20070625_387300.html. Accessed 20 Nov 2012
- Xinhua (2012) Death toll from SW China quakes rises to 81. Xinhuanet News, 10 September 2010. http://news.xinhuanet.com/english/photo/2012-09/10/c_131839459_5.htm. Accessed 20 November 2012

- Yan Z, Bao Z (2011) Chinese disaster management institutional framework: problems and suggestions for improvement: angle of inter-governmental relationships. Presented at the 2011 international conference on E-Business and E-Government, Tianjin Finance and Economic University, Tianjin, 6–8 May 2011. http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=5882556&tag=1. Accessed 20 Nov 2012
- Yin DZ (2009) China's attitude towards foreign NGOs. *Washington Univ Global Stud Law Rev* 8:521
- Zhang H (2012) What has China learnt from disasters? Evolution of the emergency management system after SARS, Southern Snowstorm, and Wenchuan Earthquake. *J Comp Policy Anal* 14 (3):234–244

Documents and Materials

- General Office of the CPC Central Committee, General Office of the State Council (2009) *Interim Provisions on the Implementation of Accountability of Leaders and Cadres of the Party and the Government*
- General Office of the State Council (2007) *Opinions of the general office of the State Council on strengthening the emergency response management at the grassroots level*
- Ministry of Civil Affairs (2008a) *Administrative Measures for Donation for Disaster Relief*
- Ministry of Civil Affairs (2008b) *Opinions of the Ministry of Civil Affairs on Issues Related to the Use of Funds Donated for Earthquake Relief in Wenchuan Areas*
- Ministry of Civil Affairs (2012) *Interim Measures on the Creation and Management of Whole Country Comprehensive Disaster Reduction Pilot Communities*
- Ministry of Commerce (2011) *Administrative Measures for Emergency Response to the Market Supply of Necessities of Life*
- Ministry of Environmental Protection (2010) *Interim Measures for the Administration of Contingency Plans for Environmental Emergencies*. Huan Fa, No. 113
- Ministry of Environmental Protection (2011) *Measures for the Reporting of Information Pertaining to Environmental Emergencies*
- Ministry of Land and Resources (2008) *Decision on Commending Those Units and Individuals Who Participated in the Emergency Examination of Geological Hazards in Earthquake Relief*
- Ministry of Public Security (2008) *Provisions on the Expressway Traffic Emergency Management Procedures*
- National People's Congress (1982) *Constitution of the People's Republic of China*
- National People's Congress (2000), *Law on Legislation of the People's Republic of China*
- People's Bank of China, China Banking Regulatory Commission (2008) *Notice of the People's Bank of China and the China Banking Regulatory Commission on Policies Relating to Deferred Repayment of Loans Borrowed before Wenchuan Earthquake*
- Standing Committee of the National People's Congress (1984) *Forestry Law of the People's Republic of China*
- Standing Committee of the National People's Congress (1996) *Law of the People's Republic of China on Prevention and Control of Water Pollution*
- Standing Committee of the National People's Congress (1997a) *Flood Control Law of the People's Republic of China*
- Standing Committee of the National People's Congress (1997b) *Law on the Prevention and Mitigation of Earthquake Disasters*
- Standing Committee of the National People's Congress (1999) *Meteorology Law of the People's Republic of China*
- Standing Committee of the National People's Congress (2002) *Water Law of the People's Republic of China*

- Standing Committee of the National People's Congress (2007) *Emergency Response Law of the People's Republic of China*
- Standing Committee of the National People's Congress (2008) *Law of the People's Republic of China on the Prevention and Mitigation of Earthquake Disasters*
- Standing Committee of the National People's Congress (2010) *Law of the People's Republic of China on Administrative Supervision*
- State Council (1991) *Regulations of the People's Republic on Flood Control*
- State Council (1998) *Regulations on Administration of Earthquake Predictions*
- State Council (2002) *Regulations on Administration of Weather Modification*
- State Council (2004) *Regulations on Administration of Earthquake Monitoring*
- State Council (2007) *Regulations of the People's Republic of China on the Disclosure of Government Information*
- State Council (2008) *Regulations on Post-Wenchuan Earthquake Recovery and Reconstruction*
- State Council (2010a) *Regulations on Natural Disaster Relief*
- State Council (2010b) *Regulations on Prevention of Meteorological Disasters*
- State Council, Central Military Commission (2005) *Regulations on the Army's Participation in Emergency Rescue and Disaster Relief*
- Supreme People's Court (2008) *Notice on Lawfully Accomplishing the Civil Trial and Enforcement during the Period of Earthquake Relief, Disaster Relief, Recovery and Reconstruction*

Chapter 11

The Slow Road to Recovery: A City Rebuilds Under the *Canterbury Earthquake Recovery Act 2011*

Elizabeth Toomey

11.1 Introduction

A major natural disaster will always capture worldwide attention, and the devastating earthquakes in the Canterbury region of New Zealand in 2010 and 2011 were no exception. As more recent tragedies subjugate memories of collapsing buildings and tragic deaths, the citizens of the stricken region have begun the long slow road to recovery. The whole Christchurch central business district (CBD) requires rebuilding, approximately 7,000 property owners have been forced to leave their homes, land must be found and developed urgently to provide housing, and frustrations over insurance and compensation payouts abound.

The recovery is underpinned by the *Canterbury Earthquake Recovery Act 2011* (NZ) (*CER Act 2011*), the broad purposes of which include a timely recovery and the restoration of the greater Christchurch communities' 'social, economic, cultural and environmental well-being'.¹ The earliest stages of recovery have largely been completed.² The *CER Act 2011* required the development of a long term Recovery Strategy for the reconstruction, rebuilding and recovery of the region,³ and this has been finalised.⁴ A further statutory mandate is the development of Recovery Plans⁵ and, while these will continue to be developed as communities are rebuilt, the draft

¹ *CER Act 2011*, s 3.

² For academic commentary on the introduction of the *CER Act 2011* and its predecessor, the *Canterbury Earthquake Response and Recovery Act 2010*, see Orpin and Pannett (2010), Robertson (2010), Knight (2010), Wilberg (2011), Forbes (2011), Palmer (2011), and Toomey (2012b).

³ Sections 11–15.

⁴ See www.cera.govt.nz/recovery-strategy, accessed 26 October 2012.

⁵ Sections 16–26.

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CBD plan was submitted to the Minister for Earthquake Recovery (the Minister) in December 2011. This led to the establishment of a special unit, the Christchurch Central Development Unit (CCDU) within the Canterbury Earthquake Recovery Authority (CERA).⁶ The task of the CCDU was to develop a 100-day blueprint for the central city that would provide certainty designed to encourage and support investors. The blueprint, released on 31 July 2012, identifies areas of land in the CBD on which anchor projects and precincts will be developed. Its implementation requires government acquisition of approximately 761 privately-owned lots.

This chapter provides a snapshot of progress approximately 2 years into the 5-year life of the *CER Act 2011*.⁷ It investigates well-publicised litigation that tests the extent of the Minister's powers, describes the powers of acquisition and the true effect of the CBD blueprint, and assesses the realities of land zoning. It starts, however, at the true heart of the city. CERA's demolition order against the Christchurch Cathedral will be remembered as a low point in this journey.

11.2 Powers to Demolish, Remove or Dispose of Buildings: The Emotive Pull of the Christchurch Cathedral

Section 38 of the *CER Act 2011* enables CERA to carry out or commission works that include erection, reconstruction, placement, alteration, extension, demolition, removal and disposal of all or any part of buildings and structures.⁸ Such works may be undertaken on or under public or private land, and with or without the consent of the owner or occupier.⁹ While the *CER Act 2011* states that these powers do not override any requirements for the necessary resource consents or building consents, any such requirement can be varied by Orders in Council made under the Act.¹⁰

The Crown is not liable to compensate the owner or any tenant or other occupier when a dangerous building¹¹ is demolished.¹² However, compensation does accrue when a non-dangerous building is demolished in order to demolish a dangerous building or for any other reason, or when negligent physical loss or damage is caused to other property as a result of demolition.¹³

⁶ The references to CERA in this chapter include references to the chief executive of CERA.

⁷ The *CER Act 2011* expires on 18 April 2016.

⁸ *CER Act 2011*, ss 38(1) and (2).

⁹ Section 38(5).

¹⁰ Section 38 (5), (6).

¹¹ A 'dangerous building' has the same meaning as in the *Building Act 2004*, s 121, but with the modifications made by the Canterbury Earthquake (Building Act) Order 2010, cl 7(1).

¹² *CER Act 2011*, s 40.

¹³ Sections 40, 41.

11.2.1 The Christchurch Cathedral: The Demolition Notice and the Church Property Trustees' Powers

Many s 38 notices have been issued. Perhaps the most disturbing, and certainly the most well-known, was the notice issued on 28 October 2011 to the Church Property Trustees (CPT), referred to in this chapter as the CPT, which holds the Christchurch Cathedral in a trust capacity. CERA advised that it had determined that the Cathedral, damaged progressively by the original earthquakes and major aftershocks, was dangerous in terms of the *CER Act 2011*. Under s 38(4), notice was given that the building was to be demolished to the extent necessary to remove the hazards. The CPT was given 10 calendar days from the date of receipt of the notice to advise CERA whether it intended to undertake the demolition of the building and, if so, when it intended to complete the work.

Subsequently, the CPT advised that it would undertake the work necessary to make the Cathedral safe. On 1 March 2012, the CPT made the following resolution:

Further to the receipt of the Section 38 notice from CERA, the 23 December events and subsequent assessments and review, it is with great regret and sadness that the Church Property Trustees resolve that the Christchurch Cathedral is to be partially deconstructed and partially demolished with great care and respect down to a level of approximately 2–3 metres to meet the required safety of an un-propped site. This will allow safe retrieval of taonga and heritage items to the extent possible.

Apart from deconstruction of what remained of the tower, no major steps had been taken to implement this decision when the decision itself was challenged in court. The Cathedral is registered as a Category 1 heritage building by the New Zealand Historic Places Trust. This is the highest listing available. It is also listed as a Group 1 building in the Christchurch City Council's District Plan and that listing reflects the significance of the Cathedral to the Christchurch community.

11.2.2 The Great Christchurch Buildings Trust v Church Property Trustees: Attempts to Stall the Order

The applicant in *The Great Christchurch Buildings Trust v Church Property Trustees*¹⁴ is an unincorporated charitable trust. Its objectives include the preservation of buildings damaged in the Canterbury earthquakes. In its application for judicial review, it alleged, inter alia, that CPT's decision to demolish down to a level of 2–3 m ('sill level') was in breach of the trusts upon which it holds the

¹⁴*The Great Christchurch Buildings Trust v Church Property Trustees* [2013] 2 NZLR 230 (HC).

Cathedral. This chapter addresses only that ground,¹⁵ and the consequent effect of the s 38 notice.

11.2.2.1 Was the CPT in Breach of the Trusts?

The core of the argument presented by the Great Christchurch Buildings Trust, referred to in this chapter as the BT, is portrayed in a passage within submissions presented on its behalf:

...the purpose of the trusts is to maintain and repair the Cathedral at Cathedral Square in order that it continues to be a place for church services and other activities. The decision of the trustees to deconstruct the Cathedral defeats that central purpose of the trusts. It is therefore unlawful.¹⁶

The CPT denied the allegations strongly, claiming that it had:

... done its utmost to act as a responsible trustee having received a notice from CERA requiring the demolition of the Cathedral building to the extent necessary to make the building safe. Furthermore, the CPT understands its duties as trustee of the Cathedral to use the property as a wise and faithful steward in furthering the purposes of the ecclesiastical institution.¹⁷

The High Court traced the relevant historical background and legislative framework and this is summarised briefly. In 1851, the Canterbury Association declared that specific lands, including Cathedral Square, were to be held on trust for the establishment and maintenance of ecclesiastical and educational institutions. While the CPT interpreted this deed as the founding document of the trust upon which the Cathedral is held today, the BT argued that this trust was overtaken in 1858 by a specific trust and was therefore largely irrelevant. The CPT's reliance on this deed was the foundation for its argument that the trust on which the Cathedral is held is for the advancement of religion rather than for the advancement of a building,¹⁸ and it could therefore make a decision to demolish the building.

The Court disagreed. It held that that trust did not reflect the trust on which the Cathedral is held by the CPT today. Clause 4 of the Cathedral Square Ordinance 1858 records that the Cathedral site was preserved by the Provincial Council:

... as a site for the erection of a Cathedral in connection with the Church of England, which site shall be conveyed to the Bishop of Christchurch and his Successors, to be held, in trust, for the uses as aforesaid of the Church of England in the said Province.¹⁹

¹⁵ The Court also considered and confirmed that the BT had the necessary standing to bring this proceeding ([62]–[80]) and that the decision was amenable to judicial review ([81]–[96]).

¹⁶ At [4].

¹⁷ At [5].

¹⁸ At [97].

¹⁹ At [103].

The Court considered that the wording of the Ordinance provided a clear indication that the trust was to be for ‘the erection of a Cathedral. . . in the sense of bricks and mortar (subject, of course, to a spiritual dimension)’.²⁰ Thus, an express trust for the erection of a Cathedral was declared in 1858.

This was confirmed in the Cathedral Square Ordinance in 1864 and the trust was complete when the land was transferred to the Bishop (which the Court took as being synonymous with the subsequent transfer to the CPT). It was inherent in the arrangement that the land was to be held by the CPT on that trust indefinitely. The Court confirmed that nothing in the *Anglican (Diocese of Christchurch) Church Property Trust Act 2003* (NZ)²¹ altered the fundamental terms of the Cathedral trust. In particular for the purposes of these proceedings, it did not authorise deconstruction of the Cathedral other than for the purpose of repair or rebuilding, nor did it reflect a legislative intention that the Cathedral as it stood before the earthquakes must be preserved indefinitely (an argument presented by the BT).²²

In essence, the Court rejected the CPT proposition that the Cathedral is currently held on an open-ended trust for the advancement of religion or for the maintenance of the ecclesiastical institution. The trust was established for the purpose of erecting a Cathedral on the site, and once erected, the CPT had a continuing obligation to ensure that there is a Cathedral on the site. As to the latter point, the Court considered that, should the Cathedral be severely damaged (as it has been), unless the terms of the Cathedral trust are varied, either the structure that remains will have to be repaired or it will have to be replaced by another Cathedral. In the absence of one of those steps, the whole purpose of the trust would be defeated.

11.2.2.2 The s 38 Notice Issued by CERA

The CPT claimed that it had no other option but to comply with the s 38 notice issued by CERA. The only way it could do that was by adopting the second of three possible options as that was the option approved by CERA. The three ‘make-safe’ options, considered at a meeting on 20 February 2012 between Holmes Consulting Resource Co-ordination (the CPT’s engineers), the Historic Places Trust and CERA comprised:

1. Option 1: maximum retention—this would retain most of the walls in place by the insertion of interior steel shoring systems;
2. Option 2: deconstruction of the building to sill level;
3. Option 3: an intermediate option involving stabilising the eastern end and deconstructing the western end.

²⁰ At [105].

²¹ This Act repealed the *Church Property Trust (Canterbury) Act 1879*.

²² The decision considers carefully various provisions of the *Anglican (Diocese of Christchurch) Church Property Trust Act 2003*—in particular its purpose (s 3), the status of the Church Property Trustees (s 5) and its function (s 6) and powers (s 7 and Schedule 1); the effect of secondary trusts (s 19), and the variation of trusts under the *Anglican Church Trusts Act 1981*.

As reflected in the above discussion, the BT favoured Option 1, as did the Historic Places Trust. The CPT favoured Option 2. Although CERA expressed reservations about Options 1 and 3, it considered that Option 2 was ‘a feasible option and could be done safely’.²³

After the CPT made its decision on 1 March 2012, the BT approached the CPT suggesting both parties work together with a network of engineers and other advisors to restore the Cathedral. In June 2012 Holmes Consulting met with the trustees of the BT and the following month the Holmes Consulting deconstruction methodology was supplied to an Independent Engineering Review Panel (the Panel) commissioned by the BT. The Panel was unanimous in its view that the Cathedral could be restored without using Option 2. It considered that once the Cathedral was reinstated under Option 1, it would meet or exceed the New Zealand Building Code requirements for a building of Importance Level 3. A copy of the Panel’s report was provided to the CPT but Holmes Consulting did not consider Option 1 to be its preferred option and the CPT was advised accordingly. In early August 2012 the CPT informed the BT that it was not prepared to adopt Option 1. Lack of any resolution led to the proceedings.

The BT argued that the s 38 notice only required the Cathedral to be partly demolished to the extent to make it safe and therefore Option 1 (advanced by the Panel) should be fully explored.

The Court had a short answer to the problem. The CPT’s decision was incomplete, rather than unlawful. The fundamental omission was the absence of any formal commitment by the CPT to repair or replace the Cathedral. During the proceedings, counsel for the CPT indicated that the CPT did intend to rebuild the Cathedral on the same site (an action that would eliminate any breach of the trust) but no such formal resolution was put before the Court. This omission could not be attributed to the CERA notice and, in any event, the Court was not persuaded that the CERA notice meant that the CPT *had* to make the decision that it did.

11.2.2.3 The Result

The Court concluded that it should exercise its discretion in favour of granting relief. It granted the application for judicial review and the decision of the CPT was stayed until further order of the Court. The proceedings were adjourned to allow the CPT to submit within a tight timeframe a memorandum or memoranda after reconsidering the matter in terms of a number of factors that included ensuring that the purposes of the trust were honoured, lodging a formal commitment to rebuild the Cathedral on the site, addressing insurance issues; and obtaining CERA’s view about the Panel’s alternative method of achieving Option 1.

²³ At [34].

As this chapter goes to print, the Court of Appeal in *The Great Christchurch Buildings Trust v Church Property Trustees*²⁴ dismissed an appeal from this High Court decision. It considered that the Judge correctly interpreted the Cathedral Trust and there was no basis for its intervention.

11.3 Land Acquisition Powers and Red Zone Woes

More generally, the *CER Act 2011* gives both the Minister and CERA extensive powers with respect to both real and personal property.²⁵ The discussion in this section is confined to powers relating to real property. An examination of the wide effects of these powers is the subject of a discrete paper.²⁶

11.3.1 Background

The extent of the authorities' powers over Christchurch landowners must be put in context. This necessitates a brief overview of New Zealand's earthquake insurance scheme and Canterbury's earthquake zoning policies.

11.3.1.1 Earthquake Insurance

For any New Zealander who insures his or her buildings, insurance premiums include a low-level premium for earthquake damage. This premium entitlement does not apply to land and the Canterbury earthquakes dealt a cruel blow to landowners who owned bare land, although some partial payments have been offered to offset the financial loss. The earthquake premium is collected by the Earthquake Commission (EQC), a government-owned entity originally established in 1945 to provide earthquake and war damage cover for purchasers of fire insurance. Subsequently, cover for natural disasters was included and, later still, cover for war damage ceased. This Natural Disaster Fund, called upon over the years for isolated small disasters, faced its first major challenge when the Canterbury earthquakes hit. A whole region of dwelling owners lodged claims against it.

In an attempt to limit its exposure, EQC adopted the stance that it was only responsible for one single big event, not a series of earthquakes. This was challenged successfully by the insurance industry. At the time of writing, EQC will be approximately NZ\$1.6 billion short for the Canterbury earthquake claims and this will be

²⁴ *The Great Christchurch Buildings Trust v Church Property Trustees* [2013] NZCA 331.

²⁵ *CER Act 2011*, ss 52–67.

²⁶ Toomey (2012a).

covered by Government guarantee.²⁷ Part of EQC's efforts in settling claims has been the apportionment of the amount of damage between earthquakes and aftershocks, and this has slowed its progress. By the end of June 2012, EQC had repaired approximately 18,000 properties, leaving a balance of approximately 80,000²⁸—a statistic that is testing the patience of many property owners.

11.3.1.2 Canterbury Zoning

In the Canterbury earthquakes, land damage manifested itself in two particular ways: liquefaction and lateral spreading,²⁹ and significant rockfall. A comprehensive zoning map for residential land was drawn up. Each property was assigned a colour: green, red, orange and white. The green zone (land deemed suitable for repairs and rebuilding) was further divided into three technical categories: TC1 (Grey)—future land damage from liquefaction unlikely; TC 2 (Yellow)—minor to moderate land damage possible from future earthquakes; and TC3 (Blue)—moderate to significant land damage possible in future earthquakes and any rebuilding must not commence before site-specific geothermal investigations and specific engineering designs are carried out.

Land in the red zone is deemed unsuitable for continued residential occupation for a prolonged period of time. The criteria for defining areas as residential red zone comprise:

- (a) Significant and extensive area-wide land damage;
- (b) Uncertainty of any likely engineering solutions;
- (c) The extent to which any repair would be too disruptive and protracted for landowners.

Both the orange zone (land that awaited allocation to a green or red category) and the white zone (land where further investigation was to be undertaken) have now been redesignated either green or red.³⁰

11.3.2 Acquisition of Red-Zoned Residential Property

Significant tracts of land are zoned red. Section 53(1) of the *CER Act 2011* states that '[t]he chief executive may, in the name of the Crown, purchase or otherwise acquire, hold, exchange, mortgage, lease, and dispose of land and personal property'.

²⁷ Earthquake Commission (2012).

²⁸ See www.eqc.govt.nz, accessed 20 October 2012.

²⁹ 'Soil liquefaction' is a phenomenon whereby a saturated soil loses strength and stiffness in response to an applied stress, usually an earthquake, causing it to behave like a liquid. This results in lateral spreading.

³⁰ For a map indicating the zoned areas, see <http://cera.govt.nz/maps>, accessed 21 February 2013.

Pursuant to this provision, owners of insured residential property in the red zone receive an offer from the Crown to buy their property. They have one of two options:

1. The purchase price paid for the property is based on the most recent rating valuation of the land and buildings, and the Crown takes over all insurance claims for the damage to the property; or
2. The purchase price paid for the property is based on the most recent valuation for the land; the Crown takes over the owner's EQC claim for land damage for the land; and the owner retains the benefit of all insurance claims for the damage to his or her buildings and continues to deal with EQC and the insurer to settle those claims.

While these offers have no compulsory element, the reality of not accepting either is harsh. It is likely that the Council will not, at least in the medium future, install new services or issue building or resource consents in a red-zoned area. Moreover, insurers will not repair or rebuild any red-zoned properties, and may also cancel or refuse to renew insurance policies.³¹

CERA also has the power to acquire the land compulsorily. In that case, the purchase price will be significantly lower. At the time of writing, approximately 7,000 contracts have been signed, a mixture of both options. The sensitive issue of relocating displaced homeowners comprises part of the challenge to the Minister's powers under the *CER Act 2011* (see Sect. 11.4.3 in this chapter).

