
Enhancing Biodiversity Co-benefits of Adaptation to Climate Change

Kanako Morita and Ken'ichi Matsumoto

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Abstract

We explore effective management of the interplay between the United Nations Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD) to enhance the biodiversity co-benefits of adaptation. By using the framework of interplay management in environmental governance, this research analyzes (1) the interactions between the UNFCCC and the CBD via ecosystem-based adaptation discussions, interactions that could reduce negative impacts and enhance positive effects on biodiversity, and (2) the efforts of the relevant actors in these interactions. We show that the CBD is addressing tangible ecosystem-based adaptation issues and that the UNFCCC refers to these efforts. However, there is limited explicit collaboration between the two Conventions because of their different characteristics. The key actors who are especially important in efforts to strengthen linkages between the two

K. Morita (✉)

Graduate School of Media and Governance, Keio University, Kanagawa, Japan
e-mail: kmorita@sfc.keio.ac.jp

K. Matsumoto

School of Environmental Science, The University of Shiga Prefecture, Shiga, Japan
e-mail: matsumoto.k@ses.usp.ac.jp

agencies with respect to ecosystem-based adaptation are the UNFCCC and CBD secretariats; the Joint Liaison Group (JLG), which links national adaptation programs of action and national biodiversity strategies and action plans; multi-lateral aid agencies such as the Global Environment Facility (GEF) that serve as financial mechanisms to UNFCCC and CBD; and national government ministries that address environmental problems in developing countries and can coordinate relevant actors at the national level.

Keywords

Ecosystem-based adaptation • Interplay management • UNFCCC • CBD

Introduction

Climate change and biodiversity issues are interlinked, although they are addressed by distinct governing bodies. Climate change needs to be considered within biodiversity conservation action because climate change affects biodiversity. Similarly, aspects of biodiversity conservation must be part of climate change mitigation and adaptation because if not well planned, these activities could impact biodiversity negatively.

This chapter explores the management of interaction between climate change and biodiversity governance agents, with a focus on adaptation. Adaptation is a response to climate change, and it can influence biodiversity in positive or negative ways. Although the primary institutional frameworks of adaptation currently fall under the United Nations Framework Convention on Climate Change (UNFCCC), reducing the negative impacts and enhancing their positive effects of adaptation on biodiversity are within the purview of the Convention on Biological Diversity (CBD). Successful management of the interaction between climate change and biodiversity governance agents could maximize the positive effects of adaptation in terms of both climate change and biodiversity. This research uses the framework of interplay management in the field of international politics, which focuses on efforts by relevant actors to address and improve institutional interaction and its effects (Stokke 2001; Oberthür 2009; Oberthür and Stokke 2011).

This chapter analyzes the negotiation processes and relationships of the UNFCCC and the CBD, with a focus on ecosystem-based adaptation. Ecosystem-based adaptation applies biodiversity and ecosystem services as part of an overall strategy of response to the adverse effects of climate change (SCBD 2009). It can not only play a role in reducing climate change impacts but could provide social, cultural, economic, and biodiversity co-benefits. The CBD has been developing tangible, ecosystem-based adaptation activities, and the UNFCCC acknowledges these efforts. There is however limited explicit collaboration between them because of their different mandates, negotiation processes, and actors involved. This chapter goes on to analyze the key actors involved in efforts to improve collaboration and implementation of ecosystem-based adaptation. These actors include the UNFCCC

and CBD secretariats, parties to the UNFCCC and CBD (national governments of developing countries), aid agencies, and NGOs. Our analysis identifies efforts to improve institutional interactions between the UNFCCC and CBD.

Increase Positive and Minimize Negative Effects of Adaptation on Biodiversity

In most cases, adaptation can increase positive and reduce negative effects on biodiversity through such initiatives as environmental impact assessments, technology impact assessments, or strategic environmental assessments (SCBD 2009, p. 38). In this chapter, we focus on ecosystem approaches to adaptation as defined above. Ecosystem-based adaptation may include sustainable management, conservation, and restoration of ecosystems as parts of an overall adaptation strategy that hopes to achieve social, economic, and cultural co-benefits for local communities (CBD Decision X/33).

Table 1 presents examples of ecosystem-based adaptation measures that achieve co-benefits, including biodiversity. An example is mangrove conservation, which not only provides protection from storm surges, a rising sea level, and coastal inundation (thus addressing climate change issues) but also protects biodiversity and conserves the habitats and species that live and breed in mangrove areas.