Unless the Crown chooses to hold any of this acquired red-zone land for a public work, the displaced property owners are not entitled to receive an offer-back of the land should the Crown decide to dispose of the land in the future.³² If the Crown does declare the land to be set apart for a government work in terms of the *Public Works Act 1981*(NZ) (*PWA 1981*), the normal offer-back procedures apply.³³

11.3.2.1 Appeal Rights and Insurance Issues

Initially, the Crown declared that there were no appeal rights against zoning decisions. Subsequently, this stance was relaxed and limited appeals were allowed.

It appears that it is the intention of both the local and central government that there will be no rebuilding in the red-zone areas. This policy has led to a fraught insurance issue for those red-zoned owners whose houses suffered some physical damage due to the earthquakes, but were not so substantially damaged to qualify as a total loss that would oblige the insurer under a normal insurance policy to replace, or pay for the replacement, of the entire dwelling. Most insurers have concluded that the insured loss is only the actual physical damage to the property and EQC is adopting a similar approach. Of course, this is a fictional repair as the houses can no longer be occupied. The financial disadvantage to those homeowners is indisputable.

³¹ Webb (2012).

³² *CER 2011*, s 53 (2), (3). Sections 40–42 of the *PWA 1981* will not apply.

³³ Section 53(4), (5) and (6). *CER Act 2011*, s 53(4), (5) and (6). For detailed commentary on ss 40–42 *PWA 1981*, see Toomey (1996, 2001, 2007).

One insurance law expert considers this approach incorrect.³⁴ Webb considers the possible insurance clauses in a typical insurance policy and examines carefully the effect of four possible terms: ‘loss’, ‘physical loss’, ‘damage’ or ‘physical damage’. With respect to the first three terms, he concludes that, subject to an occasional qualification, there is a strong argument that the insured owner has suffered a total loss and should qualify for full reinstatement or replacement. The fourth term, ‘physical damage’, requires proof of actual physical damage and, in a carefully reasoned argument, Webb concludes that the insurer’s obligation under this head is limited to the actual physical damage to the house.

11.3.3 *The CBD Blueprint*

The blueprint for the CBD was released on 31 July 2012. It identifies areas of land that will be used for the development of anchor projects and precincts. The projects include a convention centre, Cathedral Square, a justice and emergency services precinct, a metro sports hub, a multi-purpose sports stadium, and a performing arts and music precinct. The CBD area will be surrounded by green-space frames.³⁵

Approximately 761 private ownership lots are affected and any land or building that does not fit within the scheme will be acquired either by CERA or by the Minister. Pursuant to s 53 of the *CER Act 2011* (above), CERA is negotiating with affected landowners.

The process is different from that of the residential red-zone. The negotiations are simply the price for which the Crown will take the land, buildings included. While the Christchurch community adjusts to the concept of a large-scale government land acquisition, progress on this front is gradual. However, the mandate in the *CER Act 2011* is to provide a ‘focused, timely, and expedited recovery’.³⁶ In November 2012, the first notices of intention to take the land compulsorily were given.

11.3.4 *Compulsory Acquisition*

Under s 54 of the *CER Act 2011*, the Minister may acquire land compulsorily by causing a notice of intention to take the land in the name of the Crown to be published in the Gazette and twice publicly notified.³⁷ There are detailed provisions for adequate information, service, lodgment requirements with the Registrar-General of Land and notice expiry.³⁸ There is no right of objection to a notice of

³⁴ Webb (2012). This chapter provides only a brief summary of this detailed opinion that canvasses considerable case law on the terms.

³⁵ For a map of the CBD blueprint, see <http://ccdu.govt.nz/the-plan>, accessed 21 February 2013.

³⁶ *CER Act 2011*, s 39(d).

³⁷ Section 54(1)(a).

³⁸ Section 54(2), (3), (4), (6) and (7).

intention to take land.³⁹ The Governor-General may, on the recommendation of the Minister, by proclamation declare the land to be taken in the name of the Crown (s 55(4)) and that proclamation must be registered (s 56). If land is compulsorily acquired under s 55, the Crown succeeds to all rights, entitlements, and benefits that the owner has or may have against:

- (a) The insurer of the land; or
- (b) The insurer of any building or other property on the land.

Any residential land in the CBD, or any land in the greater Christchurch outside the CBD that is acquired compulsorily, must be first offered back to the person from whom it was acquired (or that person's successor) if CERA wishes to dispose of the land. Certain qualifications, similar to those under the *PWA 1981*, apply.⁴⁰ The notable omission is, of course, commercial land in the CBD that is compulsorily acquired. CERA is not obliged to first offer this land back to the original owner, and this right to not offer back goes beyond the well-accepted parameters of the *PWA 1981*.

11.3.5 Compensation and Appeal Rights

The compensation provisions in the *CER Act 2011* apply if the land has been compulsorily acquired.⁴¹ Section 61 of the *CER Act 2011* defines the meaning of compensation as compensation for actual loss, but excludes a number of factors including any economic or consequential loss. Compensation for compulsorily claimed land is determined as at the date of acquisition (*CER Act 2011* s 64(2)(a)). For owners of CBD property, this is a controversial issue. No-one denies the difficulty of deciding exactly what a piece of property is worth 'on the day' in a devastated CBD where demolition of 70 % of the buildings is still being undertaken, but it seems that property owners' expectations are unrealistic. This mandate naturally colours the 'willing buyer, willing seller' negotiations that CERA hopes will stave off the necessity for compulsory acquisition. Simply put, if no agreement is reached, the land will be acquired compulsorily—there is no other choice. By early December 2012, the Crown had signed off to buy the first three commercial properties. One owner signed over his apartment block site for less than half its registered valuation after his valuer told him to 'get a reality check' on its worth.⁴²

³⁹ Section 54(5).

⁴⁰ Section 58.

⁴¹ Section 60. Under this provision, compensation is also payable under ss 40 (demolition of non-dangerous building) and 41 (damage to other property caused by demolition of a building) of the Act.

⁴² Wright and Greenhill (2012).

Under s 69(1)(a) of the *CER Act 2011*, a claimant has a right to appeal against a determination of compensation under s 64 ('Minister determines compensation'). There is no right to appeal the taking of the land.⁴³

11.3.6 Red-Zoned Commercial CBD Landowners and Tenants: The Threshold of Untenantability

The plight of landlords and tenants of commercial properties in the red zone has raised many issues that fall outside the conditions in normal tenancy agreements. This section looks at a robust decision that highlights the ambiguities of clauses that survive perfectly well in a tranquil environment, but weaken considerably in the event of a natural disaster.

In *GP 96 Ltd v FM Custodians Ltd*,⁴⁴ the plaintiff was the commercial tenant of a five level building located within the CBD that provided economy level accommodation by way of 110 rooms. Up to 220 guests, both long and short term, could be accommodated. Significant parts of the building were sub-let. The plaintiff took an assignment of the lease on 23 July 2010, approximately nine and a half months after it had been struck. The lease was for a term of 6 years from 6 October 2009 and there were two rights of renewal, each for a period of 6 years. The rental was NZ \$520,000 annum.

Although the building was damaged in the first earthquake (4 September 2010), the hotel operation resumed after the cordon was lifted, albeit on a reduced scale. However, more damage was suffered when the further earthquake occurred on 22 February 2011. The Court categorised the damage as minor structural damage and moderate cosmetic damage. Along with all other buildings in the CBD, the building was evacuated and, apart from brief entry into the building on several occasions, at the time of this decision (24 May 2011) it had not been occupied since. The building was within the red zone from which the public was excluded.

The plaintiff sought an interim injunction preventing the defendant from taking any further steps in connection with a purported termination of the lease of the premises. The defendant was a trustee for the mortgagee and appeared to be acting as a mortgagee in possession.⁴⁵ It strongly opposed the application.

⁴³ For further discussion, see Toomey (2012a).

⁴⁴ *GP 96 Ltd v FM Custodians Ltd* (2011) 12 NZCPR 489.

⁴⁵ The Court considered the status of the mortgagee ([18]–[23]) but this aspect of the decision is beyond the scope of this chapter.

11.3.6.1 The Lease

Two clauses in the plaintiff's lease concerned damage and destruction to the premises: total destruction (cl 26.1) and partial destruction (cl 27.1). In terms of untenability, this decision focuses on cl 26.1(a). It stated:

26.1 If the premises or any portion of the building of which the premises may form part shall be destroyed or so damaged
 (a) as to render the premises untenable then the term shall at once terminate;
 . . .

On 7 April 2011, the defendant's solicitors wrote to the plaintiff with four directives, the third of which stated:

Pursuant to clause 26.1(a) of the lease, the lease terminated at 12.51 pm on 22 February 2011 when, due to the earthquake that occurred at that time, the premises became so damaged as to be untenable.

11.3.6.2 Did the February 2011 Earthquake Render the Premises Untenable?

The Court considered three reported decisions on 'untenability', none of which related to the consequences of a natural disaster. There is very little judicial comment on the noun.

In *DFC NZ Limited v Samson*,⁴⁶ a fire gutted the storeroom behind a shop. The damage was largely confined to the storeroom and the back of the shop. The lease was for 6 years. Although it was anticipated that repairs would take 3 weeks, they actually took ten.

The High Court held that the property was untenable as there had been substantial interference with the tenant's ability to enjoy, use and operate, particularly as this concerned a commercial premises. In the Court's view, the word 'untenability' in clause 26 meant 'nothing more or less than able to be used and enjoyed by a tenant',⁴⁷ and cl 26(a) involved some degree of permanence. The Court of Appeal disagreed. It considered while there was a delay in effecting the reinstatement, the initial assessment of time to repair—3 weeks—in the context of a lease for a 6 year term, meant that the damage was of a 'merely transitory or temporary nature'.⁴⁸ The appeal was allowed.

In *Russell v Robinson*,⁴⁹ a case that also concerned clause 26(1)(a), the first floor of a property that was leased for 4 years (with one right of renewal, the term of which was not apparent) was extensively damaged by fire just after the lease

⁴⁶ *DFC NZ Limited v Samson Corporation Limited* (1993) ANZ ConvR 481 (HC); and, on appeal, *DFC NZ Limited v Samson Corporation Limited* (1994) ANZ ConvR 216 (CA).

⁴⁷ *DFC NZ Limited v Samson Corporation Limited* (1993), p. 492.

⁴⁸ *DFC NZ Limited v Samson Corporation Limited* (1994), p. 228.

⁴⁹ *Russell v Robinson* (HC Auckland CIV-2010-404-5992, 1 April 2011, Priestly J).

commenced. The premises were not reinstated until 10 months after the fire. The Court, upholding a lower court's decision, considered that the property was untenable with the result that the lease had terminated validly:

I consider that, for the purposes of clause 26.1(a), the word "untenable" is an objective state to be determined on the specific relevant facts. Certainly, the focus of the inquiry must be whether the premises are capable of being tenanted by the lessee, who in terms of a lease went into the premises for a specific purpose and for a specific term. The tenant's purpose is inextricably tied with the permitted use of the premises.⁵⁰

The third decision, *Doherty v Orman*,⁵¹ canvassed the proposition that untenability necessarily involves consideration of whether a hypothetical tenant looking to lease the premises would take a lease. The Court did not consider anything could be derived from this approach. It is the lease between the relevant parties that should be considered.

The Court then turned to the facts at hand. It began by making some observations about clause 26.1(a) of the lease. It considered that the focus of the provision is on the damage to the building and the implications in terms of tenability:

It is an objective test which reflects that the clause is for the benefit of *both* parties. Before the building can be untenable there needs to be some degree of permanence and something that is merely transitory or temporary will not be enough. All relevant facts need to be taken into account including the purpose of the lease, the duration of the lease, the extent of the damage, and estimated time for repairs before occupancy can be resumed. If the building is rendered untenable the lease will automatically terminate.⁵²

The Court did not accept the defendant's claim that the two rights of renewal should not be taken into account in determining the life of the lease. The Court considered that it would be unrealistic to ignore a feature of the lease (in total, an 18-year term) that was of such importance to the parties.

The Court also rejected the submission that because the red zone cordon was not likely to be removed for quite some time (at least to the end of 2011) the premises must be untenable. It refused to consider this on the ground that, if it did agree with the submission, the widespread use of clause 26.1 in leases in New Zealand would have very significant implications in Christchurch. Many leases within the 'red zone' would probably be terminated automatically, with the result that lessors or lessees would be able to walk away. This would create 'commercial chaos'.⁵³ Moreover, the Court considered that the evidence about the likely delay before repair was unsatisfactory and there was therefore no basis upon which to consider the red zone issue.

⁵⁰ At [28].

⁵¹ *Doherty v Orman* (1878) 3 App Cas 709.

⁵² *GP 96 Ltd v FM Custodians Ltd* (2011) 12 NZCPR 489, at [31].

⁵³ At [36].

The Court accepted engineers' evidence that repairs might span 15.4 weeks. It held that in the context of a lease with 16 and a half years still to run (taken from the date of the decision), a period of 15.4 weeks did not indicate an element of permanence. It would be more accurately categorised as transitory or temporary. The Court further noted that even if the matter were approached on the basis that the red zone cordon would not be lifted for a further 7 months and therefore business could not resume before that time, this would still not alter the situation in the context of a lease with potentially such a long period still to run. The Court considered it clear that the plaintiff had an arguable case that the building was not rendered untenable in terms of clause 26.1 by the February earthquake.

The Court also quickly disposed of an argument that the doctrine of frustration could apply to leases.⁵⁴ It saw no reason for it being invoked in these circumstances. The parties to the lease elected their own mechanism for resolving what happens when there is damage to the building or it is destroyed (clauses 26 and 27) and, for that reason, the parties had made no provision for a force majeure. The lease governed the situation and there was no room for frustration.⁵⁵

11.4 The CER Act 2011 and the Resource Management Act 1991: Purposes, Powers and Limitations

The *Resource Management Act 1991* (*RMA 1991*), New Zealand's fundamental environmental and planning legislation, has been described as 'the first in the world to internalise the concept of sustainability as a defined and enforceable core obligation within a comprehensive integrated resource management structure'.⁵⁶

11.4.1 The Overriding Powers of the CER Act 2011

The *RMA 1991* is an influential statute. Nonetheless, the *CER Act 2011* has substantial overriding powers considered necessary in Canterbury's emergency environment. This 'meddling' with the *RMA 1991* is not taken lightly.

⁵⁴ See *Stack Shelf Company Number 16 Limited v Mathers* (HC Rotorua CP 31/90, 6 March 1991, Fisher J).

⁵⁵ While the Court dismissed the concept of frustration quickly, academics were undertaking extensive research in this area to establish if, indeed, the concept might apply. For more general discussion, see Nottage (1997a, b, 2007).

⁵⁶ Taylor and Grinlinton (2011).

11.4.1.1 Recovery Plans

Under the *CER Act 2011*, once a Recovery Plan has been notified in the *Gazette*, any person exercising functions or powers under the *RMA 1991* must not make a decision or recommendation that is inconsistent with the plan on any of the following matters under the *RMA 1991*:

- (a) An application for a resource consent for a restricted discretionary,⁵⁷ discretionary, or non-complying activity (whether or not the application was first lodged after the Recovery Plan was gazetted);
- (b) A notice of requirement (whether or not the notice was given after the Recovery Plan was gazetted);
- (c) An application to transfer a resource consent under section 135,⁵⁸ 136,⁵⁹ or 137;⁶⁰
- (d) An application to change or cancel the conditions of a resource consent under section 127;⁶¹
- (e) A review of a resource consent under section 128;⁶²
- (f) The preparation, change or variation of an RMA document under Schedule 1.⁶³

Despite anything to the contrary on Part 5 of the *RMA 1991* ('Standards, policy statements and plans'), a council must amend an *RMA 1991* document if a recovery plan so directs,⁶⁴ without using the process in Schedule 1 of the *RMA 1991* or any other formal process.⁶⁵ Nothing in s 85 of the *RMA 1991* ('Compensation not payable in respect of controls on land') applies in respect of any amendment to an *RMA 1991* document under this directive to amend.

In respect of any application for a resource consent for any activity specified in a recovery plan, nothing in s 88A(1A) of the *RMA 1991* applies.⁶⁶ Section 88A (1A) of the *RMA 1991* states that if an application for resource consent has been made and the type of activity for which the application was made has been altered subsequently, the application should continue to be processed, considered and decided as an application for the type of activity that it was for at the time the application was first lodged.

⁵⁷ Section 23(4) states that for the purposes of an application for a resource consent for a restricted discretionary activity, the recovery plan is a matter over which discretion is restricted and *RMA 1991*, s 87A(3) applies accordingly.

⁵⁸ *RMA 1991*, s 135: 'Transferability of coastal permits'.

⁵⁹ Section 136: 'Transferability of water permits'.

⁶⁰ Section 137: 'Transferability of discharge permits'.

⁶¹ Section 127: 'Change or cancellation of consent condition on application by consent holder'.

⁶² *RMA 1991*, s 128: 'Circumstances when consent conditions can be reviewed'.

⁶³ *CER Act 2011*, s 23.

⁶⁴ *CER Act 2011*, s 24.

⁶⁵ Section 21(2). To avoid doubt, nothing in s 32 ('Consideration of alternatives, benefits or costs') or the *RMA 1991*, sch 1, applies to action under s 24.

⁶⁶ Section 25. Section 25(2) makes it clear this provision applies in relation to any matter before the Environment Court or any further appeals while the *CER Act 2011* is in force.

11.4.1.2 Suspending Amending or Revoking *RMA 1991* Documents or *RMA 1991* Activities

The Minister may, by public notice, suspend, amend or revoke the whole or any part of, inter alia, an *RMA 1991* document insofar as it relates to any area within greater Christchurch (s 27(1)(a)).

The Minister may, by public notice, suspend or cancel, in whole or in part any of the following for an activity within the greater Christchurch area: a resource consent; any use protected under ss 10,⁶⁷ 10A⁶⁸ or 10B⁶⁹ of the *RMA 1991*; or any certificate of compliance under the *RMA 1991*. If practicable, the Minister must notify any affected parties by giving them an appropriate written notice.⁷⁰ If a resource consent is cancelled or revoked, in whole or in part, CERA has discretion to direct that the holder of the consent remains liable for performing any of the conditions under the consent and for retaining the whole or part of any bond paid under the *RMA 1991*.⁷¹ No compensation is payable under the *CER Act 2011* in respect of any of these actions.⁷²

11.4.2 A Challenge to the Interface of Both Statutes

In the early stages of the earthquake recovery process, it became very clear that the red-zoning policy would create a land shortage. Attempts to solve this relocation nightmare tested the limits of both the powers and the purposes of the *CER Act 2011*.

11.4.2.1 The Purposes of the *CER Act 2011*

Section 3 of the *CER Act 2011* defines the Act's purposes:

- (a) To provide appropriate measures to ensure that greater Christchurch and the councils and their communities respond to, and recover from, the impacts of the Canterbury earthquakes;
- (b) To enable community participation in the planning of the recovery of affected communities without impeding a focused, timely, and expedited recovery;
- (c) To provide for the Minister and CERA to ensure that recovery;
- (d) To enable a focused, timely, and expedited recovery;

⁶⁷ 'Certain existing uses in relation to land protected'.

⁶⁸ 'Certain existing activities allowed'.

⁶⁹ 'Certain existing building works allowed'.

⁷⁰ *CER Act 2011*, s 27(2)(c).

⁷¹ Section 27(5). For bond requirements, see *RMA 1991*, ss 108, 108A.

⁷² *CER Act 2011*, s 27(7).

- (e) To enable information to be gathered about any land, structure, or infrastructure affected by the Canterbury earthquakes;
- (f) To facilitate, co-ordinate, and direct the planning, rebuilding, and recovery of affected communities, including the repair and rebuilding of land, infrastructure, and other property;
- (g) To restore the social, economic, cultural, and environmental well-being of greater Christchurch communities;
- (h) To provide adequate statutory power for the purposes stated in paragraphs (a)–(g);
- (i) To repeal and replace the *Canterbury Earthquake Response and Recovery Act 2010*.⁷³

11.4.2.2 The Powers to be Exercised for Purposes of the *CER Act 2011*

The *CER Act 2011* stipulates the extent of the powers of both CERA and the Minister. Section 10 of the *CER Act 2011* provides:

- (1) The Minister and the chief executive must ensure that when they each exercise or claim their powers, rights, and privileges under this Act they do so in accordance with the purposes of the Act.
- (2) The Minister and the chief executive may each exercise or claim a power, right or privilege under this Act where he or she reasonably considers it necessary.
- (3) The chief executive may from time to time, either generally or particularly, delegate to any employee of, or person seconded to, CERA any of the functions or powers of the chief executive under this Act or any other Act, including functions or powers delegated to the chief executive under any Act.

11.4.3 *The Challenge: Did the Minister Overstep His Powers?*

The applicants in *Independent Fisheries Limited v The Minister for Canterbury Earthquake Recovery*⁷⁴ sought judicial review of decisions the Minister made with respect to the 1998 Canterbury Regional Policy Statement (1998 RPS).⁷⁵ The background to the dispute is complex and this chapter provides a heavily abbreviated version of the facts.⁷⁶

The second respondents, referred to in the judgment as the Urban Development Strategy (UDS) partners, comprised the Canterbury Regional Council, Christchurch City Council, Waimakariri District Council, Selwyn District Council and New Zealand Transport Agency. After the 1998 RPS became operative, in 2003 the UDS partners, concerned with the document's lack of specificity, supported a detailed

⁷³ *CER Act 2011*, s 3.

⁷⁴ [2012] NZHC 1810.

⁷⁵ 'An RMA document' includes a regional policy statement and a district plan (both proposed and operative: *CER Act 2011*, s 4).

⁷⁶ For a detailed description of the facts, see Toomey (2012b).

strategy in the form of a Proposed Change 1 (PC1) that, amongst other things, identified urban limits to 2041 and supported a long-standing policy of precluding noise-sensitive issues within a 50 A-weighted decibel (dBA) day-night average sound level (Ldn) contour around Christchurch International Airport. In 2009, the Regional Council, adopting the recommendations of independent commissioners, broadly upheld the approach signalled by PC1 although, in some cases, new greenfield areas for residential development resulted in changes to the location of urban limits and some ‘Special Treatment Areas’ were identified for further investigation. Although the use of a 50 dBA Ldn contour around the airport was upheld, there was provision for growth within the contour at Kaiapoi (a northern suburb).