Ecosystem-based approaches to adaptation have been defined and examined by the CBD. Ecosystem-based adaptation has also been reflected in UNFCCC adaptation discussion although the discussion is less extensive than that of the CBD. Ecosystem-based adaptation has been initiated by various actors in both developed and developing countries (UNFCCC 2013a). Multilateral organizations and aid agencies such as the United Nations Environment Programme (UNEP) launched the Ecosystem-based Adaptation Flagship Programme, whose activities include providing policy support and decision-making tools for policies and programs and piloting activities on the ground. The work is carried out in collaboration with numerous partners, including the United Nations Development Programme (UNDP), the International Union for Conservation of Nature (IUCN), United Nations Habitat, the Global Environment Facility (GEF), and donors, civil society organizations, and academia (UNEP 2013). Ecosystem-based adaptation projects are also implemented by aid agencies, national governments, and international NGOs. The Australian Agency for International Development (AusAID) supports a project to increase taro crop diversity in Samoa, and the World Wildlife Fund (WWF) supports a project for the Mesoamerican reef in Belize (see Table 4).

In this chapter, we analyze ecosystem-based adaptation in developing countries, which are generally more vulnerable to climate change than are developed countries, and where multiple aid agencies and international NGOs are involved. Note: ecosystem-based adaptation is an emerging concept and research is therefore constrained by limited data.

Table 1 Examples of ecosystem-based adaptation

Adaptation measure	Adaptive function	Co-benefits			Mitigation
		Social and cultural	Economic	Biodiversity	
Mangrove conservation	Protection against storm surges, sea level rise, and coastal inundation	Provision of employment options (fisheries and prawn cultivation)	Generation of income to local communities through marketing of mangrove products (fish, dyes, medicines)	Conservation of species that live or breed in mangroves	Conservation of carbon stocks, both above- and belowground
		Contribution to food security			
Forest conservation and sustainable forest management	Maintenance of nutrient and water	Opportunities for recreation	Potential generation of income through:	Conservation of habitat for forest plant and animal species	Conservation of carbon stocks
	Flow	Culture protection of indigenous peoples and local communities	ecotourism, recreation		
Restoration of degraded wetlands	Maintenance of nutrient and water flow, quality, storage, and capacity Protection against floods or storm inundation	Sustained provision of livelihood	Increased livelihood generation	Conservation of wetland flora and fauna through maintenance of breeding grounds and stop over sites for migratory species	Reduced emissions from soil carbon mineralization
		Recreation			
		Employment opportunities	Potential revenue from recreational activities	Sustainable use	Sustainable logging of planted trees

Establishment of diverse agroforestry systems in agricultural land	Diversification of agricultural production to cope with changed climatic conditions	Contribution to food and fuel wood security	Generation of income from sale of timber, firewood, and other products	Conservation of biodiversity in agricultural landscape	Carbon storage in both above- and belowground biomass and soils
Conservation of agrobiodiversity	Local medicines available for health problems resulting from climate change or habitat degradation, e.g., malaria, diarrhea, and cardiovascular problems	Local communities have an independent and sustainable source of medicines	Potential sources of income for local people	Enhanced medicinal plant conservation	Environmental services such as bees for pollination of cultivated crops
Sustainable management of grassland	Protection against flood	Recreation and tourism	Generate income for local communities through products from grass (e.g., broom)	Forage for grazing animals	Maintenance of soil carbon storage of soil carbon

Source: SCBD (2009)

Analytical Framework

The academic literature contains studies of the interactions among environmental institutions, where one institution affects the development or performance of another. Young (2002), Oberthür and Stokke (2011) and others have developed case studies of various international environmental institutions in areas such as climate change, biodiversity, ozone depletion, ocean-related issues, and trade policy. Young (2002) studied the characteristics of interactions among environmental institutions and categorized the interactions as vertical/horizontal or political/functional interplay. In contrast, Stokke (2001) and Gehring and Oberthür (2008) focused on the causal mechanisms of institutional interplay.

The research cited above focuses on institutional relationships, but does not identify factors that enable the creation of effective institutional interactions that can resolve conflicts between institutions. Recent studies of interplay management examine the governance of institutional interactions by focusing on the efforts and effects of relevant actors in addressing and improving institutional interactions (Oberthür 2009; Oberthür and Stokke 2011). This research uses an actor-centered approach and examines how conflicts can be avoided through: (1) analysis of the relationships between the UNFCCC and CBD and the interactions between these two agencies in regard to adaptation and (2) analysis of the roles of the relevant actors, including the secretariats of the UNFCCC and CBD, aid agencies, national governments in developing countries, and NGOs.

Several studies analyze the differences and similarities between climate change and biodiversity regimes for forest issues (Morgera 2011; Savaresi 2011; McDermott et al. 2012; van Asselt 2012). However, there is no research on adaptation that analyzes the contribution of actors in managing climate change and biodiversity governance.

Institutional Interactions and the Role of Actors in Adaptation

Adaptation Negotiation Under the UNFCCC and CBD

Ecosystem-based adaptation has been discussed under both the UNFCCC and CBD. The UNFCCC and CBD are part of the three Rio Conventions (the third is the United Nations Convention to Combat Desertification, UNCCD), which emerged from the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro. Although the UNFCCC and CBD are sister Conventions, they have different objectives, administration, secretariats, and party members. Table 2 shows the structure and characteristics of the two Conventions.

The UNFCCC primarily focuses on climate change mitigation, particularly those issues identified in the Kyoto Protocol. However, the necessity of adaptation is also explicitly stated in the text of the UNFCCC and the Kyoto Protocol, acknowledging that climate change impact is unavoidable (Morita 2010). Adaptation has been discussed under the UNFCCC and the Kyoto Protocol in

Table 2 Structures of the UNFCCC and CBD

	UNFCCC	CBD
Establishment	Opened for signature in 1992 at the UNCED	
	Entered into force in 1994	Entered into force in 1993
Objectives	Stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system	Conservation of biological diversity
		Sustainable use of its components
		Fair and equitable sharing of the benefits arising out of the utilization of genetic resources
Administration	Under the UN	Under the UNEP
Secretariat	Headquarters: Bonn	Headquarters: Montreal
Parties	193 parties + European Union	192 parties + European Union (the USA is nonparty)
Related to adaptation	Workstream: Nairobi Work Programme, National Adaptation Programmes of Action, National Adaptation Plans, Loss and Damage	Workstream: Biodiversity and Climate Change including ecosystem approaches to adaptation
	Adaptation-related funds: Special Climate Change Fund	
	Least Developed Countries Fund	
	Adaptation Fund (under the Kyoto Protocol)	

Source: Created based on the information in UNFCCC and CBD websites

relation to: the clean development mechanism, technology transfer, research and systematic observation, capacity building, adaptation to adverse effects of climate change, Least Developed Country (LDC) assistance, national communications, and financial mechanisms. Adaptation began to receive increasing attention following the UNFCCC Conference of the Parties (COP 6) in 2000 (Morita 2010).

Currently, there are four workstreams on adaptation under the UNFCCC: the Nairobi work program on impacts, vulnerability, and adaptation to climate change (NWP), National Adaptation Programmes of Action (NAPA), National Adaptation Plans (NAPs), and the Work Programme on Loss and Damage (UNFCCC 2013b). In 2010, the Cancun Adaptation Framework resulted in negotiations on greater action, grouped into five clusters: implementation, support, institutions, principles, and stakeholder engagement. The Framework includes establishing processes for NAPs and the Work Programme on Loss and Damage. In addition to the workstreams, the Framework includes establishment of an Adaptation Committee to promote timely and coherent action under the Convention:

1. NWP: This work program is established to assist all parties, in particular developing countries, LDCs, and small island developing states, to enhance knowledge about adaptation. The NWP is undertaken under the Subsidiary Body for Scientific and Technological Advice (SBSTA) and is implemented by parties, intergovernmental and nongovernmental organizations, the private sector, communities, and other stakeholders. Currently, ecosystem-based

adaptation has been discussed under the NWP. COP 12 renamed the 5-year program of work “Nairobi work programme on impacts, vulnerability and adaptation to climate change” in 2006.

2. NAPA: This process was established in 2001 to provide LDCs the opportunity to identify priority activities that respond to their urgent and immediate needs to adapt to climate change. The LDC Expert Group provides technical support and advice.
3. NAP: This process was established under the Cancun Adaptation Framework to enable LDCs to formulate and implement national adaptation plans as a means of identifying medium- and long-term adaptation needs and developing and implementing strategies and programs to address those needs. The LDC Expert Group for NAPA also provides technical guidance and support to NAPs.
4. Work Programme on Loss and Damage: This program, also established under the Cancun Adaptation Framework, aims to consider approaches to address loss and damage associated with climate change impacts in especially vulnerable developing countries.

Article two of the UNFCCC mentions the importance of ecosystem-based adaptation, stating that “the ultimate objective of this Convention . . . is to achieve . . . stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change. . . .”