The Regional Council’s decision attracted approximately 50 appeals to the Environment Court. These included appeals by five of the applicants, and the sixth joined the appeals under s 274 RMA.⁷⁷ Appeals were also lodged by two of the UDS partners (Christchurch City Council and Waimakariri District Council) and by Christchurch International Airport (an intervener in the proceedings). The appeal process was frustrated by the earthquakes; but, as time went by, the UDS partners were able to reach agreement with some of the appellants. These settlements were opposed and the Environment Court declined to endorse them at the time. Ultimately the second phase of the appeal process was set down for hearing over the period November 2011 to March 2012. The UDS partners sought an adjournment on several grounds; but, in September 2011, the Environment Court refused that adjournment. The UDS partners sought judicial review of this refusal,⁷⁸ and other parties sought to join the review—both for and against.

11.4.3.1 The Minister’s Actions

Revocation of PC1

Before the UDS partners’ application for judicial review could be considered by the Court, the Minister, against the advice given to him in briefing papers, revoked, rather than suspended PC1. This revocation had the effect of terminating appeals by the applicants and others to that Court.

New Chapters in the 1998 RPS

In October 2011, the Minister used s 27(1)(a) of the *CER Act 2011* to amend the 1998 RPS by inserting, and making immediately operative, new chapters 12A⁷⁹ and

⁷⁷ ‘Representation at proceedings’.

⁷⁸ *Canterbury Regional Council v The Environment Court of New Zealand* (HC, Christchurch, CIV-2011-409-001953).

⁷⁹ The Minister’s decision was made on 17 October 2011.

22.⁸⁰ In broad terms, chapter 12A gave effect to the relief sought by the UDS partners in their appeals to the Environment Court. It also reversed the changes that had arisen from the Regional Council's decision that had been supported by the applicants.

The Minister's stated objective in the insertion of chapter 22 was to provide for and manage urban growth within greater Christchurch while protecting:

- (a) The safe and efficient operation, use, future growth and development of Christchurch international airport; and
- (b) The health, wellbeing and amenity of the people through avoiding noise sensitive activities within the 50 dBA Ldn air noise contour.⁸¹

11.4.3.2 The Allegations

The applicants alleged that the Minister's decisions concerning the 1998 RPS were tainted with illegality for one or more of five reasons:

- (a) The Minister's use of the power under s 27 of the Act was principally exercised for ulterior (unauthorised) purposes, and not for the purpose for which the power was conferred by s 3 of the Act;
- (b) The Minister's decision entails the misapplication of a statutory power insofar as the Minister's decision (particularly in relation to chapter 12A) implements a recovery strategy measure, where, on a proper interpretation of the Act, another statutory power and procedure was intended to be used for that purpose;
- (c) The Minister failed to consider the question raised by s 10(1) of the Act as to whether the exercise of the power was 'necessary' to achieve the statutory purpose in s 3; and thus in terms of s 10(2) of the Act, in the circumstances, his decisions were not reasonable;
- (d) Insofar as appeals before the Environment Court were terminated as a result of the exercise by the Minister of the s 27(1) power, the Minister deprived parties of a fundamental right of access to the courts, and thus exceeded his statutory power; and
- (e) The Minister had failed to take into account relevant considerations.

⁸⁰ The Minister's decision was made on 8 October 2011.

⁸¹ This objective was supported by two policies: first, to provide for residential development at Kaiapoi inside the 50 dBA Ldn noise corridor to offset the displacement of residential activities at Kaiapoi (from the earthquakes); and, secondly, to avoid noise sensitive activities within the air noise corridor except as provided for in the first policy.

Use of Power for Unauthorised Purposes

The Court observed that it must identify the *legal limits* of the power rather than assess the *merits* of its exercise.⁸² Section 10(1) of the *CER Act 2011* indicated that, subject perhaps to *de minimus*, Parliament did not intend the Minister to pursue any purposes beyond those specified in the *CER Act 2011*. The Court identified two of the seven purposes behind the Minister's decision to amend the 1998 RPS and revoke PC1 that were not within the Act's purposes: the additions of chapters 12A and 22. In chapter 12A, the Court considered that earthquake recovery was an incidental purpose within a detailed document, and that references to earthquake recovery were isolated and cosmetic. It noted that the planning period was until 2041. Similar considerations applied to chapter 22. Again the 1998 RPS was used as a vehicle to resolve an issue that existed long before the earthquakes. Chapter 22 was not driven by earthquake recovery objectives, under which elimination of public participation might have been acceptable.

Misapplication of Statutory Power

The Court agreed with the applicants' contention that instead of using s 27 of the *CER Act 2011* to amend the 1998 RPS, the Minister should have used the Recovery Strategy or a Recovery Plan, thereby allowing public participation. The Court confirmed that s 27 does not provide an alternative and independent mechanism in situations where the Recovery Strategy or a Recovery Plan should be used.

Was the Exercise of the Power 'Necessary'?

One of the explanations for inserting chapter 22 was that unless the location and effect of the 50 dBA Ldn contour was made clear, territorial authorities would be flooded with requests for private plan changes. The Court observed that if, indeed, some added protection was needed in the 1998 RPS, a discrete amendment to that instrument (for example, an amendment that made it clear that the intrusion into the corridor at Kaiapoi was an earthquake recovery measure reflecting a unique situation and one that should not be interpreted as a precedent) could have achieved the desired result. This would have left the Environment Court to resolve finally the wider noise contour. In the Court's view, chapter 22 went beyond what was necessary in terms of s 10(2) of the *CER Act 2011*.

The Court came to the same conclusion with respect to chapter 12A. If it was necessary for earthquake recovery purposes to rezone the lands involved in the settlements that had not been accepted by the Environment Court, the Minister

⁸²The Court, at [90], cited *Unison Networks Ltd v Commerce Commission* [2008] 1 NZLR 42 (SC), at [54] on this point.

could have amended the relevant district plan or plans to achieve the required zoning. Instead, he introduced comprehensive provisions for the location, timing and method of expanding greater Christchurch over the next 30 years.

Finally, the Minister's revocation of PC1 appeared to have been underpinned by two objectives: to remove the concern of the UDS partners that PC1 was giving rise to uncertainty that would continue until the appeals to the Environment Court were resolved; and to overcome the impact on Council officers, who were needed for urgent earthquake duties, of the Environment Court's refusal to adjourn the appeals. The Court held that the uncertainty issue could again have been resolved by discrete amendments to the RPS 1998. As for the second objective, the Court first noted that the judicial review application was already before the High Court and if that succeeded, the staffing problem was likely to disappear. It was also quick to add that if 'further breathing space'⁸³ was required for earthquake recovery purposes, this could have been achieved by a further suspension of PC1. Instead, the Minister revoked PC1. This action permanently deprived the applicants of their ability to have their appeals heard by the Environment Court. That step was not reasonably necessary in terms of s 10(2) of the *CER Act 2011*.

Right of Access to the Courts

The Court observed that the right of access to the courts is deeply embedded in New Zealand law. It was satisfied that the revocation of PC1 deprived the applicants of access to the Environment Court (and also the possibility of pursuing any appeals against that Court's decision). It also deprived the applicants of a *private* right as the applicants' private use of land was in issue. The Court then considered whether this deprivation was authorised by s 27 or any other provision of the *CER Act 2011*, and concluded that there was no such authorisation. The general words in s 27 fell well short of expressly authorising the Minister to suspend, amend or revoke RMA documents for the purpose of removing the jurisdiction of the Environment Court.

Failure to Take into Account Relevant Considerations

The Court saw no need to address this ground as the applicants had succeeded on all the other grounds of review and this final ground traversed many of the matters already dealt with.

⁸³ *Independent Fisheries Limited v The Minister for Canterbury Earthquake Recovery*, [148].

The Result

The applicants were successful on the four considered grounds. The application for judicial review was granted setting aside the Minister's decisions inserting chapters 12A and 22 into the 1998 RPS and revoking PC1.

11.4.3.3 The Appeal: Canterbury Regional Council v Independent Fisheries⁸⁴

The appellants (the Minister and the councils responsible for local government in greater Christchurch) appealed essentially on the grounds that the Minister's decisions were within the purposes of the *CER Act 2011* and that it was necessary for him to proceed as he did. They submitted that his decision achieved planning certainty that was necessary for earthquake recovery for the people of Christchurch and their councils; and, secondly, that the decisions avoided council staff being distracted from recovery work by the Environment Court appeals. While the appeal was dismissed, the Court of Appeal did not agree with some of the lower court's reasoning.

The Court identified two essential elements in s 10(2) of the *CER Act 2011*:

- (a) The exercise of the power must be 'necessary' not merely desirable or expedient, for the purposes of the Act; and
- (b) The Minister must consider that to be so 'reasonably' when viewed objectively:

The Minister must ask and answer the question of necessity for the specific power that he intends to use. This means that where he could achieve the same result in another way, including under another power in the Act, he must take that alternative into account.⁸⁵

The Court considered that the purpose of s 10 of the *CER Act 2011* is to provide a safeguard against the exercise by the Minister of powers that carry significant consequences, including the overriding of normal processes, procedures and appeals under the *RMA 1991*. It noted that the development and approval of the Recovery Strategy (which, once struck, may be amended but unless the amendments are minor, further consultation is required)⁸⁶ is an essential feature of the *CER Act 2011* and the relevant provisions 'suggest strongly that Parliament intended planning certainty in the long-term to be addressed, at least principally, in the Recovery Strategy'.⁸⁷

The appellants argued that s 27 of the *CER Act 2011* conferred a stand-alone power that the Minister was able to exercise independently of the Recovery

⁸⁴ *Canterbury Regional Council v Independent Fisheries*.

⁸⁵ *Canterbury Regional Council v Independent Fisheries*, [18].

⁸⁶ *CER Act 2011*, s 14.

⁸⁷ *Canterbury Regional Council v Independent Fisheries*, [51].

Strategy or a Recovery Plan. The Court, agreeing with the lower Court on this point, did not accept this argument. It offered six reasons for this conclusion:

1. The primary focus of the *CER Act 2011* is on the Recovery Strategy which CERA must develop as a long-term strategy and which must involve council consultation and processes for public notification and hearings.
2. The *CER Act 2011* contemplates the development and approval of the Recovery Strategy as the primary means to implement and achieve the Act's purposes.
3. The non-mandatory discretionary power given to the Minister under s 27 of the *CER Act 2011* is an ancillary power which may be exercised, if necessary, before, during or after the processes required for the development and approval of the Recovery Strategy.
4. Whether the exercise of the s 27 power is necessary will depend on the circumstances of the particular case.
5. The s 27 power is not unfettered. It is constrained by s 10, which requires that it be exercised 'in accordance with the purposes of the Act' and only if the Minister 'reasonably considers it necessary'. In particular, the Minister must consider whether the exercise of the s 27 power, rather than an alternative such as a Recovery Strategy with public consultation, is necessary. These constraints are important safeguards in the context of this legislation.
6. The existence of the provisions relating to the development of the Recovery Strategy and Recovery Plans, with community participation, did not mean the Minister would be prevented from exercising the s 27 power in an appropriate case. Whether the Minister should so exercise that power was a separate question depending on the facts of the case and whether, objectively, he 'reasonably considers it necessary' to do so.⁸⁸

Reasonably Considered Necessary?

The Court, disagreeing with the lower Court's finding, considered the Minister's decisions for both chapters 12A and 22 were made 'in accordance with the purposes' of the *CER Act 2011*, as required by s 10(1).

The Court then asked whether the use of his ancillary discretionary power (s 27) to make these decisions was reasonably considered necessary as against proceeding by way of the mandatory Recovery Strategy and/or a Recovery Plan. In both cases, the Court considered that the Minister had not met this threshold test. With respect to chapter 12A, he should have given consideration to the option of using the Recovery Strategy and/or a Recovery Plan as the use of either would have involved public participation and the opportunity for public comment, and therefore would have been in accordance with the public participation purpose of the Act. With respect to chapter 22, the Court held that it was not made clear why a 'short term "neat solution" which precluded public participation was necessary, rather than merely expedient or desirable',⁸⁹ for a long-term problem which would be addressed in the Recovery Strategy, the draft of which had already been notified.⁹⁰

⁸⁸ *Canterbury Regional Council v Independent Fisheries*, [67].

⁸⁹ *Canterbury Regional Council v Independent Fisheries*, [134].

⁹⁰ The Minister's decisions to insert the two chapters and revoke PC1 were publicly notified on 8 and 17 October 2011. This was approximately a month after the draft Recovery Strategy had

Access to the Courts

The Court agreed that the respondents had been deprived of their right of access to the courts but it then considered whether the exercise of the power under s 27 overrides processes and appeals to the Environment Court already in progress under the *RMA 1991*. It observed that under s 27 the Minister had the power to revoke the whole or any part of an *RMA* document, which was defined as including a proposed regional policy statement (that is, a document that, under the *RMA 1991*, may be subject to appeal to the Environment Court). In this vein, it observed:

Consequently, in the event that the Minister were to revoke such a document, the right of appeal to the Environment Court in respect of that document would cease to exist. This consequence occurs as a matter of logic by necessary implication from the express provisions of s 27 and the definition of an *RMA* document construed in its context. The Act therefore contemplates that the Minister's exercise of the s 27 power could end appeals before the Environment Court.⁹¹

The Court concluded that the ending of the appeals was simply the consequence of the legitimate exercise of the Minister's powers and was not unlawful.

The Result

The Court dismissed the appeal. It noted that it was for the Minister to decide whether he wished to reconsider his decisions in light of this conclusion or to proceed in a different manner, such as by way of a specific Recovery Plan.

Subsequently, the appellants applied unsuccessfully to the Supreme Court for leave to appeal to the Court of Appeal as they preferred the High Court's reasoning to that of the Court of Appeal: *Independent Fisheries Limited v The Minister for Canterbury Earthquake Recovery*.⁹²

11.5 Conclusion

This chapter captures the second stage of earthquake recovery for the Canterbury region of New Zealand. When the *CER Act 2011* was passed, there was an atmosphere of perplexity as to its likely effect. How would it work? What about all the checks and balances in the *RMA 1991*? Would the Minister exercise his powers to implement a world-first full-scale land acquisition to create a new city?

been published and 6 months before the draft Land, Building and Infrastructure plan was to be prepared under the Draft Recovery Strategy.

⁹¹ *Canterbury Regional Council v Independent Fisheries*, [143].

⁹² *Independent Fisheries Limited v The Minister for Canterbury Earthquake Recovery* [2013] 2 NZLR 397 (SCNZ).

How can one force whole suburbs to leave? Will the heritage organisations fight to protect the old buildings?

The answers to those questions are now emerging. As this chapter demonstrates, it seems clear that complex litigation will be an integral part of this stage.

References

- Earthquake Commission (2012) Annual report 2011–12. http://www.eqc.govt.nz/sites/public_files/eqc-ann-report-2012.pdf. Accessed 10 Dec 2012
- Forbes A (2011) The rule of law and New Zealand lawyers. *New Zealand Law J* 42
- Knight D (2010) Shaking on our constitutional foundations. *Public Sector* (December 2010) 24
- Nottage L (1997a) Planning and renegotiating long-term contracts in New Zealand and Japan: an interim report on an Empirical Research Project. *New Zealand Law Rev* 482
- Nottage L (1997b) Economic dislocation and contract renegotiation in New Zealand and Japan: a preliminary empirical study. *Victoria Univ Wellington Law Rev* 27(1):59
- Nottage L (2007) Changing contract lenses: unexpected supervening events in English, New Zealand, Japanese, and international sales law and practice. *Indiana J Global Legal Stud* 14:385
- Orpin J, Pannett D (2010) Constitutional aftershocks. *New Zealand Law J* 386
- Palmer K (2011) Canterbury Earthquake Recovery Act 2011 – a legislative opportunity. *Butterworths Resour Manag Bull* 52(9)
- Robertson B (2010) Ad hoc legislation. *New Zealand Law J* 397
- Taylor P, Grinlinton D (2011) Property rights and sustainability: toward a new vision of property. In: Taylor P, Grinlinton D (eds) *Property rights and sustainability: the evolution of property rights to meet ecological challenges*, vol 11. *Martinus Nijhoff Series: Legal Aspects of Sustainable Development*, Martinus Nijhoff, Leiden
- Toomey E (1996) The offer-back provisions in the Public Works Act 1981 – a fair deal for the parties. *Canterbury Law Rev* 272(6)
- Toomey E (2001) The offer back provisions of the Public Works Act 1981: a minefield for the Crown or local authorities. *New Zealand Univ Law Rev* 19(3):310
- Toomey E (2007) The offer back provisions in the Public Works Act 1981: former owners chase potential spoils. *New Zealand Law Rev* 659
- Toomey E (2012a) This land is my land, that land is your land, a challenge to private ownership. *The Canterbury Earthquake Recovery Act 2011*. *Property Law Rev* 84(2)
- Toomey E (2012b) From Brundtland to the Canterbury Earthquake Recovery Act 2011: public participation. *New Zealand J Environ Law* 16:117–165
- Webb D (2012) Red zone advice. Letter to Hon L Dalziel, Member of Parliament, 17 April 2012
- Wilberg H (2011) New Zealand: executive given broad emergency powers in aftermath of major earthquake, *Canterbury Earthquake Response and Recovery Act 2010*. *Public Law* (January 2011) 185
- Wright M, Greenhill M (2012) Crown offers below 2007 value. *The Press*, 1 December 2012. <http://www.stuff.co.nz/the-press/business/the-rebuild/8011287/Crown-offers-below-2007-value>. Accessed 2 May 2013

Documents and Materials

Canterbury Earthquake Recovery Act 2011 (CER Act 2011)
Resource Management Act 1991 (RMA 1991)

- Canterbury Regional Council v The Environment Court of New Zealand* (HC, Christchurch, CIV-2011-409-001953)
- Canterbury Regional Council v Independent Fisheries* [2013] 2 NZLR 57 (*Canterbury Regional Council v Independent Fisheries*)
- DFC NZ Limited v Samson Corporation Limited* (1993) ANZ ConvR 481 (HC) (*DFC NZ Limited v Samson Corporation Limited* (1993))
- DFC NZ Limited v Samson Corporation Limited* (1994) ANZ ConvR 216 (CA) (*DFC NZ Limited v Samson Corporation Limited* (1994))
- Doherty v Orman* (1878) 3 App Cas 709
- The Great Christchurch Buildings Trust v Church Property Trustees* [2013] 2 NZLR 230 (HC)
- The Great Christchurch Buildings Trust v Church Property Trustees* [2013] NZCA 331
- GP 96 Ltd v FM Custodians Ltd* (2011) 12 NZCPR 489
- Independent Fisheries Limited v The Minister for Canterbury Earthquake Recovery* [2012] NZHC 1810
- Independent Fisheries Limited v The Minister for Canterbury Earthquake Recovery* [2013] 2 NZLR 397 (SCNZ)
- Russell v Robinson* (HC Auckland CIV-2010-404-5992, 1 April 2011, Priestly J)
- Stack Shelf Company Number 16 Limited v Mathers* (HC Rotorua CP 31/90, 6 March 1991, Fisher J)
- Unison Networks Ltd v Commerce Commission* [2008] 1 NZLR 42 (SC)

Chapter 12

Human Rights and Dignity: Lessons from the Canterbury Rebuild and Recovery Effort

Michael J.V. White and Andrew Grieve

12.1 Introduction

Natural disasters are the most egalitarian of events: they do not means-test their impact—wealth, social or racial background, or power do not exempt anyone from their destruction. However, more often than not, the most vulnerable people in society are especially affected in times of disaster. Often there is an almost innate sense that these people require special assistance and should be prioritised in the immediate aftermath of a disaster. Unfortunately, without robust legal frameworks, guidelines or clear policies, in the chaos of a disaster the most vulnerable are often discriminated against, simply by being treated like everyone else. Once the chaos has abated, the ensuing ‘rebuild and recovery’ phase¹ poses additional challenges, and the unintended consequences of current State practices can perpetuate the disadvantage suffered by vulnerable groups of society.

The Great Hanshin–Awaji Earthquake in 1995 (Kobe earthquake) demonstrates the critical importance of prompt and effective government responses to natural disasters. Following the Kobe earthquake the Japanese Government was criticised for its response. It was argued that the political systems, seen as ‘top down’ and centralised, impeded emergency services from responding.² Emergency rescue assistance was only approved by central Government if local authorities could report on the extent of the damage and prove the state of emergency. This process

¹ US Department of Homeland Security (2008), p. 27 (identifying three phases of effective response as ‘prepare, respond and recover’).

² Miyamoto (1998), pp. 46–58.

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caused substantial delays in efforts to save people trapped under buildings.³ Of the 6,434 killed, approximately 31 % died in the days that followed the earthquake. It has been suggested that at least some of these deaths could have been avoided if there had been faster emergency response systems.⁴

The Japanese Government response to the Kobe earthquake can be contrasted with the recent New Zealand experience. In September 2010 and February 2011, Christchurch, New Zealand's second largest city, suffered major earthquakes (Canterbury earthquakes). The earthquakes resulted in significant personal injury and trauma, and the destruction of homes, jobs, businesses and infrastructure. The effects have been compounded by continuing, and often powerful, after-shocks. The February 2011 earthquake killed 185 people, making it New Zealand's second deadliest natural disaster.

The devastating effects of the Canterbury earthquakes have had a wide-reaching impact on New Zealand society. Individuals and community groups have come together to provide support and assistance. As with any disaster of this magnitude, the Canterbury earthquakes are characterised by stories of courage, resilience and heroism. At a time when communities were fractured, New Zealand came together.

In the immediate aftermath of the 22 February 2011 earthquake, the Government (along with other humanitarian agencies and volunteers) responded quickly and provided a variety of support and services to assist those affected. Together with local authorities and communities, they responded as best they could to the chaos of the day. However, the scale of the 22 February 2011 earthquake challenged the operation of New Zealand's disaster response framework. Specifically, there was a lack of clarity as to control and insufficient and inadequate communication between agencies (local and central). As a result, on 23 February 2011, Minister of Civil Defence John Carter declared a state of national emergency under the *Civil Defence Emergency Management Act 2002 (CDEM Act)* enabling the suspension of ordinary work and essential services and for national resource to be marshalled to perform emergency functions and tasks.

A recent independent Review of the Civil Defence Emergency Management Response to the 22 February Christchurch Earthquake⁵ found that overall 'the response to this extremely challenging situation can justifiably be regarded as having been well managed and effective'.⁶ The review deals with the Civil Defence Emergency Management (CDEM) response to the earthquake, from 22 February 2011 until 30 April 2011. This chapter does not consider the response in the immediate aftermath of the Canterbury earthquakes. Instead, it focuses on how the Government's longer-term response has affected the rights of vulnerable groups in the period post 30 April 2011. On that date, the response phase officially ended and the recovery process was taken over by the Canterbury Earthquake Recovery Authority (CERA), established to administer the recovery.

³ Yasui (1997).

⁴ Nihon Jutaku Kaigi (1996).

⁵ Ministry of Civil Defence and Emergency Management (2012).

⁶ Ministry of Civil Defence and Emergency Management (2012), p. 10.

The authors do not seek to criticise the Government, those who risked their lives to assist others, nor anyone who suffered because of this disaster. Rather, the authors wish to identify some gaps in the normative framework which can and should be addressed to mitigate what we consider to be the unintended consequences of recovery activities.

12.2 International Framework

The prevalence of human rights violations following natural disasters is well understood. Despite this, the conceptual human rights framework which exists to guide responses to, or to lessen, those violations remains fragmented and underdeveloped. With the demise of the International Relief Union, the only comprehensive disaster law treaty to have been developed is now no longer in force.⁷ In response to the rising need to codify disaster law and to bring it into a more equal standing with the related body of international humanitarian law applicable during armed conflicts,⁸ the International Law Commission (ILC) is currently developing the *Draft Articles of the Protection of Persons in the Event of Disasters (Draft Articles)*.

The *Draft Articles* primarily deal with the duty of the State to seek and accept assistance where the required response exceeds the State's capabilities. However, Articles 6–8 explicitly enshrine human rights in the time of disasters and recognise the needs of the most vulnerable. Article 8 of the *Draft Articles* makes it clear that '[p]ersons affected by disasters are entitled to respect for their human rights'.⁹ While non-discrimination is clearly the foundation of the principled approach to disaster response, Article 6 contemplates situations where non-discrimination may lead to discriminatory results and therefore allows the needs of the 'particularly vulnerable' to be taken into greater account. The ILC's Special Rapporteur on the Protection of Persons in the Event of Disasters explains that this mention of the particularly vulnerable is based on one of the three parts to the humanitarian principle of impartiality—that of proportionality:¹⁰ 'relief of the suffering individuals must be guided solely by their needs and priority must be given to the most urgent cases of distress'.¹¹ Article 7 requires States and other actors to 'respect and protect the inherent dignity of the human person'.¹²

While it is useful to explicitly state that human rights continue in disasters—that the needs of the most vulnerable should be attended to first and that the inherent

⁷ *Convention Establishing an International Relief Union 1932*.

⁸ International Law Commission (2007), paras 3–4.

⁹ International Law Commission (2010a, b), Art. 8.

¹⁰ International Law Commission (2010b), pp. 12–13.

¹¹ Ebersole (1995), p. 196.

¹² International Law Commission (2010a), Art. 7.

dignity of the human person must be protected—what does this actually entail in the case of the most vulnerable? As these *Draft Articles* are not yet in force and are not yet finalised, to understand the current environment it is necessary to look at the existing normative framework. Traditionally, human rights treaties do not specifically address disasters, even though the principles they enshrine are certainly relevant and, as experience has shown, imperative to successful and sustainable recovery. While there are a number of non-binding guidelines or policies that guide the actions of governments and non-governmental or inter-governmental organisations, the majority are focussed towards high-level, inter-governmental relations and very few human rights agreements or documents specifically mention disasters.

12.2.1 *International Human Rights Law*

The Universal Declaration of Human Rights (UDHR), adopted by the United Nations (UN) General Assembly on 10 December 1948, contains a list of civil, cultural, economic, political and social rights.¹³ Although the UDHR is not a legally binding treaty, it may be argued that it contains an authoritative interpretation of Articles 55 and 56 of the *UN Charter*,¹⁴ which is a treaty binding for all UN member States. Furthermore, at least some of its provisions have become customary international law, and many of the rights have been expressly provided for in binding multilateral agreements.

The two main legally binding international human rights treaties are the *International Covenant on Economic, Social, and Cultural Rights 1976* (ICESCR) and the *International Covenant on Civil and Political Rights 1976* (ICCPR). These treaties enshrine State obligations as to the fundamental and overarching economic, social, and cultural rights as well as the range of civil and political rights. Additionally, there are various international treaties that apply to thematic issues. They include the *International Convention on the Elimination of All Forms of Racial Discrimination 1969*, the *Convention on the Elimination of All Forms of Discrimination Against Women 1981*, the *Convention Against Torture and other Cruel, Inhuman or Degrading Treatment or Punishment 1987*, the *Convention on the Rights of the Child 1990*, the *Convention on the Rights of Migrant Workers and their Families 2003*, and the *Convention on the Rights of Persons with Disabilities 2008* (CRPD).

It is generally accepted that the rights affirmed in these conventions and covenants are inalienable in all circumstances. They continue to apply in times of

¹³ *Universal Declaration of Human Rights*, GA Res 217A (III) (1948) (UDHR).

¹⁴ Art. 55 charges the UN to promote respect for and observance of universal human rights for all, and Art. 56 charges each member nation to help the UN to achieve goals set forth in Art. 55.

disaster, albeit in some cases subject to temporary derogations.¹⁵ Even when faced with the challenges of a natural disaster, States parties have a positive obligation to ensure the continued realisation of all rights. Furthermore, in the aftermath of natural disasters, States acquire additional obligations to provide relief and assistance. The Committee on Economic, Social and Cultural Rights, for example, cites ‘victims of natural disasters’ and ‘people living in disaster prone areas’ as among those disadvantaged groups that should be ensured ‘some degree of priority consideration. . .’¹⁶

In the recovery from a natural disaster, it is obviously difficult to promote all rights for all of those affected. A degree of balancing is required and is acceptable. What is clear is that the rights of vulnerable groups and individuals must be prioritised. However, the UN Covenants and Conventions provide little practical guidance on how to best ensure the full realisation of inalienable human rights in times of disaster, and avoid disproportionately disadvantaging vulnerable groups in recovery and rebuild activities. In fact, only the CRPD provides specific guidance on natural disasters. It states that:

States Parties shall take, in accordance with their obligations under international law, including international humanitarian law and international human rights law, all necessary measures to ensure the protection and safety of persons with disabilities in situations of risk, including situations of armed conflict, humanitarian emergencies and the occurrence of natural disasters.¹⁷

This provision reflects the changing conception of disability central to the CRPD. It recognises that disability is an evolving concept that is very dependent on the environment in which a person lives and that in fact, disability ‘resides’ in society rather than in a person.¹⁸ That is, disability is a result of the interaction between various mental, physical, and/or sensory impairments that a person has and various external barriers (be they social or environmental). Adopting this understanding of disability is very enlightening in situations of natural disaster because the very nature of a natural disaster is to make the environment even more disabling. While the person’s physical condition may not actually worsen, they do in fact become ‘more disabled’. They also may not be as capable of adapting to the changes in the environment and social fabric.

This still leaves open the question: what is required of States Parties? Is mere non-discrimination, by taking ‘all necessary measures to ensure the protection and safety’ of all persons enough? Almost all of the provisions in the CRPD echo a need for positive action to ensure rights are afforded to persons with disabilities. It is hard to imagine a situation in which treating a person with a disability ‘equally’ with a

¹⁵ *The International Covenant on Civil and Political Rights*, for example, contemplates that during public emergency, there may be some derogation from the full rights in the Covenant but it clearly limits this to the degree strictly necessary and limits which rights may be derogated from.

¹⁶ UN Committee on Economic, Social and Cultural Rights (1991), para 8(e).

¹⁷ CRPD, Art. 11.

¹⁸ Secretariat for the Convention on the Rights of Persons with Disabilities (2007), p. 4.

person who does not live with a disability will lead to a full realisation of the principles of the CRPD, particularly in natural disasters where the social fabric of a community has been eroded.

12.2.2 *Non-binding Instruments*

There are a number of non-binding guidelines that have been produced by various non-governmental organisations (NGOs) in the last few years. These include the Sphere Project's *Charter and Minimum Standards in Disaster Response*,¹⁹ the *Inter-Agency Standing Committee Operational Guidelines on the Protection of Persons in Situations of Natural Disasters (IASC Guidelines)*,²⁰ the *United Nations Guiding Principles on Internal Displacement (Guiding Principles)*,²¹ and the *Madrid International Plan of Action on Ageing (Madrid Plan)*.²²

These guidelines all focus on the needs of vulnerable groups in recovery and are founded on the principle of non-discrimination. The Sphere Project's *Charter and Minimum Standards in Disaster Response*, for example, states that agencies must ensure that '[p]eople can access humanitarian assistance according to need and without adverse discrimination'.²³ It goes on to clarify that agencies must '[c]arefully monitor the access of the affected population to humanitarian assistance, especially of the most vulnerable people' and that '[s]pecial measures to facilitate the access of vulnerable groups should be taken... Such measures might include... putting in place means that facilitate access for persons with disabilities'.²⁴

Although the *IASC Guidelines* primarily aim to help international organisations and NGOs, they are also a useful guide for States. The guidelines note that human rights violations after a natural disaster are often the result of inappropriate policies, which could be mitigated if human rights were taken into account in all phases of disaster response.²⁵

The destruction in property resulting from natural disasters inevitably causes the displacement of significant numbers of people. Internally displaced persons are typically among the most vulnerable populations, often coming from disadvantaged communities. The *Guiding Principles* outline the responsibilities of governments and other actors toward those who have been displaced by natural disaster or armed conflict. Although not legally binding as such, they reflect the moral and political obligations of the adopting States to provide for the basic needs of displaced

¹⁹ The Sphere Project (2011).

²⁰ The Brookings – Bern Project on Internal Displacement (2011).

²¹ UN Office for the Coordination of Humanitarian Affairs (UNOCHA) (2004).

²² UN Department of Economic and Social Affairs (UN-DESA) (2002).

²³ The Sphere Project (2011), p. 36.

²⁴ The Sphere Project (2011), p. 37.

²⁵ The Brookings – Bern Project on Internal Displacement (2011), p. 2.

persons as well as to protect their rights of compensation, participation, and return. Several UN entities, such as the UN Development Programme (UNDP), the High Commissioner for Human Rights and the UN Children's Fund (UNICEF), have incorporated the *Guiding Principles* into their actions and policies. UN treaty bodies, which monitor the implementation of human rights conventions, have also referred to the *Guiding Principles* in their observations of States parties.

Recognising the special needs of older people, the *Madrid International Plan of Action on Ageing* notes that 'older persons . . . should be identified as [vulnerable] because they may be isolated from family and friends and less able to find food and shelter'.²⁶ To better protect older people's rights, there are a number of treaty-specific 'Actions' that governments should undertake. The most relevant in terms of the 're-establishment and reconstruction of communities and the rebuilding of the social fabric following emergencies'²⁷ are:

- including older persons in the provision of community relief and rehabilitation programmes;
- assisting older persons to re-establish economic self-sufficiency through rehabilitation projects, including income generation, educational programmes and occupational activities, taking into account the special needs of older women;
- providing legal advice and information to older persons in situations of displacement and dispossession of land and other productive and personal assets.²⁸

One of the enduring themes in the above guidelines is that in order to fully protect the most vulnerable people and to ensure they are afforded their human rights, those affected must actively participate in the planning and execution of humanitarian relief and reconstruction.

12.3 New Zealand's Human Rights Framework

New Zealand is party to the core human rights treaties. The standards that are set out in these international treaties are therefore binding on New Zealand as a matter of international law. However, as New Zealand adopts a 'dualist' approach to international law, the question arises as to their impact in domestic law. Although aggrieved individuals have the right to issue complaints with the UN, none of these treaties create legally enforceable individual rights in the traditional sense. The Court of Appeal has warned that if the executive or administrative branches of Government ignore international obligations in their discretionary powers, this would be very unattractive to the international community as it is 'apparently

²⁶ UN Department of Economic and Social Affairs (2002), para 54.

²⁷ UN Department of Economic and Social Affairs (2002), para 56.

²⁸ UN Department of Economic and Social Affairs (2002), para 56.

implying that New Zealand's adherence to the international instruments has been at least partly window-dressing'.²⁹

There are two main Acts of Parliament that protect human rights in New Zealand: the *Human Rights Act 1993 (HRA)* and the *New Zealand Bill of Rights Act 1990 (BORA)*. The *HRA* was enacted to consolidate previous Acts on human rights and to 'provide better protection of human rights in New Zealand in general accordance with United Nations Covenants or Conventions on Human Rights'.³⁰ Rather than prescribe certain rights that must be adhered to, the *HRA* details grounds on which discrimination is prohibited. Because of this method, the *HRA* assumes that there are certain rights that are inherent to the person and need to be protected, rather than simply creating rights and limiting their application. Section 21 prohibits discrimination on the grounds of (inter alia) disability,³¹ age,³² and employment status.³³ Aside from s 21, of particular relevance to the earthquake rebuild and recovery is s 53 which makes it unlawful to discriminate in the provision of land, housing, and other accommodation on the prohibited grounds of discrimination.

While the *HRA* is designed to primarily protect the rights of individuals from abuse or neglect by other private individuals or organisations, the *BORA* only applies to acts done 'by the legislative, executive or judicial branches of the Government of New Zealand; or by any person or body in the performance of any public function, power or duty conferred or imposed on that person or body by or pursuant to law'.³⁴ The long title to the *BORA* states that its aim is to 'affirm, protect and promote human rights and fundamental freedoms in New Zealand; and to affirm New Zealand's commitment to the International Covenant on Civil and Political Rights'.³⁵ Section 19 prohibits discrimination on the grounds contemplated in the *HRA*.

Although the *BORA* affirms New Zealand's commitment to the ICCPR, it is not supreme law. Despite arguments that it has attained a 'constitutional status' because of the nature of the rights that it protects, the *BORA* can still be overridden by Parliament.³⁶ Section 5 allows derogation from the rights, so long as this can be 'demonstrably justified in a free and democratic society'.³⁷

²⁹ *Tavita v Minister of Immigration* [1994] 2 NZLR 257, p. 266.

³⁰ *Human Rights Act 1993 (HRA)*, title.

³¹ *HRA*, s. 21(h).

³² *HRA*, s. 21(i).

³³ *HRA*, s. 21(k).

³⁴ *New Zealand Bill of Rights Act 1990 (BORA)*, s. 3.

³⁵ *BORA*.

³⁶ Rishworth et al. (2003), p. 74.

³⁷ *BORA*, s. 5.

12.4 The Earthquake Recovery and Rebuild

The Kobe earthquake was instrumental in changing the approach to disaster management and provided a series of useful lessons. It highlighted that disasters are not only natural events but also social events: ‘without people, there can be no disaster’.³⁸ Furthermore, the Kobe earthquake demonstrated that disaster risks are generally disproportionately distributed; 53 % of those who died in the earthquake were over the age of 60, 65 % of this group being women.³⁹ In terms of recovery, disparities became increasingly clear over time. It was not possible for vulnerable populations to achieve full recovery to the same level and at the same rate as the rest of the population.

When governments face massive loss of life, public health crises, and thousands of injured, hungry, and homeless people, the demands of humanitarian aid coordination and delivery, the rebuilding of infrastructure and the basic need to re-establish public services and security are paramount. However, these activities must be deployed through a human rights lens, prioritising the most vulnerable, in order to ensure the full recovery of all members of society on an equal basis.

Although the immediate response to the Canterbury earthquakes was admirable, the ensuing recovery efforts have thus far proved problematic on a number of levels. As time goes on, disparities in recovery are evident across a number of groups including the elderly, disabled people and low socio-economic groups.

12.4.1 Recovery Legislation⁴⁰

On 30 April 2011, the national state of emergency was lifted and management of the recovery effort moved to CERA. The *Canterbury Earthquake Recovery Act 2011* (*CER Act*), which was enacted to ensure a focused, timely and expedited recovery, provides the Chief Executive of CERA and the Minister for Canterbury Earthquake Recovery with additional power. Notably it contains a ‘Henry VIII’ clause, allowing the Governor-General (on advice from the Minister) to modify or grant an exemption from existing legislation through an Order in Council (OIC).⁴¹ The *CER Act* precludes any judicial challenge or review of a ministerial recommendation.⁴² Anyone who acts under the authority of an OIC is also immune from legal liability,⁴³ and any right to compensation for acts taken under the *CER Act* is expressly removed.⁴⁴

³⁸ Susman et al. (1983).

³⁹ Susman et al. (1983).

⁴⁰ For further discussion on the Recovery Legislation see Toomey (2013), in this volume.

⁴¹ *CER Act*, s. 71.

⁴² *CER Act*, s. 6(3).

⁴³ *CER Act*, s. 19.

⁴⁴ *CER Act*, s. 20.

Except for prohibiting any OIC from exempting or modifying any provision of *BORA*, there appears to be little express consideration given to broader human rights protections. Despite governments being obliged—legally, politically, and morally—to undertake recovery efforts in ways that are consistent with the human rights of those most affected by disaster, the *CER Act* does not reflect any such positive obligation.

Although derogations from some rights will be justifiable in emergency situations, they must be temporary and exceptional measures. With the lifting of the state of national emergency, any legitimate justification for such derogations cease. However, in the absence of any particular protections in the *CER Act*, individuals must rely on existing human rights laws to ensure their rights are fully realised through the recovery phase and beyond. It is still early days, but there is some indication that a failure to proactively prioritise the rights of vulnerable groups may have a significant long-term impact on the health and well-being of Canterbury communities. It is important, therefore, to learn from experiences to date in order to mitigate such negative and divisive impacts.

12.4.2 Right to Adequate Housing

The devastating effects of natural disasters present particular challenges in the realisation of the right to housing. In the aftermath of natural disasters, states must ensure minimum essential levels of the right to housing, and in doing so, prioritise the most vulnerable. In General Comment 4 on the right to adequate housing, the UN Committee on Economic, Social and Cultural Rights notes that the right to housing should be seen as encompassing ‘the right to live somewhere in security, peace and dignity’.⁴⁵

12.4.2.1 Temporary Housing

As a result of the Kobe earthquake, roughly 170,000 houses became uninhabitable.⁴⁶ Reflecting the traditional approach, housing recovery was divided into three phases: emergency and temporary sheltering, temporary housing, and permanent housing. The Government provided temporary housing through 30,000 existing public homes that were vacant, and the construction of 48,000 temporary homes.⁴⁷ Because of space limitations and the need for a speedy solution, the Government had to build some housing in the suburbs. These unfamiliar environments proved difficult for the elderly and disabled. Perhaps more concerning was that these

⁴⁵ UN Committee on Economic, Social and Cultural Rights (1991), para 7.

⁴⁶ Takada (1998), p. 157.

⁴⁷ Takada (1998), p. 157.

temporary houses were designed to last 6 months to 1 year—but the bulk of residents were still living in them some three years after the earthquake, often in uninhabitable conditions.

The UN Disaster Relief Organisation makes it clear that accelerated reconstruction of permanent housing is preferable to the use of temporary housing.⁴⁸ To fulfil this aim, internationally the trend has been shifting to a two-stage approach: from short-term emergency response (tents, welfare centres) to the long-term response (high quality housing, conceived with the standard of permanent houses).⁴⁹ However, much like Japan in 1995, New Zealand adopted a traditional approach to temporary housing. In March 2011, the *Canterbury Earthquake (Resource Management Act Permitted Activities) Order 2011* was approved to enable the Christchurch City Council to permit temporary accommodation for displaced people and businesses that would otherwise not comply with the City and District Plans.

The Department of Building and Housing made arrangements for several hundred campervans to be used as a short-term solution to the demand for temporary housing. Subsequently, three temporary accommodation villages have been set up by the Government to help meet increasing demand for short-term rental housing after the earthquakes. The houses in the temporary villages are fully serviced with town water supply, sewerage and storm-water drains, rubbish collection, mail delivery, power and telephone lines—just like any other normal residential neighbourhood. It is anticipated that the villages might need to be maintained for about 24 months—longer if the need remains. In addition, assistance in finding temporary accommodation and some funding is provided through the Canterbury Earthquake Temporary Accommodation Service. Interestingly, displaced persons did not seem to ‘accept’ short-term or medium-term solutions to housing. Instead they preferred to either share accommodation with other families or to stay in their damaged houses. The situation is thus characterised by overcrowding and inadequate housing which has a serious impact on the health and well-being of communities.⁵⁰ It is still relatively early days, but in the absence of adequate long-term solutions to housing, the risk of avoidable post-earthquake related deaths (PERD) remains. Following the Kobe earthquake, there were 422 PERDs, which could have been prevented by appropriate government interventions in housing.

In the aftermath of natural disasters, it is important to distinguish rental housing from owner-occupied units. The World Bank has noted the importance of assistance to renters as one of its ‘lessons for the future’ to promote equitable redevelopment.⁵¹ Likewise, the *IASC Guidelines* recommend that States ensure people who were renting houses that were damaged have access to assistance. People who occupy rental housing are often amongst the poorest.⁵² Disabled people, Maori and

⁴⁸ UNDRO (1982).

⁴⁹ See the Italian Government’s response to the L’Aquila earthquake.

⁵⁰ Giovinazzi et al. (2012).

⁵¹ World Bank Group (2005), p. 4.

⁵² See UN Office for the Coordination of Humanitarian Affairs (2006).

Pasifica are disproportionately represented in this group. Assistance with temporary accommodation has been provided to Christchurch homeowners while their homes are being repaired or rebuilt. However, those who were renting in Canterbury prior to the earthquakes have not routinely received support and assistance to find and access adequate temporary housing.

12.4.2.2 Security of Tenure

One of the central tenets of the right to adequate housing under the ICESCR is legal security of tenure. After the Kobe earthquake, some victims were forced from their land and refused permission to rebuild. In the worst affected areas of Canterbury, the result has effectively been the same.

CERA has acted as an agent for the Crown in taking certain actions in relation to residential land. In particular, it has zoned residential land as either green (land deemed suitable for repairs and rebuilding) or red (land deemed unsuitable for continued residential occupation for a long period of time). Where an insured property is zoned red, the Government has offered to purchase those properties. CERA originally offered two alternatives: sell the entire property to the Government for the price of the last rating valuation; or sell the land to the Government for the value ascribed to the land in the last rating valuation and deal with the insurer of the property in respect of the value of the building.

Although there is no legislative prohibition against rebuilding in the red zone, in practical terms this is not a reality. In these circumstances, owners of property in the red zone are left with no other real alternative because it has been suggested that the Council may not install new or maintain existing services, nor issue any building or resource consents to properties in the red zone. Similarly, insurers are unwilling to repair or rebuild properties in the red zone. The effect is that it is no longer viable for people to keep living in the red zone and/or to sell their property to a purchaser other than the Crown.