At the UNFCCC COP 14 in 2008, Sri Lanka and Palau proposed an ecosystem approach to adaptation (IISD 2008, p. 13), and at the UNFCCC COP 16 in 2010, the Cancun Agreement was adopted. As the Agreement states, it “Invites all Parties to enhance action on adaptation under the Cancun Adaptation Framework, . . . by undertaking, inter alia, the following: . . . Building resilience of socioeconomic and ecological systems, including through economic diversification and sustainable management of natural resources” (UNFCCC Decision 1/CP.16, II paragraph 14(b)). Ecosystem-based adaptation has also started to receive attention under the NWP. In June 2011 at the UNFCCC SBSTA 34 session, the SBSTA request of the secretariat to undertake interim activities under the NWP included compilation of information on ecosystem-based approaches to adaptation (FCCC/SBSTA/2011/L.13). This information was compiled prior to the UNFCCC COP17 in 2011, and it reflected activities of the CBD. The UNFCCC also created an ecosystem-based adaptation database on its website (UNFCCC 2013a). At the COP 17, the secretariat was asked to organize workshops in collaboration with NWP partner organizations and other relevant organizations. Included was “a technical workshop on ecosystem-based approaches for adaptation to climate change, before the 38th session of the SBSTA, taking into account the role of ecosystems, including forests, in adaptation; vulnerability and impacts in ecosystems; the implementation and benefits of ecosystem-based approaches for adaptation; and lessons learned, including through the three Rio Conventions” (UNFCCC Decision 6/CP.17, paragraph 4 (b)). This workshop, organized under the NWP, was held in Dar es Salaam,

United Republic of Tanzania, in March 2013 (FCCC/SBSTA/2013/2). At the subsequent SBSTA 38 meeting in June 2013, ecosystem-based adaptation was mentioned in the NWP draft conclusions (FCCC/SBSTA/2013/L.9).

Specific ecosystem-based adaptation measures have been subject to more discussion by the CBD than by the UNFCCC. At the CBD COP 7 in 2004, recorded decisions cite the potential of an ecosystem-based approach to adaptation (CBD Decision VII/15, paragraph 8), and under the CBD COP 8 and COP 9, decisions established the links between adaptation and biodiversity conservation (CBD Decision VIII/3 and IX/16). The CBD COP 10 in 2010 invited “Parties and other Governments. . .to consider the guidance below on ways to conserve, sustainably use and restore biodiversity and ecosystem services while contributing to climate-change mitigation and adaptation: Recognizing that ecosystems can be managed to limit climate change impacts on biodiversity and to help people adapt to the adverse effects of climate change; implement where appropriate, ecosystem-based approaches for adaptation, . . .as part of an overall adaptation strategy that takes into account the multiple social, economic and cultural co-benefits for local communities; . . .” (CBD Decision X/33, paragraph 8 (j)). The CBD COP 11 in 2012 addressed ecosystem-based adaptation and the NWP, encouraging parties and other governments to “. . .support the strengthening of inventorying and monitoring of biodiversity and ecosystem services at appropriate scales in order to evaluate the threats and likely impacts of climate change and both positive and negative impacts of climate-change mitigation and adaptation on biodiversity and ecosystem services” (CBD Decision XI/21, paragraph 6 (e)), “Encourages Parties and other Governments to. . . consider reviewing land-use planning with a view to enhancing ecosystem-based adaptation to climate change. . .” (paragraph 6 (f)), and “Requests the Executive Secretary. . . to. . . identify relevant workshops and activities within the NWP and countries’ NAPs under the UNFCCC, and disseminate such information. . .with a view to enhancing knowledge-sharing on ecosystem-based approaches” (paragraph 7 (a)).

The first Ad Hoc Technical Expert Group (AHTEG) on Biodiversity and Climate Change, established in 2001, extended the CBD discussions. The AHTEG aimed to add technical and scientific advices for the integration of biodiversity considerations into the measures that might be taken under the UNFCCC and its Kyoto Protocol to implement mitigation and adaptation (SCBD 2003). The second AHTEG on Biodiversity and Climate Change, which convened in 2008, compiled and described the characteristics of ecosystem-based adaptation in the CBD Technical Series (SCBD 2009).

The CBD has attempted to add ecosystem-based adaptation to the discussion on the NWP and has attempted to unite the two Conventions in the ways in which they address adaptation. In the UNFCCC SBSTA 31 Plenary (COP15) in 2009, the CBD stated at the conclusion of the work of the second AHTEG on Biodiversity and Climate Change, “ecosystem-based adaptation is not sectorally limited, but addresses potential adaptation needs across many sectors,” “ecosystem-based adaptation is highly relevant because it: can be applied at all levels; may be more cost-effective and more accessible to rural or poor communities than measures based on

hard infrastructure and engineering; and can integrate and maintain traditional and local knowledge and cultural values,” and “ecosystem-based adaptation approaches can also contribute to climate change mitigation by conserving or enhancing carbon stocks and reducing emissions caused by ecosystem degradation and loss” (Statement of the CBD at UNFCCC SBSTA 31 Plenary). Furthermore, the final report of the AHTEG on Biodiversity and Climate Change (SCBD 2009) was transmitted to the UNFCCC COP 15 by the CBD COP 9 with a view to convening a joint meeting of the two bureaus (CBD Statement at the UNFCCC SBSTA 31 Plenary).

At the UNFCCC COP 16, the CBD highlighted the outcomes of its COP 10, stating that the discussions focused on a number of issues related to the NWP, including the development of joint activities at national levels, the promotion of ecosystem-based approaches for adaptation and mitigation especially for protected areas, and improving information on the impact of climate change on biodiversity (CBD Statement at the UNFCCC SBSTA 33 Plenary). The CBD also invited the UNFCCC to collaborate with it (CBD Statement at the UNFCCC SBSTA 33 Plenary).

Thus, although there is limited explicit collaboration between the UNFCCC and the CBD, the CBD has actively discussed ecosystem-based adaptation, and the UNFCCC has acknowledged CBD’s work. Table 3 summarizes the adaptation discussions under the UNFCCC and CBD.

Efforts of the Relevant Actors to Support Interaction

We next analyzed the contribution of relevant actors in efforts to encourage discussion and interaction between the UNFCCC and CBD on ecosystem-based adaptation. The actors are the UNFCCC and CBD secretariats, multilateral and bilateral donors, national governments in developing countries, and NGOs.


Table 4 presents examples of ecosystem-based adaptation activities in developing countries. This table illustrates the many actors involved in projects, and their efforts are analyzed in terms of the identified activities.

Secretariat Efforts

Secretariats are important for improving the interactions between the UNFCCC and CBD vis-a-vis ecosystem-based adaptation, but they currently play differing roles. The CBD secretariat has developed significant influence in international negotiations and cooperation (Siebenhüner 2009), while the UNFCCC secretariat has not promoted the political ideas of the committee or proposed specific technical approaches (Busch 2009).

The Joint Liaison Group (JLG) was established in 2001 as an informal forum among the three Rio Conventions for exchanging information, exploring opportunities for synergistic activities, and increasing coordination (CBD 2013). The JLG comprises the members of the secretariats, the executive secretariats, and the officers of scientific subsidiary bodies (CBD 2013). The JLG clearly has the

Table 3 Adaptation discussions under the UNFCCC and CBD

UNFCCC		CBD	
COP 6–9 (2003)	Adaptation issues were discussed under various agendas. Adaptation begins to receive more attention following COP 6 (2000)		
COP 10 (2004)	Decided the Buenos Aires program of work on adaptation and response measures, which describes ways to respond to the adverse effects of climate change (UNFCCC Decision 1/CP.10)	COP 7 (2004)	Stated that the application of an ecosystem approach could facilitate the formulation of climate change mitigation and adaptation projects that also contribute to biodiversity conservation and sustainable use at the national levels (CBD Decision VII/15)
COP 11 (2005)	Adopted a 5-year work program on the SBSTA on impacts, vulnerability, and adaptation to climate change (Decision 2/CP.11)		
COP 12 (2006)	Renamed the program to NWP (FCCC/CP/2006/5)	COP 8 (2006)	Parties, other governments, and so on are encouraged to development rapid assessment tools for the design and implementation of biodiversity conservation and sustainable use activities that contribute to adaptation (Decision VIII/30)
COP 13 (2007)	Decided to launch “a comprehensive process to enable the full, effective and sustained implementation of the Convention through long-term cooperative action, now, up to and beyond 2012,” including addressing “enhanced action on adaptation” (Decision 1/CP.13)		
COP 14 (2008)	 <p><i>Sri Lanka and Palau, speaking also for Micronesia and the Marshall Islands, proposed an ecosystem approach to adaptation</i></p>	COP 9 (2008)	Showed the proposals for the integration of climate change activities within the work programs of the Convention, including conducting in-depth reviews of the work programs by considering such as the contribution of biodiversity to adaptation and measures that enhance the adaptive potential of components of biodiversity (Decision IX/16)

(continued)

Table 3 (continued)

UNFCCC		CBD	
COP 15 (2009)			
COP 16 (2010)	Decided to establish the Cancun Adaptation Framework including establishing NAPs process, Work Programme on Loss and Damage, and Adaptation Committee (Decision 1/CP.16)	COP 10 (2010)	Mentioned the role of ecosystem-based adaptation and call for the integration of ecosystem-based adaptation into relevant strategies and careful consideration of different ecosystem management options and objectives (Decision X/33)
COP 17 (2011)	Decided the structures and functions of the Adaptation Committee (Decision 2/CP.17). Adopted COP decisions on NWP (6/CP.17), NAPs (5/CP.17), and Work Programme on Loss and Damage (7/CP.17)		
	<i>NWP: secretariat and NWP partner organizations, etc., are requested to organize a technical workshop on ecosystem-based approaches for adaptation</i>		
COP 18 (2012)	Adopted COP decisions on approaches to address loss and damage (Decision 3/CP.18), work of the Adaptation Committee (11/CP.18), and NAPs (12/CP.18)	COP 11 (2012)	Decisions touch on ecosystem-based adaptation and NWP such as encourages parties to support strengthening inventorying and monitoring of biodiversity and ecosystem services to evaluate both positive and negative impacts of climate change mitigation and adaptation on biodiversity and ecosystem services. Also requests the Executive Secretariats to identify relevant workshops and activities within the NWP and countries' NAPs under the UNFCCC (CBD Decision XI/21)

potential to strengthen the links between the UNFCCC and CBD secretariats concerning ecosystem-based adaptation.