Evictions are only permissible in disaster situations insofar as they are solely for the purpose of promoting the general welfare in a public society. Although the situation in Canterbury is unlikely to meet the criteria envisaged for an eviction, the UN's *Guiding Principles*⁵³ make it clear that people must be protected from involuntary displacement. Displacement should only occur after alternatives have been considered and then only as a matter of last resort. The zoning decisions are based on area-wide assessments and do not take into account individual circumstances. There appears to be a failure to consider alternatives in individual cases and there is no evidence that displacement is a matter of last resort.

⁵³ UN Office for the Coordination of Humanitarian Affairs (UNOCHA) (2004). Although not legally binding the *Guiding Principles* draw on and are consistent with human rights law, humanitarian law and refugee law.

The procedural safeguards required by the ICESCR and reflected in a human rights approach include genuine consultation with those affected, adequate and reasonable notice, and provision of legal remedies. Although CERA held a number of public meetings to explain the categories to people and advise on progress, and has door-knocked on every property that has been placed in the red zone, there was insufficient consultation and a distinct lack of participation and engagement with the public. The zoning decisions have proved divisive of communities. CERA has stated that ‘zoning decisions are not solely based on geotechnical assessments, but also on the Government’s assessment of what is best for the community given the likely time and cost entailed in remediating the land’.⁵⁴ However, in contrast with normal Council processes, which would involve advertising and public submission, information flows were confusing and poorly managed. More troubling is that there is no established appeals mechanism for zoning decisions whereby appeals can be heard by competent judicial authorities.

While States do not have an obligation to provide restitution, compensation or other forms of reparation to those who lost their homes, land and property by reason of natural disaster, States are obliged to provide adequate compensation to persons displaced by reason of a Government’s response to natural disaster. Where CERA’s offer is not accepted by owners of red-zoned properties, CERA may acquire land compulsorily. In such cases, the purchase price could be substantially lower than the original offer. Perhaps more worrying is the distinction between insured and uninsured properties. Uninsured properties were not included in the original purchase offer. CERA has subsequently announced that an offer will be made to uninsured properties. However, the quantum of such an offer will only be half the registered valuation. Those without insurance generally include older people (often living alone) and poorer communities. CERA’s response will inevitably result in these people being significantly disadvantaged, forcing them to move away from their communities. The validity of the zoning decisions and the appropriateness of the amount offered to various categories of property continues to be the subject of litigation.⁵⁵

12.4.3 *People with Disabilities*

Prior to the Canterbury earthquakes, the Disabled Persons Assembly published a Monitoring Report, *Disability Rights in Aotearoa*, in which they outlined six ways in which disabled people felt that they were not being treated according to their human rights. Of the six, the most pressing was that disabled people felt that they did not have the opportunity for full social participation, not just because of tangible

⁵⁴ New Zealand House of Representatives (2012), pp. 4–5.

⁵⁵ See, for example, *Quake Outcasts v The Minister for Canterbury Earthquake Recovery and Chief Executive of the Canterbury Earthquake Recovery* CIV-2013-409-843 (HC).

reasons such as the physical environment, but also because disabled people find the creation of friendships and other social networks much more difficult.⁵⁶ As with all widespread disaster, the Canterbury earthquakes only exacerbated these problems. Not only did the physical environment become more disabling, but many people left the city, breaking up social networks and leaving people feeling stranded and alone. During an interview, one victim of the Canterbury earthquakes said that the biggest challenges following the earthquake were ‘[d]ealing with the utter loneliness and feeling totally inadequate to help others’.⁵⁷

12.4.3.1 The Physical Environment

In terms of the physical environment, infrastructure was destroyed, many services for disabled people were rendered inoperative or inaccessible, and even when emergency services managed to set up temporary facilities, these often did not cater for disabled people. Disabled people were significantly disadvantaged by the lack of transport to and from Civil Defence Emergency Management Centres, little or no provisions to prioritise disabled people when distributing provisions or accessing public toilets, and the inability of Civil Defence Emergency Management Centres to communicate in even a very basic level of sign language.⁵⁸

CERA has been coordinating with the Christchurch City Council, the Land Transport Authority and other agencies on the restoration of infrastructure. Water, electricity and sewerage were reconnected to all properties by early 2012. Roads will be the last piece of infrastructure fixed, in order to avoid repeated digging. It is likely to take 4–5 years to fix all the roads. Accessibility is a key element to ensure that disabled people enjoy all rights and freedoms on an equal basis with others. The delay in repairing roads will inevitably have a flow-on effect for disabled people.

Unfortunately, these experiences are indicative of the Government’s approach to non-discrimination. While the *HRA* does have admirable goals, this does not always lead to the desired result, and it may be that in some circumstances it is necessary to treat people not as equals to ensure that they are protected. This is in fact the common theme throughout all of the international instruments and guidelines—that ‘non-discrimination’ is not enough.

The Government’s approach is shown most clearly in its First Periodic report to the UN Committee on the Rights of Persons with Disabilities. Article 11 only has a very brief mention, even though this report was produced after the Canterbury earthquakes and it would have been an excellent opportunity for one of the driving

⁵⁶ Disabled Persons Assembly (2010), p. 41.

⁵⁷ Anonymous Respondent and Office for Disability Issues (2012).

⁵⁸ MacNiell (2012).

forces behind the CRPD to lead by example.⁵⁹ The report says that '[m]easures taken in instances of risk, disaster or emergency are extended to all people, regardless of whether they are disabled or not'.⁶⁰

Despite the shortcomings and delays in providing an accessible society in which disabled people can fully participate post earthquake, there is a positive to note coming out of the earthquakes. They have given the Government and Council the opportunity to completely redesign the city. The Government has 'committed to [ultimately] improve accessibility during the rebuild and disabled people are represented on committees relating to the rebuild'.⁶¹ It is important that this commitment is translated into action by actively involving disabled people in planning and decision making throughout the process from design to inception.

12.4.3.2 Adequacy of Information

It is estimated that 55,000 people fled Christchurch following the February earthquake.⁶² One major problem that resulted from this was the loss of vital information about who was living with disabilities and where these people were living. The Ministry of Social Development maintains a database of people aged 65 years and older, but no such comprehensive database exists for disabled people. Janice Lovelle from the Canterbury District Health Board has commented that while 'numerous agencies hold information... in general [they] don't share it or talk to each other'.⁶³

At a time where sharing of information was vital, the legal framework proved inadequate. Under the *Privacy Act 1993*, it is unlawful for an agency to disclose the personal information of an individual to another person or agency unless 'the disclosure of the information is necessary to prevent or lessen a serious and imminent threat' to either public health or public safety, or the life or health of the individual concerned or another individual.⁶⁴ The reality of natural disasters is such that while they may cut off essential supplies or visits to disabled people, this may not cause 'imminent' harm to the individuals and therefore would not be covered by this exception to the principle of limiting disclosure. Because of this discrepancy between what was needed and what was allowed, the Privacy Commissioner issued a Code of Practice which allowed Government agencies to share information about individuals in order to:

⁵⁹ The New Zealand Ambassador to the UN, Don MacKay was the Chair of the initial Working Group and then the Chair of the Ad Hoc Committee that created the CRPD.

⁶⁰ Ministry of Social Development (2011), p. 17.

⁶¹ Convention Coalition (2012), p. 19.

⁶² Gorman (2012).

⁶³ Lovelle (2012).

⁶⁴ *Privacy Act 1993*, ss. 66 and 6 Principle 11(f).

- identify those who may be injured, missing or dead as a result of the earthquake or who may be otherwise involved in the earthquake;
- assist individuals involved in the earthquake to obtain services such as respiration services, medical or other treatment, health services, financial services and other humanitarian assistance; and
- ensure that people responsible for those who are, or may be, affected by the earthquake are appropriately informed about the impact of the earthquake on those individuals or the post-disaster services available to them.⁶⁵

Unfortunately, the Code was not well understood by agencies and so was not widely used. Although the Code has since expired,⁶⁶ legislation was submitted to Parliament to enable the greater sharing of information should a similar need arise.⁶⁷

12.4.4 Older Persons

Older persons face very similar challenges to persons with disabilities, and in many cases, the problems encountered by older persons are due to disability. However, there are specific challenges faced by older persons not felt by other members of the community. The majority of older people in New Zealand currently live independently in their own homes.⁶⁸ When families were forced to move away from Christchurch after losing their homes, this often meant leaving behind older people who were unable to move, or whom it would have been unwise to move. Further, many independent older people would have lost their homes and many temporary accommodation facilities were unable to cater to their needs.

One very positive aspect of the Government's response to the earthquake is that it was (in some cases) very open to employing novel strategies to ensure vulnerable people were identified and their needs were met. An example of this is the Ministry of Social Development ringing every person over the age of 65 in the affected areas. This has now grown into an extensive network called *Eldernet*, a website dedicated to providing relevant information about services for older people in New Zealand.⁶⁹

While the majority of older persons live independently, many live in aged-care facilities. These facilities had their own advantages and disadvantages in the aftermath of a natural disaster. In August 2011, *Eldernet* commissioned a report into the lessons that have been learnt by the aged-care sector from the Canterbury

⁶⁵ *Christchurch Earthquake (Information Sharing) Code 2011* (Temporary), cl. 4(2).

⁶⁶ *Christchurch Earthquake (Information Sharing) Code 2011* (Temporary), cl. 2(b).

⁶⁷ *Privacy (Information Sharing) Bill 2012*.

⁶⁸ Office for Senior Citizens (2011), p. 6.

⁶⁹ Lovelle (2012).

earthquakes.⁷⁰ The report specifically mentions the difficulties faced by aged-care facilities within the central business district cordon, who themselves found it difficult to get staff through the cordon, having tradespeople turned away as they were not considered ‘essential’, and not being able to get relatives of residents in and out. The report suggests that this was due to Civil Defence’s ‘lack of understanding about the requirements of residential care services... and that they were operating a 24/7 service for very vulnerable people’.⁷¹

The area that attracted the most criticism with regard to aged-care residents was the evacuation of around 300 people to other areas of New Zealand.⁷² The evacuations caused significant physical and emotional distress to residents (and staff). Although the direct cause is not certain, there were a higher number of deaths among evacuated residents than were expected.⁷³ It is acknowledged that these evacuations were necessary as the earthquakes caused the Canterbury region to lose over 600 beds in aged-care facilities, yet there was an overwhelming failure to inform evacuated residents’ family members where residents had been moved to, or indeed that they had been moved at all, causing significant distress and further isolating older people from their families and communities.

12.5 Conclusion

All too often the legal and moral obligations of States to respect, protect and fulfil internationally recognised human rights are overlooked when a catastrophe occurs. However, it is at such times and in the years to follow that human rights can be in the most danger. These violations may include unequal access to assistance, discrimination in the provision of aid and recovery assistance, enforced relocation, sexual and gender-based violence, involuntary return or resettlement, and issues of property restitution and housing. It may not always be immediately apparent that such violations are occurring.

In December 2012, a new plan to strengthen disaster response was announced. The plan is based on the recommendations of the 2012 Review of the Civil Defence Emergency Management Response to the 22 February 2011 Christchurch Earthquake and aims to better clarify incident control and coordination between agencies.⁷⁴ Although an admirable step, this plan does not address the unintended consequences emerging in the rebuild phase.

Despite the lessons learnt from the Kobe earthquake (and other natural disasters since that time) the New Zealand response has again highlighted the complexities in

⁷⁰ Carswell (2011).

⁷¹ Carswell (2011), p. 13.

⁷² Carswell (2011), p. 21.

⁷³ Carswell (2011), p. 23.

⁷⁴ Shuttleworth (2012).

protecting the rights of the most vulnerable members of society post-disaster. Drawing on the approach in the *HRA*, the Government of New Zealand has applied a non-discrimination model to the recovery efforts, ensuring as far as possible that measures taken extend to all people on an equal basis. However, as seen in the examples above, equal treatment in the wake of natural disasters can lead to unequal results. Vulnerable groups continue to be disadvantaged. Failure to accommodate their needs in all policy decisions and recovery measures has perpetuated this disadvantage, and may have long-term effects on the health and well-being of communities in Canterbury.

The *CER Act* significantly limits any rights of appeal. When coupled with the limitations on actions under the *BORA* and/or *HRA* for human rights violations, individuals can find themselves without any effective review or remedy. Then President of the New Zealand Court of Appeal, Cooke P, warned that it ‘is necessary to be alert in New Zealand to the danger that both the Courts and Parliament at times may give, or at least be asked to give, lip service to human rights in high-sounding language, but little or no real service in terms of actual decisions’.⁷⁵ In the same case, the New Zealand Court of Appeal ruled that because of this temptation, it should be possible to bring an action against the Crown for breaches of the *BORA* as in some cases ‘the only effective remedy is compensation. A mere declaration would be toothless’.⁷⁶ Cooke P said that ‘in addition to any physical damage, intangible harm such as distress and injured feelings may be compensated for’. However, in the case of the Canterbury earthquakes, it is very unlikely that any positive breaches of *BORA* will be found and no action would lie against the Crown. If there are positive breaches, it is also very likely that these will be able to be excused using the ‘demonstrably justified’ test under s 5 of that Act.

This being said, the New Zealand approach to the Canterbury earthquakes has highlighted new ways of delivering services and providing opportunities to create a more accessible city for all people. What is important is that New Zealand learns from its experience and ensures that human rights are protected in all ongoing recovery and rebuild efforts and that the rights of the most vulnerable people are prioritised. Until such time as the *ILC Draft Articles* come into force, the numerous non-binding international guidelines provide a framework to achieve this goal. Adopting such an approach from the early policy development stages will assist to mitigate the unintended consequences for vulnerable people in the aftermath of the Canterbury earthquakes.

It may well be that the absence of any positive obligation to protect rights in disaster management is why New Zealand has struggled to avoid such unintended consequences. The *CER Act* was enacted in urgency,⁷⁷ and was not developed with the invaluable insights of those who were directly affected by such legislation.

⁷⁵ *Simpson v Attorney-General* [1994] 3 NZLR 667 (CA), p. 676.

⁷⁶ *Simpson v Attorney-General* [1994], p. 676.

⁷⁷ See Geiringer et al. (2011).

Learning from the Canterbury earthquakes and drawing on international experience, it is worth considering the need and desirability of recovery legislation and how this legislation might best protect the rights of the most vulnerable groups in communities at a time when they may have lost their homes, their livelihoods, their families and friends as well as their democratic voices. As Gould notes more generally: ‘Given the complexity of vulnerability in the disaster context, there is clearly a need for a more visible rights perspective’.⁷⁸

References

- Anonymous Respondent, Office for Disability Issues (2012) Personal experiences and reflections by disabled people. <http://www.odi.govt.nz/resources/guides-and-toolkits/emergency-preparedness-and-responsiveness/symposium-may-2012/personal-experiences.html>. Accessed 28 Nov 2012
- Carswell S (2011) What we have learnt: aged care provider learnings on responding to the February earthquake in Canterbury. http://www.eldernet.co.nz/IM_Custom/ContentStore/Assets/7/98/b45068e6b3f6d8180db28b092133d87d/2011-07-31%20Cant%20EQ%20Research%20FINAL%20.pdf. Accessed 28 Nov 2012
- Convention Coalition (2012) Disability Rights in Aotearoa New Zealand 2012: A report on the human rights of Disabled People in Aotearoa New Zealand. Disabled Persons Assembly, Wellington
- Disabled Persons Assembly (2010) Disability Rights in Aotearoa New Zealand 2010: A report on the human rights of disabled people in Aotearoa New Zealand. Disabled Persons Assembly, Wellington
- Ebersole JM (1995) The Mohonk criteria for humanitarian assistance in complex emergencies. *Hum Rights Q* 17(1):192–208
- Geiringer C, Higbee P, McLeay E (2011) What’s the hurry? Urgency in the New Zealand Legislative Process 1987–2010. Victoria University Press, Wellington
- Giovinazzi S, Stevenson J, Mitchell J, Mason A (2012) Temporary housing issues following the 22nd Christchurch Earthquake, NZ. Unpublished paper presented at the 2012 NZSEE Conference. <http://www.nzsee.org.nz/db/2012/Paper125.pdf>. Accessed 28 Nov 2012
- Gorman P (2012) Survey picks quake exodus. *The Press* (1 June 2012). <http://www.stuff.co.nz/the-press/news/christchurch-earthquake-2011/our-rebuild-your-views/7026937/Survey-picks-quake-exodus>. Accessed 25 Apr 2013
- Gould CW (2009) The right to housing recovery after natural disasters. *Harv Hum Rights J* 22:169–204
- Lovelle J (2012) What have we learnt? Speech to the Symposium on disability-inclusive emergency preparedness and response, Christchurch, 28 May 2012. <http://www.odi.govt.nz/resources/guides-and-toolkits/emergency-preparedness-and-responsiveness/symposium-may-2012/presentation-by-janice-lovelle-canterbury-district-health-board.html>. Accessed 28 Nov 2012
- MacNeill P (2012) Experience of Pam MacNeill on Disabled Persons Assembly (DPA) 2011 Accessible Christchurch Campaign. Speech to the Symposium on disability-inclusive emergency preparedness and response, Christchurch, 28 May 2012. <http://www.odi.govt.nz/resources/guides-and-toolkits/emergency-preparedness-and-responsiveness/symposium-may->

⁷⁸ Gould (2009), p. 193.

- [2012/personal-experiences-pam-macneill-on-disabled-persons-assembly-2011-accessible-christchurch-campaign.html](#). Accessed 28 Nov 2012
- Ministry of Civil Defence & Emergency Management (2012) Review of the Civil Defence Emergency Management Response to the 22 February Christchurch Earthquake. http://www.civildefence.govt.nz/memwebsite.nsf/wpg_URL/For-the-CDEM-Sector-Publications-Review-of-the-Civil-Defence-Emergency-Management-Response-to-the-22-February-Christchurch-Earthquake?OpenDocument. Accessed 28 Nov 2012
- Ministry of Social Development (2011) First New Zealand Report on implementing the United Nations Convention on the Rights of Persons with Disabilities. UN Doc. CRPD/C/NZL/1
- Miyamoto K (1998) Fukkou Seisaku No Kadai to Tenbo [The challenge and outlook of reconstruction policy]. Yukikaku, Tokyo
- New Zealand House of Representatives (2012) Report of the Finance and Expenditure Committee on the 2010/2011 financial review of the Canterbury Earthquake Recovery Authority and the Earthquake Commission. http://www.parliament.nz/NR/rdonlyres/844197E7-E9E0-4312-A43D-4ACB5F5F4A42/212437/DBSCH_SCR_5412_201011financialreviewoftheCanterbur.pdf. Accessed 20 Nov 2012
- Nihon Jutaku Kaigi (ed) (1996) Jutaku Hakusho 1996 (Housing report 1996). Damesu Shuppan, Tokyo
- Office for Senior Citizens (2011) Briefing to the incoming Minister: New Zealanders: Getting older, doing more. <http://www.msd.govt.nz/documents/about-msd-and-our-work/publications-resources/corporate/bims/office-for-senior-citizens-2012.pdf>. Accessed 28 Nov 2012
- Rishworth P, Huscroft G, Optican S, Mahoney R (2003) The New Zealand Bill of Rights. Oxford University Press, South Melbourne
- Secretariat for the Convention on the Rights of Persons with Disabilities (2007) From exclusion to equality: realizing the rights of persons with disabilities. UN Doc. HR/PUB/07/6
- Shuttleworth K (2012) Plan released to strengthen the role of Civil Defence. The New Zealand Herald (11 December 2012). http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10853419. Accessed 25 Apr 2013
- Susman P, O'Keefe P, Wisner B (1983) Global disasters, a radical interpretation. In: Hewitt K (ed) Interpretations of calamity. Allen & Unwin, Winchester
- Takada N (1998) Kouteki Jutaku Seisaku No Kadai to Tenbou (Challenge and outlook of public housing policy) in Ritsumeikan Daigaku Shinsai Fukko Kenkyu Project. Yuhikaku, Tokyo
- Toomey E (2013) The slow road to recovery: a city rebuilds under the Canterbury Earthquake Recovery Act 2011. In: Butt S, Nasu H, Nottage L (eds) Asia-Pacific disaster management. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- UN Office for the Coordination of Humanitarian Affairs (UNOCHA) (2006) Exploring key changes and developments in post disaster settlement, shelter and housing, 1982–2006: Scoping study to inform the revision of 'Shelter after Disaster: Guidelines for Assistance'. UN Doc. OCHA/ESB/2006/6
- UNDRO (United Nations Disaster Relief Organization) (1982) Shelter after disaster: guidelines for assistance. United Nations, New York
- US Department of Homeland Security (2008) National response framework. <http://www.fema.gov/pdf/emergency/nrf/nrf-core.pdf>. Accessed 27 Nov 2012
- World Bank Group (2005) Lessons from natural disasters and emergency reconstruction (4 January 2005) <http://www.oecd.org/derec/worldbank/35281124.pdf>. Accessed 28 Nov 2012
- Yasui E (1997) Analyzing people's vulnerability to the Great Hanshin Earthquake: interface between physical and human aspects of disasters. Unpublished Master's Thesis, University of Oregon