The COPs of the three Conventions have recognized that adaptation is an area of importance (JLG 2004). The executive secretaries of each Convention identify adaptation, capacity building, and technology transfer as priority areas for their discussion (JLG 2004). The three secretariats have also identified options for

Table 4 Examples of ecosystem-based adaptation in developing countries

Name	Country	Ecosystem	Name of implementing institution
Responding to shoreline change and its human dimensions through integrated coastal area management	Mauritania, Senegal, Gambia, Guinea Bissau, Cape Verde	Marine and coastal	UNDP, GEF, UNESCO
Enhancing adaptive capacity in semiarid mountainous regions, Bolivia	Bolivia	Mountain, forest, and woodland	The Netherlands Climate Assistance Programme (NCAP)
The CEIBA-PILARES project	Ecuador and Peru	Forest and woodland	Nature and Culture International
Coping with drought and climate change in the Chiredzi district	Zimbabwe	Agriculture, rangelands, and grasslands	Government, UN Agency
Integrated National Adaptation Plan – Colombia highland ecosystems	Colombia	Mountain; Inland water	GEF; World Bank; Conservation International
Drought-resistant agriculture in El Salvador	El Salvador	Agriculture	Red Cross, World Food Programme
Community-based coastal habitat restoration (“Green Coast Project”)	Indonesia, Sri Lanka, India, Thailand, and Malaysia	Marine and coastal, forest and woodland	Wetlands International, Both Ends, WWF, IUCN
Integrating agroforestry practices in the farming system in Grenada	Grenada	Agriculture, mountain	Government of Grenada
Integration of climate change risk and resilience into forestry management (ICCRIFS)	Samoa	Forest and woodland	UNDP, GEF, Government of Samoa
Jordan Valley Permaculture Project	Jordan	Agriculture	National Center for Agricultural Research and Transfer of Technology, Jordan; Permaculture Research Institute (PRI) of Australia
Kikuyu Escarpment Forest	Kenya	Forest and woodland	Birdlife, Kenyan Forestry Service
Kimbe Bay: scientific design of a resilient network of marine protected areas	Papua New Guinea	Marine and coastal	The Nature Conservancy
Assessing the Impacts of Climate Change on Madagascar’s Biodiversity and Livelihoods	Madagascar	Forest, marine and coastal	Government of Madagascar, USAID, Conservation International, WWF

(continued)

Table 4 (continued)

Name	Country	Ecosystem	Name of implementing institution
Using the Maya Nut Tree to increase tropical agroecosystem resilience to climate change in Central America and Mexico	Nicaragua, Guatemala, El Salvador and Mexico	Forest and woodland, agriculture	Maya Nut Institute
Adapting to climate change in the Mesoamerican Reef	Belize	Marine and coastal	WWF
Coping with drought and climate change, Mozambique	Mozambique	Agriculture, rangeland, and grassland	UNDP
Nomadic herders: enhancing the resilience of pastoral ecosystems and livelihoods	Mongolia and Russian Federation	Mountain, rangeland, and grassland	UNEP/GRID-Arendal, Association of World Reindeer Herders, UArctic EALAT Institute
Orito Ingi Ande Medicinal Plants Sanctuary	Colombia	Forest and woodland	Government of Colombia, local communities
The Pangani River Basin Management Project (PRBMP)	Tanzania	Inland water, agriculture	Pangani River Basin Management Project, IUCN, UNDP
Rio de Janeiro's Community Reforestation Project	Brazil	Urban, forest and woodland	City of Rio
Conservation and management of high altitude peatlands of Ruoergai Marshes for water security and climate change adaptation	China	Mountain, inland water	Wetlands International
Maintenance of hydropower potential in Rwanda through ecosystem restoration	Rwanda	Inland water	Government of Rwanda
South Africa: ecosystem-based planning for climate change	South Africa	All	Government of South Africa
Community-based rangeland rehabilitation	Sudan	Rangeland and grassland, agriculture	UNDP, GEF
Adaptation to climate change impacts in the Syunik Mountain Forest Ecosystems of Armenia	Armenia	Forest and woodland, mountain	GEF, UNDP, Government of Armenia
Increasing Taro Crop Diversity	Samoa	Agriculture	Secretariat of the Pacific Community, AusAID, Australian Centre for International Agricultural Research

(continued)

Table 4 (continued)