Documents and Materials

- Charter of the United Nations*, 26 June 1945, 1 UNTS XVI (entered into force 24 October 1945)
- Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment*, 10 December 1984, 1465 UNTS 85 (entered into force 26 June 1987)
- Convention Establishing an International Relief Union*, 12 July 1927, 135 LNTS 247 (entered into force 27 December 1932)
- Convention on the Elimination of All Forms of Discrimination against Women*, 18 December 1979, 1249 UNTS 13 (entered into force 3 September 1981)
- Convention on the Rights of Persons with Disabilities*, 13 December 2006, 2515 UNTS 3 (entered into force 3 May 2008)
- Convention on the Rights of the Child*, adopted 20 November 1989, 1577 UNTS 3 (entered into force 2 September 1990)
- International Convention on the Elimination of All Forms of Racial Discrimination*, 7 March 1966, 660 UNTS 195 (entered into force 4 January 1969)
- International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families*, 18 December 1990, 2220 UNTS 3 (entered into force 1 July 2003)
- International Covenant on Civil and Political Rights*, 19 December 1966, 999 UNTS 171 (entered into force 23 March 1976) ('ICCPR')
- International Covenant on Economic, Social and Cultural Rights*, 19 December 1966, 993 UNTS 3 (entered into force 3 January 1976) ('ICESCR')
- International Law Commission (2007) Protection of persons in the event of disasters: Memorandum by the secretariat. UN Doc. A/CN. 4/590 646
- International Law Commission (2010a) Protection of persons in the event of disasters: third report on the protection of persons in the event of disasters, by Mr Eduardo Valencia-Ospina, Special Rapporteur. UN Doc. A/CN. 4/629 649
- International Law Commission (2010b) Protection of persons in the event of disasters: texts and titles of draft articles 6, 7, 8 and 9 provisionally adopted by the Drafting Committee on 6, 7 and 8 July 2010 (Draft Articles) UN Doc. A/CN.4/L.776
- Simpson v Attorney-General*, [1994] 3 NZLR 667 (CA)
- Tavita v Minister of Immigration*, [1994] 2 NZLR 257
- The Brookings – Bern Project on Internal Displacement (2011) Inter-Agency Standing Committee (IASC) Operational Guidelines on the Protection of Persons in Situations of natural Disasters
- The Sphere Project (2011) Humanitarian charter and minimum standards in humanitarian response. <http://www.sphereproject.org/resources/download-publications/?search=1&keywords=&language=English&category=22>. Accessed 27 Nov 2012
- UN Committee on Economic, Social and Cultural Rights (1991) General Comment 4: The right to adequate housing (Art. 11(1)). UN Doc. E/1992/23
- UN Department of Economic and Social Affairs (UN-DESA) (2002) Madrid international plan of action on ageing. <http://social.un.org/ageing-working-group/documents/mipaa-en.pdf>. Accessed 27 Nov 2012
- UN Office for the Coordination of Humanitarian Affairs (UNOCHA) (2004) Guiding principles on internal displacement. UN Doc. E/CN. 4/1998/53/Add. 2
- UN Office for the Coordination of Humanitarian Affairs (UNOCHA) (2006) Exploring key changes and developments in post disaster settlement, shelter and housing, 1982–2006: Scoping study to inform the revision of 'Shelter after Disaster: Guidelines for Assistance'. UN Doc. OCHA/ESB/2006/6
- Universal Declaration of Human Rights*, GA Res 217A (III) (1948)

Chapter 13

Tax Policy and Chaos: War, Disaster, and the Role of the Tax System

Micah Burch

13.1 Introduction

In the wake of the tragic 11 March 2011 disasters in Fukushima, Japan, policymakers and commentators have continued questioning and rethinking many aspects of disaster prevention, preparedness and response. Everything from socio-cultural norms, to emergency response, to legal and regulatory structures (for example, public health, urban planning and insurance) has garnered considerable and increased scholarly and political attention as natural disasters all over the globe seem to be increasing in both frequency and intensity (and, if the scientists are to be believed, that is exactly what is happening).¹

To be sure, death—one of two inevitabilities of the human condition—in the form of disaster has received its proper and depressing share of attention. The other of Benjamin Franklin’s certainties—taxes—has received considerably less attention when it comes to disasters. Most legal and regulatory aspects of disaster mitigation and response have at least been mapped, allowing for considered analysis of the proper framework within a given discipline. While there have been some notable evaluations of tax policies responding to particular disasters (some of which are from the United States (US) and are discussed further below), this chapter’s ambition is to make an initial contribution to a more general overview of the proper role of tax policy with respect to natural disasters, an issue perhaps heretofore deemed too abstract, ancillary or tangential to the immediate issues raised by catastrophes. A comparison with the tax policy concerns implicated by *man-made* disasters (in particular, war) reveals that tax policy has an important, if largely overlooked, role to play in the overall legal and regulatory framework for

¹ See, for example, Centre for Research on the Epidemiology of Disasters, Natural Disasters Trend database, <http://www.emdat.be/natural-disasters/trends>.

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preventing and managing disasters, both natural and man-made. This chapter identifies circumstances under which tax policy considerations can be usefully reflected in legal and regulatory efforts in preventing and managing disasters. Just as importantly, and perhaps of more universal applicability, this chapter also emphasises that disasters can affect tax policy.

The given starting point of tax policy is the need to raise revenue. This functional need is particularly keen and evident during times of crisis such as war. And so, by definition, crises put pressure on the fiscal system as a whole, including fundamental aspects of the tax system. However, crises and tax policy also interact in ways that are less straightforward. Traditional tax policy thinking starts with the notion that in an ideal world the role of the tax system should be confined to raising revenue without otherwise affecting economic decision making (known as the 'efficiency' criterion). Furthermore, this should be done in such a way as to maximise both the tax system's fairness (the 'equity' criterion) and its simplicity, so as to promote compliance on the taxpayers' part and administrability on the government's part. These criteria, which inevitably clash under even the best of circumstances, more starkly conflict during crises. Under the accepted model, using the tax system for expenditure or regulatory purposes is the traditional bugaboo of tax policy and is often seen to violate all three of these fundamental tax policy criteria.

However, in reality it is abundantly clear that the tax system is widely used for expenditure, regulatory and other social engineering purposes, academic concerns notwithstanding. Politics and responses to market imperfections, among other concerns, routinely lead to tax policies that deviate from efficient revenue raising and cross over into behaviour regulation and other non-revenue raising goals. Such deviations are often the result of responses to extraordinary events and, as such, provide fertile ground for examining the confluence of disasters and taxation.

Scientists subject their theories to the strains of extreme conditions as a matter of course to revelatory effect. Two related quotes illustrate why the same notion can usefully be applied to tax law: '[B]y driving already-flawed legal and social structures into crisis, disasters present unique opportunities for meaningful inspection and reform of those structures'.² Likewise, as Professor Super has observed, '[b]ecause of their highly visible and accelerated time lines, disasters provide an excellent means of examining otherwise obscure aspects of government behavior'.³

This chapter proceeds by first looking at the long-recognised relationship between war and taxes. US history illustrates the tendency for wartime tax policies to become entrenched aspects of the tax system. It also shows that during times of crisis pressure increases to use the tax system for more than its primary purpose of simply raising revenue. Ironically, certain aspects of the tax system lend themselves to mobilisation for non-revenue purposes during crises. This chapter then focuses on tax and disasters, using the legislative response to Hurricane Katrina as an

² CCELP (2007), pp. 12–13.

³ Super (2011), p. 1428.

illustrative example of the difficulties in using the tax system to deliver targeted financial relief for affected taxpayers. The chapter is not intended as an exhaustive account of the ways in which tax policy and disasters intersect, but rather as an overview of important tax policy concerns implicated by disasters.

13.2 Tax Policy and War

In a series of remarkable, and seemingly fictional, Cold War era memoranda, the US Treasury Department laid out plans for the tax system in the event of catastrophic nuclear war.⁴ The memoranda, one of which is dramatically entitled ‘Fiscal Planning for Chaos’,⁵ are a unique window into how stresses on the fiscal system challenge some fundamental assumptions about the proper role of the tax system (at least, from the government’s point of view). The memoranda deal head-on with fundamental questions of tax policy. For example, in planning for the post-nuclear ‘chaos and disorganisation’, ‘Fiscal Planning for Chaos’ calls for a tax system that (1) can yield revenue adequate for immediate emergency and rehabilitation needs and (2) is simple to administer ‘even to the exclusion of considerations of equity’.⁶

Of course, Cold War-era US Treasury Department memoranda should not drive tax policy considerations for disasters, but they do illustrate that quotidian tax policy tensions, such as those between fairness and simplicity, can be brought into relief during times of crisis and sometimes call for a stark resolution.

As others have noted,⁷ for many purposes war is a useful comparator for natural disaster. The two unhappy phenomena are indeed linked in US history to a third, seemingly more mundane: the income tax (which, incidentally, celebrates its centennial in the US in 2013). While there is now a nascent literature on the intersection of disasters and taxes, there has long been a rich literature examining the relationship between war and taxes.⁸ The generally accepted historical narrative attributes the US income tax (as it currently exists) to the country’s need to finance its participation in World War I. Of course, the British had previously paid for the Crimean War with an income tax. The *Revenue Act* of 1916 (legislation made possible by the passage of the Sixteenth Amendment to the US Constitution in 1913, a moment of fiscal revolution many years in the making) is the first time an

⁴ I first came across these memos while reading David Foster Wallace’s posthumously published novel *The Pale King* (2011). Unsure whether or not they were fictional, I found no mention of them in any non-fiction source save an anti-tax book by investigative journalist David Burnham (1989). I am grateful to Mr. Burnham for his assistance in providing these memos.

⁵ Treasury Department (1966).

⁶ Treasury Department (1966), p. 2.

⁷ See, for example, Claremont (2013) and Suter (2013), both in this volume.

⁸ See, for example, Crum et al. (1942); Bank et al. (2008); and, generally, Mehrotra (2009), at text accompanying footnotes 13–18.

income tax resembling its current incarnation was introduced. The impetus for this earlier introduction of the heretofore unconstitutional income tax was not war but in fact the panic and recession that followed the catastrophic earthquake (and resulting fires) that befell San Francisco in 1906.

It is worth noting from the outset one of the most important lessons from the historical interaction between tax policy and crises (be they purely natural disasters, man-made crises like war, or something combining the two): tax policy necessitated by crisis tends to become embedded in the long term. Continuing the US history example, while the income tax of 1913 had a top rate of 7 % and a very narrow base, the 1916 tax introduced graduated rates, dramatically increased both personal and corporate tax rates (the top marginal rate for individuals peaked, for a time, at 77 %), widened the tax base, and introduced estate and excess profits taxes. In other words, once the tax system expanded to a broadly-based and redistributive system after a major disaster and during a war, these changes became embedded (and largely inviolate) parts of the fiscal system. By the next world war, the US income tax had become the primary means of government revenue and part of the fabric of civic life. History has shown that the types of major fiscal responses that are necessitated by wars and major disasters end up sticking around and becoming relied upon by government treasuries.⁹

Given the nature of war and natural disasters, such responses are also often borne of patriotic emotions. The aforementioned ‘war and taxes’ literature largely focuses on the role played by ‘fiscal citizenship’ and the narrative of shared national sacrifice. Such notions, by no means unanimous, nonetheless played no small part in the introduction of measures that created a broad-based income tax during the first two world wars.¹⁰

A more cynical side to the idea of shared sacrifice is the populist response against profiteering (both perceived and real) during times of crisis. Such populism is another mechanism by which the public emotion stoked by disaster can be translated into tax policy. It was such a populist response against the steel and chemical industries profiteering from the World War I effort that aided the passage of laws ushering in a new era of income tax ubiquity.

As a matter of tax policy rather than political history, a fundamental issue with respect to taxation and profiteering is the propriety of using the tax system as a way of not simply raising revenue, but addressing a more systemic economic concern (in this case brought about by the exigencies of war—and perhaps the vicissitudes of human greed). This issue concerned the authors of the US Treasury Department’s

⁹ In fact, some of civilisation’s earliest recorded history tells of embedded tax law policy on account of war. Six-thousand year-old Sumerian clay cones tell of a king who raised taxes during wartime and then declined to concede the taxing power after the war’s conclusion: Adams (1993), p. 2. It is worth noting here that Japan’s post-Fukushima tax response has included various measures to fund reconstruction efforts, including increases in individual income tax rates, rollbacks of scheduled corporate tax rate relief (particularly with regard to passive income), and more limited allowance of credits for foreign tax paid.

¹⁰ See Bank et al. (2008).

1967 memorandum ‘Emergency Tax Proposals for a Post-Attack Economy’. The proposals recommend that even in a catastrophic nuclear war in which ‘the private economic sector may have ceased to function’, it is still desirable to have a personal income tax in place as early as possible. In addition to allowing the revenue authorities time to plan the system’s administration upon the private sector’s ‘reactivation’, a tax system would also necessitate ‘financial accounting that would implement general economic controls (for example, the prevention of profiteering)’¹¹ and would tax ‘illegal gains made by speculators and black market operators’.¹² ‘Emergency Tax Proposals for a Post-Attack Economy’ further calls upon the tax system to help regulate inflation during a recovery period by controlling liquidity levels and highlights the potential regulatory use of the tax system by assuming that the Government’s revenue needs would be largely financed by public debt.¹³

While the merits of these policies and suppositions can be argued, their serious consideration illustrates the potential malleability of the tax system in a fiscal system under considerable strain. Despite deep ambivalence towards using the tax system as a means of regulation and expenditure, aspects of the tax system make such uses an option during times of crisis. In a post-Katrina State Department report, Jane Gravelle considers various potential tax system responses to the problem of rising energy prices.¹⁴ Though ultimately unenthusiastic about any of them as ideal solutions to the problem, the report’s consideration of a suspension of the gasoline tax, the provision of income tax rebates and stimulative tax cuts, and the introduction of a windfall profit tax shows the resilience of the notion of using the tax system to address systemic economic problems in times of crisis.

13.3 Tax Policy and Disasters

Putting aside the efficacy of the particular policy recommendations, the preparation for nuclear war in the US serves as an incisive example of the extra-revenue purposes to which the tax system might be put in order to get a broken economy up and running again. Likewise, tax measures in response to recent disasters such as 9/11 and Hurricane Katrina show how even well-intentioned legislative tax responses meant to provide relief for individuals and businesses are complicated and not convincingly justified according to fundamental tenets of tax policy analysis. The response to Hurricane Katrina is particularly useful not only because of the

¹¹ Treasury Department (1967), p. 7.

¹² Treasury Department (1967), p. 9. Confusingly, the next sentences read, ‘(This last consideration should not be very important. Primary reliance for control of profiteering would have to be in criminal sanctions.)’.

¹³ Treasury Department (1967).

¹⁴ Gravelle (2005).

scale of the tragedy and the resulting tax-related legislation, but also because the episode exposed a sophisticated legal system's 'veritable inability to skilfully handle disasters'.¹⁵ The Katrina-inspired tax provisions illustrate the strain put upon traditional tax policy criteria on account of disasters, as well as the limitations and trade-offs of using the tax system for extra-ordinary purposes. By highlighting a selection of the tax policy concerns implicated by the Katrina emergency tax measures, it is possible to identify some main themes that link tax policy to disaster law more generally.

One month after Hurricane Katrina devastated New Orleans in August 2005, the *Katrina Emergency Tax Relief Act* of 2005 (KETRA) added a plethora of relief measures to those already existing in the Internal Revenue Code. The Internal Revenue Code provided that most relief or welfare payments were not included in taxable income,¹⁶ extensions of time to file and pay without interest or penalties,¹⁷ and that casualty losses were deductible subject to certain caps.¹⁸ KETRA allowed full deductions for casualty losses, more fulsome relaxations of filing and payment obligations, retirement account distribution relief, tax credits for those providing boarding to displaced victims, non-inclusion of certain forgiven debt obligations, tax credits for employee hiring and retention in affected areas, and full deductibility of charitable contributions made to relief organisations, to name a few.¹⁹

These measures can be categorised in various ways according to the main functional themes of disaster law. Using chronology as an organising, but imperfect, principle, disaster-related laws can be associated with *ex ante* concerns (prevention and mitigation), *ex post* concerns (response and recovery), and of course combinations thereof (for example, insurance and risk-sharing are matters of both mitigation and recovery). Naturally, each concern presents its own unique challenges for law and society generally and for tax policy more specifically.

Media and popular attention is understandably most acutely attuned to disaster *response* rather than disaster *prevention*. Many readers will be familiar with the staggering and increasing costs of natural disasters, which have doubled over the past 20 or so years in the US, for example. During that same time, the Government spent less than one-fifteenth of its disaster relief budget on disaster prevention and preparedness.²⁰ The crisis of political will can be explained, if not excused, by

¹⁵ CCELP (2007), p. 3.

¹⁶ Internal Revenue Code s139.

¹⁷ Internal Revenue Code s7508A.

¹⁸ Internal Revenue Code s165.

¹⁹ Public Law No. 109-73, 119 Stat. 2016 (2005). Japan's post-Fukushima tax relief measures similarly allow more lenient casualty loss carrybacks, accelerated depreciation for substitute assets, local and property tax exemptions, increased deductibility of certain charitable donations, and relaxed compliance requirements. The Tohoku region was also designated a special reconstruction zone, with geographically targeted deferral provisions and special credits for depreciation and wages paid to affected people.

²⁰ Healy and Malhotra (2009).

comparing the political capital to be gained from providing relief to identifiable and sympathetic disaster victims with that to be gained from investing in protection against a myriad of indefinite doomsdays that may or may not come in the future. Put another way, ‘cutting spending on levees, for example, will have no political costs in the likely event that no big storm strikes near New Orleans; other possible cuts are assured of yielding obvious problems’.²¹

Other practicalities also compound this problem and further complicate prevention and mitigation efforts. For example, the structure of government might blur lines of governmental responsibility and accountability (between local governments in the position to execute projects and central governments in the position to fund and coordinate them). To the extent that the national government benefits from a reduced need to make relief payments, the subnational government is not fully incentivised to undertake policies that prevent or mitigate disaster losses. The structure of property ownership, for example where important infrastructure is not publicly owned, can also make concerted efforts at prevention difficult.

Nevertheless, prevention is a logical starting point for a discussion of the role of disaster law, particularly for more disaster-prone nations such as Japan and Australia. In this regard, the particular political difficulties with disaster prevention can be illuminated by a closer look at the familiar gremlin of tax policy (and favourite legislative response for providing disaster relief): tax expenditure. Using the tax system to distribute funds from the government to particular persons for particular reasons is almost always inferior from a policy perspective to simply transferring the money directly. However, some of these shortcomings actually provide an argument *for* the use of tax expenditure (and for using the tax system for non-revenue purposes more generally) when it comes to preventing and responding to disasters.

The reason that tax expenditure is used even more than direct governmental spending to affect government expenditure is because tax expenditure is much less transparent than direct expenditure. Legislators can avoid accountability for governmental spending by ‘spending’ through the tax code: it is called something different, appears in the obscurity of tax law, and escapes the attention of even sophisticated observers. These are, of course, some of the most powerful criticisms of such usage of the tax system, but these traits explain the staying power of a largely disdained policy tool.

Another criticism of tax expenditure, which is relevant to the evaluation of tax law responses to disaster as further discussed below, is its regressivity. A tax deduction is more valuable to high-rate taxpayers (that is, the wealthy) and is less valuable to those with low marginal tax rates. Tax benefits such as deductions and credits, furthermore, are of *no* value to those who have no income tax liability (for example, low income and tax-exempt persons). Tax expenditure is exceedingly difficult to target and measure from a cost-benefit analysis in a way that direct

²¹ Super (2011), p. 1441.

expenditure is not. Finally, the effect of tax expenditure is distorted by self-selection and delayed by the time-lagged operation of the tax reporting and payment system. In short, in most cases, government spending as a general matter is more efficiently accomplished directly rather than via tax measures.

On the other hand, to the extent that tax expenditure can be targeted via means testing, it can contribute to progressivity and redistributive justice—issues that are agonisingly highlighted by events such as Katrina and the Fukushima disasters. Additionally, tax expenditure at the national level can avoid the risk of local corruption infecting direct expenditure programs. And finally, for better or worse (see the discussion of policy embedding above), legislation enacted into the tax code is generally considered permanent while direct spending legislation is almost by definition temporary.

This final concern is important in the context of disasters because of the ambiguous efficacy of ‘flexibility’ in legal regimes dealing with disaster. Professor Super argues that the legal flexibility purposefully and reverently built into disaster response regulations and mechanisms in the lead up to Hurricane Katrina actually compounded the costliness and ineffectiveness of the response to that disaster. Such discretion, rather than empowering decision-makers, petrified them with indecision just at the time when their resources were most in demand. Discretion also subjects disaster-related programs to the political risk of spending cuts to ‘discretionary’ spending. In the context of Katrina, ‘[t]he supposedly parsimonious retention of unexercised discretion has been exposed as the wasteful procrastination that it is’.²² Disasters require quick, definitive, well-targeted policy responses just as government’s ability to tailor such responses is at its most strained.

Thus, when it comes to unpopular or misunderstood but necessary expenditure, perhaps the obfuscatory and relatively permanent nature of tax expenditure can be used to policymakers’ advantage. Disaster-related programs properly tailored and implemented through the tax system could potentially avoid some of the misplaced political attention given to programs whose benefits are real and measurable but difficult to pinpoint. Such ready-made policy could in turn liberate governmental resources to more effectively attend to the immediate business of disaster response. Aprill and Schmallbeck, in criticising the effectiveness and fairness of *ad hoc* tax law responses to 9/11 and Hurricane Katrina, recommend the development of ‘off-the-shelf’ disaster tax provisions that are activated under certain predefined disastrous circumstances, so that ‘uneven and somewhat excessive tax relief’ motivated by sympathy more than tax policy concerns can be restrained.²³

An important *substantive* disaster law concern that implicates tax policy and is relevant to not only *ex ante* mitigation but also *ex post* response and recovery is that of insurance and cost-sharing. One of the most obvious and glaring fiscal challenges posed by disasters is effectively insuring against catastrophic loss. The nature of disasters makes at least some of their resulting losses unamenable to adequate

²² Super (2011), pp. 1466–1467.

²³ Aprill and Schmalbeck (2006), p. 96. See also Stead (2006).

private insurance coverage. A discussion of insurance against disaster losses is beyond the scope of this chapter, but private insurers' inability or unwillingness to insure against highly correlated risk such as that caused by disasters essentially necessitates some level of government intervention.²⁴ There are various forms that such governmental insurance intervention can take (again, a discussion of which is beyond the scope of this chapter), but commentators such as Chen, Gravelle, and Aprill and Schmallbeck have recommended that in this regard the tax system can play an effective role. Aid from the national government can generally be viewed as a form of implicit insurance and the tax system in particular 'provides a certain level of implicit insurance, which emanates from provisions that allow for deduction of losses and... insurance payments, as well as the exclusion of recoveries from insurance companies or the tortfeasors themselves'.²⁵ Many of KETRA's provisions are indeed superficial attempts at some measure of recompense. The most thorough examination of the KETRA tax measures' efficacy posits that designing tax relief so as to provide insurance against disaster-related loss of business 'will help match the irresistible congressional impulse to respond to disasters with tax provisions more directly targeted at the disaster'.²⁶

Unfortunately, the track record of targeting disaster relief using the tax system is not good.²⁷ Aside from the sensible relief from tax reporting and payment obligations themselves, using the tax system to deliver disaster relief has generally been poorly targeted—unable to assist those who most need it while aiding those perhaps least in need. Similarly situated taxpayers can also be treated unfairly (differentially) by virtue of the definition of the disaster event or geographical area to be covered by targeted tax relief.

As a general matter, tax expenditure, as noted above, is not easily directed towards low-income persons who need it most. Tax deductions are of the most use to those with high taxable income (graduated rates mean that those in higher tax brackets enjoy a correspondingly larger tax benefit from a deduction). Tax credits are only useful to those who pay income tax. Exclusion from income of casualty gains, forgiven loans and the like requires the existence of substantial property ownership or large loans in the first place in order to be relevant; again, these are most likely issues for higher-income taxpayers. The flip side, of course, is that supporting increased revenue needs with regressive taxes (such as consumption taxes on basic consumer goods) further undermines the most vulnerable during times of crisis.

Tax-based rebuilding and recovery incentives have likewise benefitted those with capital to invest more directly than the area affected by the disaster (though to the extent such incentives act as public insurance they can potentially be useful). In a similar vein, greater encouragement for charitable giving has provided generous

²⁴ Chen (2011), pp. 1132–1137.

²⁵ Chorvat and Chorvat (2003), pp. 425–426.

²⁶ Aprill and Schmalbeck (2006), p. 96. See also Stead (2006).

²⁷ See generally, Aprill and Schmalbeck (2006) and Gravelle (2005).

relief to wealthy altruists, but has had a less obvious direct effect on the actual provision of disaster relief.

Even with all of its proven limitations, the tax system can be a useful tool for effective governmental relief and response efforts as well as preparation and mitigation efforts. On a very basic level, the national tax office is emerging, for better or worse, as the governmental entity that has the best grasp on our whereabouts and wherewithal. The tax authorities know where we are and what we do and do not have, if anyone does. This generally dystopian development could potentially be harnessed in times of disaster to effectively communicate with and administer assistance to those in need. The tax system is already widely used to establish eligibility for and deliver governmental support—in a time of crisis when systems cannot be customised and reinvented, using what is already in place and suitable to task is critical.

13.4 Conclusion

The importance of the tax system during times of crisis is in some ways obvious. Crises such as war and disaster demand greater public expenditure, which requires greater public revenue, which generally requires an increased burden of taxation of one form or another. But taking the fundamental revenue-raising function of the tax system as a given, this chapter has discussed the proper role of the tax system—beyond raising revenue—in times of disaster. Using US tax policy documents developed in preparation for nuclear war and legislative responses to Hurricane Katrina, this chapter showed how fundamental tax policy concerns and disaster management affect one another in three ways.

First, tax policy borne during the emotion and exigency of war and disaster tends to become embedded in public policy. Second, crises can expose an unexpected capacity in the tax system to address systemic disaster-related economic issues such as inflation, profiteering, and insurance provision. Whereas traditional tax policy orthodoxy calls for an ideal tax system that unobtrusively raises revenue, crises expand the ways in which the tax system can effectively implement broader policy goals. Third, using the tax system to target relief is difficult in practice. Only when tax measures are most narrowly tailored to exploit the tax system's inherent and unique advantages can it be an ideal mechanism for delivering government expenditure.

It is hoped that this chapter contributes to the development of a fulsome and thoughtful literature examining the intersection of tax and disasters. If there is a recurring lesson from the accelerating parade of global natural disasters, it is that careful forethought and well-designed regulatory schemes can avoid some of the worst consequences of disasters and contribute to quicker, better, and fairer recoveries. As in every other area of human endeavour, tax law has its part to play as well.

References

- Adams C (1993) *For good and evil: the impact of taxes on the course of civilization*. Madison Books, Lanham
- Aprill E, Schmalbeck R (2006) Post-disaster tax legislation: a series of unfortunate events. *Duke Law Rev* 56:51–100
- Bank S, Stark K, Thorndike J (2008) *War and taxes*. Urban Institute Press, Washington
- Burnham D (1989) *A law unto itself: power, politics and the IRS*. Random House, New York
- California Center for Environmental Law and Policy (CCELP) (2007) White Paper, Disasters and the law. Report on workshop, Disaster law and the legal academy: curriculum, research and law reform, held at U.C. Berkeley Law School, 25 June 2007
- Chen J (2011) Modern disaster theory: evaluating disaster law as a portfolio of legal rules. *Emory Int Law J* 25:1121–1143
- Chorvat T, Chorvat E (2003) Income tax as implicit insurance against losses from terrorism. *Indiana Law Rev* 36:425–447
- Claremont Y (2013) Disaster in Japan: a case study. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Crum WL, Fennelly J, Seltzer L (1942) *Fiscal planning for total war*. National Bureau of Economic Research, Cambridge, MA
- Gravelle J (2005) Tax policy options after Hurricane Katrina. Congressional Research Service Report for Congress. <http://fpc.state.gov/c20419.htm>
- Healy A, Malhotra N (2009) Myopic voters and natural disaster policy. *Am Political Sci Rev* 103 (3):387–406
- Mehrotra A (2009) The price of conflict: war, taxes, and the politics of fiscal citizenship. *Mich Law Rev* 108:1053–1078
- Stead M (2006) Implementing disaster relief through tax expenditures: an assessment of the Katrina emergency tax relief measures. *N Y Univ Law Rev* 81:2158–2191
- Super D (2011) Against flexibility. *Cornell Law Rev* 96:1375–1468
- Suter R (2013) The March 2011 Tohoku disaster in Japanese science fiction. In: Butt S, Nasu H, Nottage L (eds) *Asia-Pacific disaster management*. Springer, Heidelberg (this volume). doi:10.1007/978-3-642-39768-4
- Treasury Department (1966) Fiscal planning for chaos [memorandum dated 3 February 1966]
- Treasury Department (1967) Emergency tax proposals for a post-attack economy [memorandum from Henry H. Fowler to Price Daniel, Director, Office of Emergency Planning, 26 December 1967]
- Wallace DF (2011) *The Pale King*. Little, Brown and Co., New York

Chapter 14

International Nuclear Law: Nuclear Safety, Emergency Response and Nuclear Liability

Helen Cook

14.1 Introduction

The regulation of nuclear energy is an important subject of international law. This is primarily due to nuclear weapons proliferation concerns relating to the non-peaceful use of nuclear energy and the potential transboundary consequences of nuclear accidents relating to civilian nuclear power reactors. A network of international treaties concerning nuclear energy establishes global regimes and enshrines global standards for the peaceful, secure and safe use of nuclear energy. In addition to nuclear non-proliferation and nuclear security objectives, these treaties and conventions attempt to ensure that civilian nuclear power reactors are operated safely and, if an accident occurs, that the consequences to the public and the environment will be mitigated and appropriate compensation will be available.

This chapter outlines the primary international treaties applicable to civilian nuclear power reactors. It then discusses some of the international initiatives that are underway to address lessons learned from the events at the Fukushima Daiichi nuclear power plant, which provide renewed impetus promoting widespread adherence to, and further strengthening and implementation of, the international treaties and conventions in the field of nuclear power.

The views expressed in this work are personal to the author and do not express the views of Pillsbury Winthrop Shaw Pittman LLP.

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14.2 International Nuclear Law

International nuclear law is broad in scope and encompasses a body of multilateral treaties, as well as bilateral agreements. International nuclear law covers both peaceful and non-peaceful uses of nuclear energy, reflecting its potential dual applications.

The various treaties relating to the use of nuclear energy are often categorised into the following subjects:

- Nuclear non-proliferation and de-nuclearisation
- Nuclear security
- Nuclear safety
- Emergency preparedness and response
- Liability for nuclear damage

Although nuclear security and nuclear non-proliferation are critical components of international nuclear law, the treaties that address these topics, together with other related multilateral and bilateral agreements, are not covered in this chapter.¹ This chapter limits its scope to international law of most relevance to preventing and mitigating any impact of civilian nuclear power reactor accidents: nuclear safety, emergency preparedness, and nuclear liability.

14.3 Nuclear Safety

The International Atomic Energy Agency (IAEA) defines ‘nuclear safety’ as ‘[t]he achievement of proper operating conditions, prevention of accidents or mitigation of accident consequences, resulting in protection of workers, the public and the environment from undue radiation hazards’.²

There are two primary international treaties that specifically address nuclear safety:

- *Convention on Nuclear Safety*, which entered into force on 24 October 1996; and
- *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention)*, which entered into force on 18 June 2001.

The scope of the *Convention on Nuclear Safety* is restricted to general principles applying to the operation of civilian nuclear power plants.³ The *Joint Convention* was subsequently adopted to address the safety of spent fuel and radioactive waste

¹ See generally: Joyner (2009), Joyner (2011), Njølstad (2011), and Bellany et al. (1985).

² IAEA (2007).

³ The *Convention on Nuclear Safety* is limited to the safety of ‘nuclear installations’, defined as ‘any land-based civil nuclear power plant under [the] jurisdiction [of Contracting Parties] including such storage, handling and treatment facilities for radioactive materials as are on the same site

management. Together, these treaties are intended to provide comprehensive coverage of the primary nuclear safety objectives and obligations of Contracting Parties undertaking activities in the nuclear fuel cycle. As can be seen from Table 14.1, the *Convention on Nuclear Safety* and the *Joint Convention* have entered into force for most Asia-Pacific states that operate civilian nuclear power plants or research reactors within their territories.

14.3.1 *Convention on Nuclear Safety*

The purpose of the *Convention on Nuclear Safety* is stated in Article 1 as follows:

- (i) to achieve and maintain a high level of nuclear safety worldwide through the enhancement of national measures and international cooperation including, where appropriate, safety-related technical cooperation;
- (ii) to establish and maintain effective defences in nuclear installations against potential radiological hazards in order to protect individuals, society and the environment from harmful effects of ionizing radiation from such installations; and
- (iii) to prevent accidents with radiological consequences and to mitigate such consequences should they occur.

All Contracting Parties are to take legislative, regulatory and administrative measures under national law to implement their obligations.⁴ Specifically, Contracting Parties are to establish legislative and regulatory frameworks to govern the safety of nuclear installations, including: (1) national safety requirements and regulations; (2) a licensing system prohibiting the operation of a nuclear installation without a licence; (3) an inspection and assessment regime; and (4) an enforcement regime.⁵

Within its framework, the *Convention on Nuclear Safety* makes evident the interrelationship between the role of the state, the nuclear regulatory authority and the ‘licence holder’ (the entity permitted by the regulatory authority to undertake regulated activities, such as the construction and operation of nuclear power plants) over the lifecycle of nuclear facilities, including siting, design, construction, commissioning, operation and decommissioning activities.

The *Convention on Nuclear Safety* enshrines a number of fundamental principles of nuclear safety. The principle of regulatory independence provides that the regulatory authority must be institutionally separated from the entities involved in the promotion and utilisation of nuclear power.⁶ Establishment of such institutional

and are directly related to the operation of the nuclear power plant’: *Convention on Nuclear Safety*, Art. 2(i).

⁴ *Convention on Nuclear Safety*, Art. 4.

⁵ *Convention on Nuclear Safety*, Art. 7.

⁶ *Convention on Nuclear Safety*, Art. 8.

Table 14.1 Status of nuclear treaties in the Asia-Pacific

Country ^a	Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency		Convention on Early Notification of a Nuclear Accident		Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	Convention on Supplementary Compensation for Nuclear Damage ^b	Joint Protocol relating to the Application of the Vienna Convention and the Paris Convention
	X		X				
Australia	X		X		X		
Brunei							
Darussalam ^c							
Canada	X		X		X		
Chile	X		X		X		X
China	X		X		X		
Indonesia	X		X		X		
Japan	X		X		X		
Republic of Korea	X		X		X		
Malaysia	X		X				
Mexico	X		X		X		
New Zealand	X		X				
Papua New Guinea							
Peru	X		X				
Philippines	X		X				
Russia	X		X		X		
Singapore	X		X		X		
Chinese Taipei ^c							
Thailand	X		X				
United States	X		X		X		Ratified
Vietnam	X		X		X		

X Treaty is in force

^aMember Economies of Asia-Pacific Economic Cooperation^bConvention is not yet in force^cNot a member of the International Atomic Energy Agency

separation is important to effectively apply stringent safety standards through regulatory oversight, verification and enforcement. To ensure its own independence, the regulator must be properly mandated under national law and have sufficient financial and human resources to undertake its responsibilities.⁷

All entities engaged in activities relating to nuclear installations must establish policies that give due priority to nuclear safety.⁸ While this obligation is framed in quite general terms, the prioritisation of nuclear safety and policies to implement this obligation usually pervade the national nuclear laws, nuclear regulations and licensing requirements of State Parties, as well as operational codes, procedures and guidelines developed by the nuclear industry. Indeed, in some jurisdictions, the concept of a ‘nuclear safety culture’ has developed, which refers to ‘the core values and behaviours resulting from a collective commitment by leaders and individuals to emphasise safety over competing goals to ensure protection of people and the environment’.⁹

Despite the extensive regulatory control and oversight of nuclear facilities, the *Convention on Nuclear Safety* holds that the licence holder has primary responsibility for the safety of a nuclear installation.¹⁰ A licence from the regulatory authority is required for nuclear-related activities, and many of the other principles set out in the *Convention on Nuclear Safety* are integral components of the licensing process for siting, design, construction, commissioning, operation and decommissioning of nuclear power plants. For example, the *Convention on Nuclear Safety* sets out the requirement to have a quality assurance programme in place,¹¹ to consider human capabilities and performance limitations,¹² to incorporate ‘defense in depth’,¹³ and to implement emergency plans.¹⁴ These obligations are usually formally codified in national laws and regulations and are implemented and complied with by licence holders as preconditions to obtaining and holding a valid licence to conduct regulated activities.

⁷ *Convention on Nuclear Safety*, Art. 8.

⁸ *Convention on Nuclear Safety*, Art. 10.

⁹ US Nuclear Regulatory Commission, Safety Culture Policy Statement, NUREG/BR-0500. The IAEA defines ‘nuclear safety culture’ as ‘[t]hat assembly of characteristics and attitudes in organisations and individuals which establishes that, as an overriding priority, nuclear power plant safety issues receive the highest attention warranted by their significance’: IAEA (1991).

¹⁰ *Convention on Nuclear Safety*, Art. 9.

¹¹ *Convention on Nuclear Safety*, Art. 13.

¹² *Convention on Nuclear Safety*, Art. 12.

¹³ *Convention on Nuclear Safety*, Art. 18 (specifically the ‘design and construction of a nuclear installation [to] provid[e] for several reliable levels and methods of protection (defense in depth) against the release of radioactive materials, with a view to preventing the occurrence of accidents and to mitigating their radiological consequences should they occur’).

¹⁴ *Convention on Nuclear Safety*, Art. 16.

14.3.2 *Joint Convention*

The *Joint Convention* covers the safe management of spent fuel and radioactive waste resulting from the operation of civilian nuclear power reactors.¹⁵ The *Joint Convention* is intended to align with the *Convention on Nuclear Safety* to effectively achieve comprehensive coverage over the safety of civilian nuclear power reactors.

The core objective of the *Joint Convention* is to ensure the establishment of effective defenses against potential nuclear hazards so that individuals, society and the environment are protected from harmful effects of ionising radiation.¹⁶ The *Joint Convention* contains a chapter dedicated to the safety of spent fuel management and a chapter dedicated to the safety of radioactive waste management. It also sets out general safety provisions and concludes with some important ‘miscellaneous provisions’, including provisions relating to the transboundary movement of nuclear waste and spent fuel.

The general safety requirements for the safety of spent fuel management are articulated in Article 4.¹⁷ These requirements reflect some of the core principles of spent fuel management, including that radioactive waste resulting from spent fuel management should be kept to the minimum practicable, that management activities require a licence from the regulatory authority and that Contracting Parties should seek to avoid imposing impacts and undue burdens on future generations. The general provisions for the safety of radioactive waste management

¹⁵ *Joint Convention*, Art. 3.

¹⁶ *Joint Convention*, Art. 1.

¹⁷ Article 4 provides that:

... each Contracting Party shall take the appropriate steps to:

- (i) ensure that criticality and removal of residual heat generated during spent fuel management are adequately addressed;
- (ii) ensure that the generation of radioactive waste associated with spent fuel management is kept to the minimum practicable, consistent with the type of fuel cycle policy adopted;
- (iii) take into account interdependencies among the different steps in spent fuel management;
- (iv) provide for effective protection of individuals, society and the environment, by applying at the national level suitable protective methods as approved by the regulatory body, in the framework of its national legislation which has due regard to internationally endorsed criteria and standards;
- (v) take into account the biological, chemical and other hazards that may be associated with spent fuel management;
- (vi) strive to avoid actions that impose reasonably predictable impacts on future generations greater than those permitted for the current generation;
- (vii) aim to avoid imposing undue burdens on future generations.

in Article 11 are substantively the same as the obligations for the safety of spent fuel management.

The *Joint Convention* espouses specific obligations to promote safety during the siting, design, construction and operation of facilities for both spent fuel and radioactive waste. It also provides obligations with respect to the closure of radioactive waste facilities¹⁸ and the disposal of spent fuel.¹⁹

The implementing measures under the *Joint Convention* are similar to those under the *Convention on Nuclear Safety*. In particular, each Contracting Party is to establish a legislative and regulatory framework to govern the safety of spent fuel and radioactive waste management. This framework provides for a licensing system that prohibits the operation of a spent fuel or radioactive waste facility without a licence, a system of institutional control, regulatory inspection and reporting, an enforcement regime, and clear allocation of responsibilities between the different entities involved in spent fuel and radioactive waste management.²⁰ As stated in the *Convention on Nuclear Safety*, the regulatory body must be properly mandated, effectively independent and sufficiently resourced.²¹ The licensee is to have primary responsibility for the safety of licensed activities.²² Provisions requiring quality assurance,²³ operational radiation protection²⁴ and emergency preparedness,²⁵ are also included.

Finally, the *Joint Convention* also contains important principles governing the transboundary movement of spent fuel and radioactive waste, including requirements that: (1) the state of origin ensures transboundary movement is authorised and takes place with the prior consent of the state of destination; (2) transboundary movement through states of transit is subject to all international obligations regarding the utilised mode of transport; (3) the state of destination has the administrative and technical capacity and regulatory structure to manage spent fuel or radioactive waste consistent with the *Joint Convention*; and (4) the state of origin has taken appropriate steps to permit re-entry into its territory if the transboundary movement cannot be completed in accordance with the requirements of the *Joint Convention*.²⁶

¹⁸ *Joint Convention*, Art. 17.

¹⁹ *Joint Convention*, Art. 10.

²⁰ *Joint Convention*, Art. 19.

²¹ *Joint Convention*, Art. 20.

²² *Joint Convention*, Art. 21.

²³ *Joint Convention*, Art. 23.

²⁴ *Joint Convention*, Art. 24.

²⁵ *Joint Convention*, Art. 25.

²⁶ *Joint Convention*, Art. 27.

14.3.3 *National Reports and Peer Reviews*

Both the *Convention on Nuclear Safety* and the *Joint Convention* are ‘incentive-oriented’, being designed to encourage adherence by as many countries as possible. Contracting Parties are to submit regular national reports documenting their implementation of the Conventions.²⁷ These national reports are ‘peer-reviewed’ at meetings held in accordance with the respective procedural arrangements. The Contracting Parties may also hold ‘extraordinary meetings’ under certain circumstances.²⁸

14.3.4 *Nuclear Safety Following Fukushima*

The Fukushima nuclear accident focused attention on a number of specific issues and general subject areas related to the safe operation of nuclear power plants and the safety of spent fuel management. Some of these include:

- *Plant design basis*: the range of conditions and events to be taken explicitly into account in the design of a nuclear power plant, according to established criteria, such that the facility can withstand them without exceeding authorised limits by the planned operation of safety systems.²⁹
- *Station blackout*: the complete loss of all alternating current (AC) power supplies from off-site, the power plant generator and emergency power systems.
- *External hazards/events*: events unconnected with the operation of a facility or the conduct of an activity that could have an effect on the safety of the facility or activity. Typical examples of external events for nuclear facilities include earthquakes, tornadoes, tsunamis and aircraft crashes.³⁰
- *Emergency preparedness and response*: the preparation for and performance of actions to mitigate the consequences of an emergency for human health and safety, quality of life, property and the environment in the event of a nuclear accident.³¹
- *Regulatory independence*: the institutional separation between the entities responsible for the regulation, and the promotion and utilisation of nuclear power plants.

In April 2011, while the aftermath of the Fukushima Daiichi nuclear power plant incident was continuing, the Contracting Parties to the *Convention on Nuclear Safety* met in Vienna for its 5th Review Meeting. At the meeting, the Contracting

²⁷ *Convention on Nuclear Safety*, Article 5; *Joint Convention*, Art. 32.

²⁸ *Convention on Nuclear Safety*, Article 23; *Joint Convention*, Art. 31.

²⁹ IAEA (2007), p. 51.

³⁰ IAEA (2007), p. 79.

³¹ IAEA (2007), p. 69.

Parties made a specific statement in response to the Fukushima nuclear accident. The response states (in part):

The international community recognises the significance of the Fukushima nuclear accident, which highlights the need to consider new challenges and underlies the paramount importance of safety in the use of nuclear energy.

The Contracting Parties reaffirm their commitment to the objectives of the Convention on Nuclear Safety: to achieve and maintain a high level of nuclear safety worldwide through the enhancement of national measures and international cooperation; to establish and maintain effective defences in nuclear installations against potential radiological hazards; and to prevent accidents with radiological consequences and to mitigate such consequences should they occur.

The Contracting Parties are committed to draw and act upon the lessons of the Fukushima accident. In line with their national responsibilities, all Contracting Parties are already carrying out reviews to ensure the continued safety of their existing and planned nuclear power plants and are committed to taking prompt actions as lessons are learned. It is understood that the lessons learned processes cannot be completed until sufficient additional information is known and fully analysed. Japan has committed to provide this information as soon as possible.³²

In August 2012, the 72 Contracting Parties to the *Convention on Nuclear Safety* met in an 'Extraordinary Meeting' to review and discuss lessons learned from the events at the Fukushima plant and to consider the effectiveness of the *Convention on Nuclear Safety*.³³ At the Extraordinary Meeting, the Contracting Parties held discussions around six subject areas: (1) external events; (2) design issues; (3) severe accident management and recovery (on-site); (4) emergency preparedness and response (off-site); (5) national organisations; and (6) international cooperation.

Prior to the Extraordinary Meeting, Contracting Parties submitted national reports addressing the lessons identified by the Fukushima nuclear accident and the actions taken by each state at the national level in response to Fukushima.³⁴ The Final Summary Report of the Extraordinary Meeting notes that, while Contracting Parties had undertaken reviews in different ways, there was a commonality in the results and subsequent actions taken in response.³⁵ The Final Summary Report includes a summary of actions that Contracting Parties reported to have undertaken nationally to address lessons learned from Fukushima. It is possible that these actions could form the basis of future substantive changes to the *Convention on Nuclear Safety* and other applicable treaties. The Contracting Parties also identified a set of 15 'action-oriented objectives for strengthening nuclear safety', which are annexed to the Final Report, and which Contracting Parties are encouraged to implement.