Name	Country	Ecosystem	Name of implementing institution
Tonle Sap	Cambodia	Forest and woodland, inland water	Conservation International, Government of Cambodia
Climate Change Governance Capacity: Building Regionally and Nationally Tailored Ecosystem-Based Adaptation in Mesoamerica	Mexico, El Salvador, Costa Rica, Panama	Marine and coastal, agriculture, inland waters	Federal Environment Ministry of Germany, IUCN
Ecosystem-Based Adaptation in Marine, Terrestrial, and Coastal Regions as a Means of Improving Livelihoods and Conserving Biodiversity in the Face of Climate Change	Brazil, Philippines, South Africa	Marine and coastal; forest and woodland; agriculture; inland water	Federal Environment Ministry of Germany, Conservation International Foundation

Source: UNFCCC 2013a

improving cooperation, including: (1) the promotion of complementarity among the national biodiversity strategies and action plans (NBSAPs) under the CBD, national action programs of the UNCCD, and the UNFCCC NAPA for LDCs; (2) the development of joint work programs or plans, joint international workshops, and joint capacity-building activities (including training and local, national, and regional workshops to promote synergy in implementation); and (3) case studies on interlinkages (CBD 2013). In 2007, at the seventh JLG meeting it was agreed that an information note on adaptation activities, plans, and programs adopted within the framework of each Convention should be drafted (JLG 2007).

The degree of willingness to enhance links between the UNFCCC and CBD executing secretariats is different: in general, the CBD more actively connects UNFCCC and CBD processes. For example, at the tenth JLG meeting in 2010 the Executive Secretary of the CBD invited his counterparts at the UNFCCC and UNCCD to convene a high level dialogue between themselves and the Secretary General at the CBD COP 10. He also shared the CBD proposal for a joint work program between the three Rio Conventions and a proposal to have an extraordinary meeting of the Rio Convention COP (JLG 2010).

Although the UNFCCC is generally passive about linking the two processes, it admits the importance of interaction on specific topics like adaptation. In 2010, also at the tenth JLG meeting, the Executive Secretary of the UNFCCC expressed concern about the CBD proposals for a joint work program and an extraordinary meeting of the Rio COPs. The concern was that the proposals would infringe on the mandate of the UNFCCC secretariats and that the topic of adaptation is still under active negotiation. Nevertheless it was acknowledged that focusing on specific topics can move the synergies agenda forward and that the NAPA, NBSAP, and

national action programs of the UNCCD may be conducive to the promotion of such synergies (JLG 2010).

Although the JLG does not explicitly address ecosystem-based adaptation, the Group is important in linking the adaptation work of the UNFCCC and CBD secretariats. Further, the JLG links the works of NBSAP and NAPA, which are vital for strengthening ecosystem-based adaptation discussions.

Donor Efforts

Although the number of ecosystem-based adaptation programs and projects remains limited, multilateral aid agencies such as the GEF and the World Bank and bilateral aid agencies such as the United States Agency for International Development (USAID) and AusAID have engaged in research and implementation of ecosystem-based adaptation. In this section, we describe the efforts of both multilateral and bilateral aid agencies.

With regard to multilateral aid agencies, the GEF (see chapter “► [Financing Adaptation to Climate Change in Developing Countries](#)” in this handbook), serving as the financial mechanism of the UNFCCC and CBD, plays a vital role implementing ecosystem-based adaptation and linking the two Conventions. In 2004, at the fifth JLG meeting, the secretariats of the Rio Conventions discussed adaptation, capacity building, and technology transfer. This discussion was in preparation for an informal meeting with the GEF CEO (JLG 2004). The point was made that “synergy (among the objectives of the three conventions in adaptation activities) can be promoted through meetings between the Executive Secretaries of three conventions, the GEF and the Implementing Agencies, and further supported through cooperation between the Scientific and Technical Advisory Panel (STAP) of the GEF, and the respective scientific and technical subsidiary bodies of the conventions” (JLG 2004). In 2012, the GEF developed *Operational Guidelines on Ecosystem-based Approaches to Adaptation* (GEF/LDCF.SCCF.13/Inf.06) which assists agencies and project proponents that seek aid through the Least Developed Countries Fund or the Special Climate Change Fund. The GEF has supported ecosystem-based projects such as Adaptation to Climate Change Impacts in the Syunik Mountain Forest Ecosystems of Armenia and Integrated National Adaptation Plan: Colombia Highland Ecosystems (see Table 4).

Furthermore, the implementing agencies of the GEF such as the World Bank, the UNEP, and the UNDP are also actively engaged in research and projects on ecosystem-based adaptation. World Bank projects and programs support biodiversity conservation and the protection of natural habitats and ecosystem services, thereby contributing to effective mitigation and adaptation strategies (World Bank 2009). Other organizations including the International Union for Conservation of Nature, United Nations Habitat, as well as donors, civil society organizations, and academia have established ecosystem-based adaptation flagship programs (UNEP 2013).

Bilateral aid agencies and countries such as the Netherlands and Germany support ecosystem-based adaptation activities. The USAID supports the ecosystem-based adaptation project Assessing the Impacts of Climate Change on Madagascar’s Biodiversity and Livelihood, and AusAID supports the Increasing

Taro Crop Diversity project. Although the number of projects funded by both multilateral and bilateral donors is limited, the ecosystem-based adaptation activities of bilateral donors are more often confined to specific areas and sectors, than those of multilateral aid agencies like the GEF (UNEP 2013). Bilateral aid agencies also lack the comprehensive guidance and strategy on ecosystem-based adaptation supports and implementation and have less influence in discussions of the UNFCCC and CBD.

National Government Efforts

Several developing countries are beginning to discuss ecosystem-based adaptation activities. Although it is early to evaluate their efforts in promoting ecosystem-based adaptation and linkage between the UNFCCC and CBD, national ministries with environmental mandates in developing countries are likely to play a significant role.

Although a number of industry or sector-specific ministries are involved in adaptation issues (e.g., Ministry of Agriculture of Grenada, Ministry of Agriculture and Fisheries of Samoa, and Kenya Forest Service), many of the ecosystem-based adaptation projects implemented in developing countries are funded by multilateral and bilateral donors and are likely to be endorsed and managed by the national ministries that address environmental problems (e.g., Environmental Management Agency of Zimbabwe, Ministry for the Environment and National Natural Parks of Colombia, and Ministry of Natural Resources and Environment of Samoa).

Cambodia's Ministry of Environment approves and supports projects such as ecosystem-based approach to integrate climate change-resilient livelihoods and floodplain management for the Tonle Sap supported by Conservation International and ecosystem-based adaptation approach to climate change along the Mekong River (Kratie Province in Cambodia) supported by the WWF (Cambodia's Ministry of Environment 2013). Examples in other countries include Integration of Climate Change Risk and Resilience into Forestry Management project in Samoa, executed by Samoa's Ministry of Natural Resources and Environment through supports from UNDP (Samoa's Ministry of Natural Resources and Environment 2013), and Adaptation to Climate Change Impacts in the Syunik Mountain Forest Ecosystems of Armenia, executed by the Ministry of Nature Protection in Armenia. The ministry that addresses environmental problems is likely to be a key to supporting ecosystem-based adaptation in developing countries, because it is usually the focal point of the UNFCCC and the CBD, and has the capacity to both coordinate actors at the national level and to help link the UNFCCC and CBD.

NGO Efforts

Many international NGOs working in nature conservation actively support and implement ecosystem-based adaptation in developing countries, including the World Wildlife Fund, Nature Conservancy, BirdLife International, CARE, and Conservation International. Conservation International is supporting ecosystem-based adaptation projects, such as the Tonle Sap project in Cambodia (see above), the Integrated National Adaptation Plan (Colombia highland ecosystems), and

Ecosystem-Based Adaptation in Marine, Terrestrial, and Coastal Regions as a Means of Improving Livelihoods and Conserving Biodiversity in the Face of Climate Change projects in Brazil, Philippines, and South Africa.

Such international environmental NGOs are actively encouraging ecosystem-based adaptation activities, but their support and activities are limited to specific areas or they play only a subsidiary role of multilateral and bilateral aid agency support. NGOs therefore have limited influence in strengthening links between the UNFCCC and CBD on adaptation.

Conclusion

Ecosystem-based adaptation, which has the potential to improve biodiversity conservation and reduce climate change impacts simultaneously, is addressed by both the UNFCCC and CBD. This chapter explores the management of the interaction between climate change and biodiversity governance, which could enhance ecosystem-based adaptation efforts and maximize the positive effects of adaptation on both climate change and biodiversity. This research used the conceptual framework of interplay management in international politics.

This chapter shows that the CBD has been involved in a greater number of tangible ecosystem-based adaptation activities than the UNFCCC, and coordinated ecosystem-based adaptation dialogue between the UNFCCC and CBD has been attempted. However, they are not fully coordinated because of the different characteristics of the two Conventions.

To promote ecosystem-based adaptation and improve collaboration between the UNFCCC and CBD, this research analyzed how the key actors can develop adaptation discourse and strengthen the links between the two UN Conventions when approaching the topic. The study suggests that to enhance links between the two Conventions, it is important to involve: the secretariats of UNFCCC and CBD, the JLG that links NAPA and NBSAP, multilateral aid agencies like the GEF that serve as financial mechanisms to the UNFCCC and CBD, numerous key actors, and the various national government ministries that address environmental problems in developing countries and who can coordinate relevant actors at the national level.

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