³² Summary Report of the 5th Review Meeting of the Contracting Parties to the Convention on Nuclear Safety, Vienna, Austria (2011).

³³ IAEA Convention on Nuclear Safety Final Summary Report, p. 2.

³⁴ IAEA Convention on Nuclear Safety Final Summary Report, p. 3.

³⁵ IAEA Convention on Nuclear Safety Final Summary Report, p. 4.

Switzerland³⁶ and the Russian Federation³⁷ both submitted proposals to amend the *Convention on Nuclear Safety*. Switzerland's proposal focuses on increased international transparency and communication. The proposal suggests that the regulatory authorities and national safety standards (covering siting, design and construction and operation) of Contracting Parties should be subject to periodic review by 'external experts' to ensure compliance with IAEA requirements. Indicative of the primacy given to transparency in the Swiss proposal is the suggestion that Article 25 of the Convention be renamed 'Transparency' rather than 'Summary Reports' and that Contracting Parties should make their national reports, as well as the questions and comments received from other Contracting Parties, available to the public. This proposal is clearly aimed at increasing incentives for states to standardise and benchmark their safety standards to those set by the IAEA by subjecting national regimes to greater levels of peer and public scrutiny.

The amendments proposed by the Russian Federation include the periodic review of operating nuclear power plants, as well as focusing on design requirements and accident response. The Russian proposal specifically suggests the inclusion of a new provision into Article 18 requiring that the design of a nuclear installation takes account of various possible combinations of 'unfavourable external factors of natural and man-made origin characteristic for the site location, including their combined impact on the nuclear installation'. While most national systems already include such a requirement, Fukushima has certainly promoted reassessment of the robustness of current design basis standards.

The Contracting Parties to the *Convention on Nuclear Safety* did not reach agreement on any immediate amendments to the text of the Convention. Instead, it was decided to establish an 'effectiveness and transparency' working group, open to all Contracting Parties, with the task of reporting to the next review meeting on proposals to amend the Convention.

14.4 Emergency Preparedness and Response

A legal framework for the international regime of emergency preparedness and response to a nuclear accident quickly developed in the wake of the Chernobyl accident on 26 April 1986.³⁸ Within 5 months of the accident, states had negotiated both the *Convention on Early Notification of a Nuclear Accident (Notification Convention)* and the *Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (Assistance Convention)*. The *Notification Convention* entered into force on 27 October 1986 and the *Assistance Convention* entered into

³⁶ See Swiss Confederation (2010).

³⁷ See Russian Federation (2010).

³⁸ Rautenbach et al. (2006), p. 9 and n. 6.

force on 26 February 1987. Table 14.1 shows that most of the Asia-Pacific countries have brought into force the *Notification Convention* and the *Assistance Convention*.

The purpose of the *Notification Convention* is to place a duty on states to notify other states of nuclear accidents with actual or potential international transboundary effects that could be of radiological significance to other states.³⁹ The purpose of the *Assistance Convention* is, on the other hand, to place a duty on states to cooperate in arranging and providing assistance in the case of a nuclear accident or radiological emergency.⁴⁰ Both Conventions are underpinned by a desire to minimise and mitigate any consequences of a nuclear emergency by protecting life, property and the environment.

14.4.1 *Notification Convention*

The obligations contained in the *Notification Convention* apply to nuclear accidents when a release of radioactive materials occurs or is likely to occur and when such release has resulted or may result in an international transboundary release that could pose radiological safety threats to another state.⁴¹

In the event of a nuclear accident, the State Party responsible for the facilities or activities, or persons or legal entities under its jurisdiction or control, has two primary obligations: (1) to notify, directly or through the IAEA, those states which are or may be physically affected as well as the IAEA of the nuclear accident and various details concerning the accident;⁴² and (2) to furnish specified information relevant to minimising the radiological consequences of the nuclear accident in those states.⁴³ State Parties are to cooperate with each other and with the IAEA to facilitate prompt assistance in the event of a nuclear accident or radiological emergency to minimise the consequences and to protect life, property and the environment.⁴⁴

14.4.2 *Assistance Convention*

Pursuant to the *Assistance Convention*, a State Party may request assistance from other State Parties, the IAEA or other international organisations in the event of a nuclear accident or radiological emergency, whether or not the accident or

³⁹ *Notification Convention*, Art. 1.

⁴⁰ *Assistance Convention*, Art. 1.

⁴¹ *Notification Convention*, Art. 1.1.

⁴² *Notification Convention*, Art. 2(a).

⁴³ *Notification Convention*, Art. 2(b), Art. 5.

⁴⁴ *Notification Convention*, Art. 1.1.

emergency originates within its territory, jurisdiction or under its control.⁴⁵ This includes requesting assistance for medical treatment or for the temporary relocation of people.⁴⁶ A State Party to which a request for assistance is directed must promptly decide whether it is in a position to render the requested assistance and, if so, the scope and terms of such assistance.⁴⁷ The requesting state will maintain responsibility for the overall direction, control, coordination and supervision of the assistance it receives within its territory.⁴⁸ Assistance may be provided on a gratuitous or reimbursement basis.⁴⁹ Either the requesting state or the assisting party may, upon consultation and written notification, request termination of assistance.⁵⁰

The IAEA is to respond to a request for assistance by making available resources, transmitting information to other states and international organisations and, at the request of a state, coordinating available international assistance.⁵¹ The IAEA is also requested by the State Parties to the *Assistance Convention* to collect and disseminate information concerning experts, equipment, materials and research relating to nuclear accidents or radiological emergencies and to assist State Parties with emergency planning, monitoring and training.⁵² Each State Party is to notify the IAEA and other State Parties of its competent authorities and point of contact authorised to make and receive requests for assistance.⁵³

The *Assistance Convention* also contains provisions relating to the protection of confidentiality of exchanged information;⁵⁴ privileges, immunities and facilities that the requesting state will afford the assisting state;⁵⁵ and claims and compensation in respect of assistance provided.⁵⁶

14.4.3 *Emergency Preparedness and Response Following Fukushima*

The events at the Fukushima Daiichi nuclear power plant cannot be considered in isolation from the extreme natural disaster of the Great East Japan Earthquake and

⁴⁵ *Assistance Convention*, Art. 2.1.

⁴⁶ *Assistance Convention*, Art. 2.5.

⁴⁷ *Assistance Convention*, Art. 2.3.

⁴⁸ *Assistance Convention*, Art. 3.

⁴⁹ *Assistance Convention*, Art. 7.

⁵⁰ *Assistance Convention*, Art. 10.

⁵¹ *Assistance Convention*, Art. 2.6.

⁵² *Assistance Convention*, Art. 5.

⁵³ *Assistance Convention*, Art. 4.1.

⁵⁴ *Assistance Convention*, Art. 6.

⁵⁵ *Assistance Convention*, Art. 8.

⁵⁶ *Assistance Convention*, Art. 10.

tsunami, which resulted in tragic loss of life and devastation over large land areas. Unlike the Three Mile Island and Chernobyl nuclear accidents, emergency response at the Fukushima plant was undertaken in the context of and hampered by a contemporaneous state of national emergency due to a natural disaster.

The experience at Fukushima has given rise to a reassessment of international and national emergency preparedness and response arrangements in the event of a nuclear accident or radiological emergency in combination with an extreme natural disaster. The lessons learned are still being assessed as part of national and international responses. The IAEA Action Plan (discussed below) incorporates emergency preparedness and response as one of its 12 areas of focus.

14.5 Nuclear Liability

14.5.1 *International Nuclear Liability Regimes*

Some national nuclear liability laws predate international nuclear liability treaties. Countries such as Germany, Japan, Switzerland, the United Kingdom and the United States (US) promulgated national nuclear liability laws prior to the development of international nuclear liability regimes.⁵⁷ The first such international regime, the *Paris Convention on Third Party Liability in the Field of Nuclear Energy (Paris Convention)*, was adopted in 1960 under the auspices of the Organisation for European Economic Cooperation (now, the Organisation for Economic Cooperation and Development: OECD). The *Paris Convention* is a regional convention, open to adoption by OECD member states. Separately, the IAEA facilitated the adoption in 1963 of the *Vienna Convention on Civil Liability for Nuclear Damage (Vienna Convention)*, which is open to adoption by any state. These initial treaties have been revised by amendments and supplementary agreements.

Both international regimes for third party liability for nuclear damage contain a set of fundamental principles, divided below into substantive and procedural principles.

The key substantive principles of nuclear liability include:

- *The operator of a nuclear installation is exclusively liable for nuclear damage:* all liability is legally ‘channelled’ to the operator of the nuclear installation, to the exclusion of any other entity (such as a manufacturer, supplier or construction contractor). This is known as ‘the channelling principle’. The operator is

⁵⁷ See: *Price-Anderson Act 1957* (US); *Nuclear Installations (Licensing and Insurance) Act 1959* (United Kingdom); *Atomic Energy Act 1959* (Germany); *Federal Law on the Exploitation of Nuclear Energy for Peaceful Purposes and Protection from Irradiation 1959* (Switzerland); and *Nuclear Damages Act 1961* (Japan).

only liable under these legal provisions and not under any other law or legal regime, such as tort law.

- *Strict (no fault) liability is imposed on the operator*: the operator is liable irrespective of fault or negligence. Subject to specific and limited exceptions, the operator is not relieved from liability due to acts of *force majeure* or intervening acts of third parties.
- *Liability is limited in amount*: the installation state sets minimum and (sometimes) maximum limits on the amount of the operator's liability.
- *Liability is limited in time*: claims must be brought within a defined period of time from the date of the nuclear incident and from the date on which the victim had knowledge, or should have had knowledge, of the damage.
- *Mandatory and commensurate financial coverage of the operator's liability*: operators must maintain financial security (guarantees, liquid assets or insurance) to cover a minimum amount of liability.
- *Non-discrimination based on nationality, domicile or residence*: states must not discriminate in the provision of compensation; claimants, wherever they are located, can access the available compensation.

The key procedural rules of the nuclear liability regimes are as follows:

- *States cannot rely on the defence of state immunity*: pursuant to the Vienna and Paris Conventions, a liable state or agency of the state cannot invoke state immunity as a defence.
- *Exclusive jurisdiction is granted to the courts of one state, to the exclusion of the courts of other states*: the courts of the Contracting Party in whose territory the nuclear incident occurs have exclusive jurisdiction. If the incident occurs outside the territory of a Contracting Party or where the place of the incident cannot be determined with certainty, jurisdiction lies with the courts of the Contracting Party of the liable operator.
- *Choice of law rules are established*: the competent court will apply the law of its state (including its own law relating to the conflict of laws).
- *Recognition and enforcement of foreign judgments*: judgments rendered by the competent court of a Contracting Party must be recognised by and enforced in the territory of all other Contracting Parties without a re-hearing of the merits (subject to limited exceptions).

The international nuclear liability regimes were revised following the Chernobyl nuclear accident in 1986 due to the perception of inadequate coverage.⁵⁸ The first initiative, the 1988 *Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention (Joint Protocol)*, was developed as a mechanism to link the two regimes. There also have been amendments to the provisions of both the *Paris Convention* and the *Vienna Convention*: the 2004 *Protocol to Amend the Paris Convention* (2004 Protocol) and the 1997 *Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage* (1997 Protocol), respectively.

⁵⁸ See generally Schwartz (2006), pp. 44–57.

The most recent iterations of the *Paris Convention* and the *Vienna Convention* expand the class of compensatory injuries, by adding to the definition of nuclear damage (to the extent determined by the law of the competent court) economic loss, costs of measures of reinstatement of impaired environment, loss of income from an economic interest in use or enjoyment of the environment, costs of preventative measures.⁵⁹ Under the 2004 Protocol, the nuclear operator's liability is increased to an amount not less than 700 € million and under the 1997 Protocol, the operator's liability is raised to not less than 300 million Special Drawing Rights.⁶⁰

In addition, the 1997 *Convention on Supplementary Compensation for Nuclear Damage* (CSC) has been developed under the auspices of the IAEA. So far it has been ratified by four countries,⁶¹ but is not yet in force.⁶² The CSC aims to provide additional state funds in the event of a nuclear accident and incorporates the key principles of international nuclear liability in substantially the same formulation as the 1997 Protocol and the 2004 Protocol. It is also designed to function as a global regime by recognising the national nuclear liability legislation of certain states (that may not be a party to either the *Vienna Convention* or the *Paris Convention*) as a basis for inclusion in the CSC's international nuclear liability regime. The CSC is open to any state which is a party to the *Vienna Convention* or the *Paris Convention*, or which declares that it has national legislation in line with the fundamental principles of nuclear liability set out in an Annex to the CSC.⁶³

Despite the international significance of nuclear liability, the adoption by states of the various nuclear liability treaties has been piecemeal. Comprehensive geographical coverage of any one convention or regime has not yet been achieved. This is certainly the case for the Asia-Pacific region, where only the US has ratified the CSC. In addition, the 2004 Protocol is not yet in force and only 11 states have ratified or acceded to the 1997 Protocol.

14.5.2 International Nuclear Liability Following Fukushima

The IAEA Action Plan developed post-Fukushima (discussed further below) calls upon IAEA member states to work towards establishing a global nuclear liability regime and requests member states to give due consideration to joining an international nuclear liability instrument. The IAEA Action Plan specifically requests the

⁵⁹ 2004 Protocol, Art. I.B; 1997 Protocol, Art. 2(2). The 1963 *Vienna Convention* limited nuclear damage to personal injury, loss or damage of property, or other damage 'compensable under the law of the competent court': Art. 1(k).

⁶⁰ Special Drawing Rights are an international reserve asset of the International Monetary Fund.

⁶¹ The four countries are Argentina, Morocco, Romania and the United States. There are 15 signatory countries.

⁶² Pursuant to Article XX, the CSC will enter into force on the 90th day following the date on which at least five states with a minimum of 400,000 units of installed nuclear capacity (MWt) have deposited an instrument referred to in Article XVIII.

⁶³ CSC, Art. XVIII.

International Expert Group on Nuclear Liability (INLEX) to recommend actions to be taken to achieve this goal.

INLEX published its 'Recommendations on how to facilitate achievement of a global nuclear liability regime' in June 2012.⁶⁴ While these recommendations state that member states (both with and without nuclear installations) should adhere to one or more of the relevant international nuclear liability instruments and implement the international principles of nuclear liability into national laws, they do not espouse any new mechanism or plan to achieve universal adherence. This area of international law is one in which considerable work remains to be done.

14.6 International Nuclear Law and Fukushima

National legislative and regulatory responses can generally be implemented more swiftly than international responses, and countries have considered and mandated a variety of changes based on lessons learned from Fukushima. International nuclear law covering the subjects set out above is of direct relevance to the events at Fukushima. The international community has been actively re-considering nuclear safety, emergency preparedness and nuclear liability in the aftermath of Fukushima.

As discussed above, much of the discussion has occurred in the context of nuclear safety, including during the Ministerial Conference on Nuclear Safety and the review meetings of the Contracting Parties to the *Convention on Nuclear Safety*. In parallel, the IAEA Board of Governors began consultations among its member states to prepare an Action Plan on Nuclear Safety (Action Plan) to strengthen global nuclear safety, emergency preparedness and radiation protection in the event of another nuclear accident.⁶⁵ The Action Plan was approved by the Board of Governors and endorsed by the 55th General Conference of the IAEA in September 2011.⁶⁶

The aim of the Action Plan is to strengthen nuclear safety worldwide through actions in 12 main areas: (1) safety assessments ('stress tests'); (2) IAEA peer reviews; (3) emergency preparedness and response; (4) national regulatory bodies; (5) operating organisations; (6) IAEA safety standards; (7) the international legal framework; (8) countries embarking on nuclear energy programmes; (9) capacity building; (10) protecting people and the environment from ionising radiation; (11) communication and information dissemination; and (12) research and development.

The member states of the IAEA and the IAEA Secretariat are currently implementing the Action Plan. For example, with respect to 'safety assessments', the Action Plan resolves to 'undertake assessment of the safety vulnerabilities of nuclear power plants in the light of lessons learned to date from the accident' at the Fukushima Daiichi nuclear power plant.⁶⁷ Each member state is to promptly

⁶⁴ International Expert Group on Nuclear Liability (undated).

⁶⁵ IAEA (2011).

⁶⁶ IAEA (2011), p. 1, n. 1.

⁶⁷ IAEA (2011), pp. 2–3.

perform a national assessment of the design of nuclear power plants in their territory against site-specific extreme natural hazards and to implement the necessary corrective actions. The IAEA Secretariat is tasked with developing a methodology which may be used by member states in carrying out their national assessments, undertaking peer reviews of national assessments and providing assistance and support to member states in carrying out implementation activities. These activities, and activities with respect to other Action Plan initiatives, are ongoing. They demonstrate, in a practical way, the implementation of international nuclear law and the commitments of states through the relevant treaties.

14.7 Conclusion

The accidents at Three Mile Island and Chernobyl were catalysts for legal and regulatory change, which was implemented at international and national levels. It is hoped that the accident at the Fukushima Daiichi nuclear power plant will herald a new era of increased international cooperation which will further strengthen and harmonise world-wide safety standards. Substantive changes to international nuclear law are likely to follow the changes already made, and currently being made, at national levels, particularly as they generally show a consistent approach. However, it is too soon to tell the full extent of the content of and the mechanisms through which such changes will occur. Clearly, the international nuclear community must continue to react in a positive and productive manner to all the lessons learned from the events at the Fukushima Daiichi nuclear power plant.

References

- Bellany I, Blacker C, Gallacher J (eds) (1985) *The nuclear non-proliferation treaty*. Frank Cass, London
- IAEA (1991) IAEA Safety Series No.75-INSAG-4. Vienna, IAEA. http://www-pub.iaea.org/MTCD/publications/PDF/Pub882_web.pdf. Accessed 22 Apr 2013
- IAEA (2007) IAEA safety glossary: terminology used in nuclear safety and radiation protection. Vienna, IAEA. http://www-pub.iaea.org/MTCD/publications/PDF/Pub1290_web.pdf. Accessed 22 Apr 2013
- IAEA (2011) IAEA action plan on nuclear safety. <http://www.iaea.org/newscenter/focus/actionplan/reports/actionplanns130911.pdf>. Accessed 22 Apr 2013
- International Expert Group on Nuclear Liability (undated) IAEA action plan on nuclear safety – nuclear liability. <http://gnssn.iaea.org/actionplan/Shared%20Documents/Action%2007%20-%20International%20Legal%20Framework/Recommendations%20on%20how%20to%20facilitate%20achievement%20of%20a%20global%20nuclear%20liability%20regime.pdf>. Accessed 20 Apr 2013
- Joyner D (2009) *International law and the proliferation of weapons of mass destruction*. Oxford University Press, Oxford
- Joyner D (2011) *Interpreting the nuclear non-proliferation*. Oxford University Press, Oxford
- Njølstad O (ed) (2011) *Nuclear proliferation and international order: challenges to the non-proliferation treaty*. Routledge, London

- Rautenbach J, Tonhauser W, Wetherall A (2006) Overview of the International legal framework governing the safe and peaceful uses of nuclear energy: some practical steps. In: OECD-Nuclear Energy Association and IAEA (2006) International nuclear law in the post-Chernobyl period. <http://www.oecd-nea.org/law/chernobyl/>. Accessed 22 Apr 2013
- Schwartz J (2006) International nuclear third party liability law: the response to Chernobyl. In: OECD-Nuclear Energy Association and IAEA (2006) International Nuclear Law in the Post-Chernobyl Period, pp 44–57. <http://www.oecd-nea.org/law/chernobyl/>. Accessed 22 Apr 2013

Documents and Materials

- Atomic Energy Act 1959* (Germany)
- Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*, 26 September 1986, 1457 UNTS 133 (entered into force 26 February 1987) (*Assistance Convention*)
- Convention on Early Notification of a Nuclear Accident*, 26 September 1986, 1439 UNTS 275 (entered into force 27 October 1986) (*Notification Convention*)
- Convention on Nuclear Safety*, 17 June 1994, 1963 UNTS 293 (entered into force 24 October 1996) (*Convention on Nuclear Safety*)
- Convention on Supplementary Compensation for Nuclear Damage*, 12 September 1997, IAEA INFCIRC/567, 36 ILM 1454 (not yet entered into force) (*CSC*)
- Convention on Third Party Liability in the Field of Nuclear Energy*, 29 July 1960, 956 UNTS 251 (entered into force 1 April 1968), as amended by the Additional Protocol of 28 January 1964 and the Protocol of 16 November 1982 (*Paris Convention*)
- Federal Law on the Exploitation of Nuclear Energy for Peaceful Purposes and Protection from Irradiation 1959* (Switzerland)
- IAEA Convention on Nuclear Safety*, CNS/ExM/2012/04/Rev.2, Final Summary Report of the 2nd Extraordinary Meeting of the Contracting Parties to the Convention on Nuclear Safety (27–31 August 2012) (IAEA Convention on Nuclear Safety Final Summary Report)
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*, 5 September 1997, 2153 UNTS 303 (entered into force 18 June 2001) (*Joint Convention*)
- Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention*, 21 September 1988, 1672 UNTS 293 (entered into force 27 April 1992) (*Joint Protocol*)
- Nuclear Damages Act 1961* (Japan)
- Nuclear Installations (Licensing and Insurance) Act 1959* (United Kingdom)
- Price-Anderson Act of 1957* (US)
- Protocol to Amend the Convention on Third Party Liability in the Field of Nuclear Energy of 29 July 1960*, as amended by the Additional Protocol of 28 January 1964 and by the Protocol of 16 November 1982, 12 February 2004 (not yet entered into force) (2004 Protocol)
- Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage*, 12 September 1997, IAEA INFCIRC/566 (entered into force 4 October 2003) (1997 Protocol)
- Russian Federation (2010) *Convention on Nuclear Safety: Proposal for Amendments by the Russian Federation*, IAEA N5.41.01 Circ.
- Summary Report of the 5th Review Meeting of the Contracting Parties to the Convention on Nuclear Safety, Vienna, Austria (2011) CNS/RM/2011/6/FINAL
- Swiss Confederation (2010) *Convention on Nuclear Safety: Proposal for Amendments by the Swiss Confederation*, IAEA N5.41.01 Circ.
- US Nuclear Regulatory Commission, Safety Culture Policy Statement, NUREG/BR-0500. <http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0500/>. Accessed 22 Apr 2013
- Vienna Convention on Civil Liability for Nuclear Damage*, 21 May 1963, 1063 UNTS 265 (entered into force 12 November 1977) (*Vienna Convention*)

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