2 Governing Biodiversity and Clean Energy with Global Partners

Liliana B. Andonova and Dario Piselli

Introduction

Over the past three decades, the emergence of transnational partnerships between public and non-state actors in the areas of biodiversity and clean energy has represented an important dimension of the global trend towards the rise of this form of governance. Among the initiatives registered at the 2002 World Summit on Sustainable Development, more than 19 percent targeted policy issues relevant to the conservation and sustainable use of biodiversity (e.g., terrestrial species and ecosystems; oceans, lakes and rivers; forest management), while an additional 13.9 percent focused on clean energy objectives (Andonova and Levy 2003; Chan and Müller 2012). Most recently, around half of the partnerships and voluntary commitments submitted to the United Nations' Partnerships for sustainable development goals (SDGs) online platform covered terrestrial or aquatic biodiversity aspects as part of their strategy, and 12.8 percent contained clean energy commitments.[1] These may range from local, project-level endeavors (e.g., a public-private partnership to fund and manage a new energy infrastructure or specific ecosystem conservation and restoration project) to large multi-stakeholder initiatives that are seeking to mobilize significant amounts of funding, knowledge, technology and expertise.

The growing role of partnerships in biodiversity and clean energy governance can be explained by several concurrent factors. These include increased scientific understanding of the centrality of the biosphere and climate sub-systems to Earth System functioning (Stafford-Smith et al. 2017; Steffen et al. 2015), as well as growing recognition of multi-sector collaboration as an implementation mechanism for relevant international legal frameworks (Andonova 2017; Chan and Müller 2012; Visseren-Hamakers et al. 2012). Partnerships are increasingly convened to address funding and capacity gaps that often beset effective domestic action (Andonova 2014; Campe 2014), particularly in areas of sustainable development cooperation that coincide with the priorities of powerful actors in the Global North.

As with other issue areas discussed in this volume, however, we still have limited knowledge of the impacts of existing initiatives on biodiversity and clean energy and the related conditions for effectiveness. Of the few studies that have

DOI: 10.4324/9781003148371-5

been conducted on these topics, most have assessed partnerships against a set of proposed governance functions rather than actual sustainable development outcomes (Campe 2014; Szulecki et al. 2011; Visseren-Hamakers et al. 2012). The need for a broadly applicable methodology for understanding the variable effects of partnerships remains critically important, considering their designation as key means of implementation of the 2030 Sustainable Development Agenda.

In this chapter, we thus aim to explore the question of partnership effectiveness in the areas of biodiversity and clean energy by applying the analytical framework presented in Chapter 1 to a comparative study of three partnerships. Two of these initiatives, namely the Amazon Region Protected Areas (ARPA) program in Brazil and Costa Rica's Instituto Nacional de Biodiversidad (INBio), were launched with the aim of promoting the conservation and sustainable use of biological diversity and also to engage with wider considerations relating to climate change and the creation of socioeconomic opportunities for local communities. The third partnership, the Galápagos San Cristóbal Wind Park partnership in Ecuador (hereafter the Galápagos Wind case), had the objective of reducing the Galápagos Islands' dependence on imported fossil fuels, while simultaneously protecting the region's fragile marine ecosystem from the risk of oil spills and contributing toward the transition to cleaner energy sources. Taken together, the case studies provide significant insights about the pathways through which partnerships in the areas of biodiversity and clean energy may exert behavioral influence on the partners, as well as about the key factors shaping variable partnership effectiveness. Accordingly, they also hold a series of implications for the design of future sustainable development partnerships.

The chapter is structured as follows. First, we describe the methodology of the paper, summarizing the key characteristics of the three case studies and the rationale for using them in our comparative analysis. We then briefly present our findings on the effectiveness of the three partnerships, trying to identify common patterns in terms of goal attainment, improved collaboration, creation of value for partners and wider sustainable development impacts. In the fourth section, we analyze our findings against the conditions for effectiveness proposed in Chapter 1 that are particularly relevant for explaining the variable effectiveness of partnerships. Lastly, we provide a conclusion.

Case Selection and Methodology

This chapter adopts a comparative approach centered on the structured, focused comparison of three case studies (George and Bennett 2005). The cases highlight the various forms of interaction that may occur between different types of actors under the broader framework of partnerships for sustainable development. Furthermore, they are selected due to a detailed consideration of the contextual factors that would facilitate the comparison. On the one hand, all three case studies concern partnerships operating in areas of high ecological value (including UNESCO natural World Heritage Sites). In addition, the activities of these partnerships sought to integrate multiple elements of biodiversity conservation

and sustainable socioeconomic development in their project design. Third, the respective projects were characterized by strong forms of domestic ownership by local actors and embedded in a similar institutional and regional setting. The case selection thus allows us to examine comparatively the interface between domestic political factors and internal partnership characteristics, across broadly comparable contexts and with respect to biodiversity and clean energy issues. On the other hand, the scale of the three partnerships diverges considerably, including a project-based operation grounded at the municipal level (Galápagos Wind case), a large-scale program in the Amazon region of Brazil (ARPA) and the creation of an entirely new institution in Costa Rica (INBio). Moreover, the types of transnational actors involved, and the form and rationale of their involvement, are ostensibly different, allowing the examination of the inherent diversity of partnerships as a form of governance and the discussion of the variable extent to which generalizable conclusions can be drawn.

The Instituto Nacional de Biodiversidad (INBio), created in 1989 by the Costa Rican government, achieved global recognition as the first public-private institution in a developing country set up with the explicit purpose of financing biodiversity conservation. Its main work included conducting a comprehensive national biodiversity inventory. It also aimed at creating a market for the collected ecological, biochemical and genetic information through the negotiation of access and benefit-sharing agreements (also known as bioprospecting contracts) with potential commercial users (Castree 2003; Gámez et al. 1993). INBio has been described as a pioneering effort in the mobilization of hybrid coalitions in support of biodiversity conservation and sustainable use, given that it effectively predated the 1992 Earth Summit and the adoption of the Convention of Biological Diversity (CBD) (ten Kate and Laird 2000). Until the sudden demise of its original structure in 2015, the activities of INBio were financed or supported by partners including the government of Costa Rica, the Global Environment Facility (GEF), research institutions from all over the world and the governments of Norway, the Netherlands, Sweden, Canada and Spain (GEF 2007),[2] as well as through bioprospecting contracts, such as the one concluded in 1991 with pharmaceutical company Merck and Co. (Blum 1993). In 2000, as part of its attempts to diversify revenue streams through tourism and to conduct environmental education activities, INBio also inaugurated a biodiversity-themed park known as INBioparque, which was similarly supported by external donations (Charpentier 2001; Wade 2014).

ARPA was originally announced in 2002 during the World Summit on Sustainable Development and arose out of a series of processes that had already been taking place at the national and international level since the 1980s (Andonova 2014).[3] It is widely considered to be the most ambitious transnational partnership to have emerged in the area of biodiversity conservation. Among its main partners, ARPA involved the Brazilian government and agencies, the World Bank and the GEF, the World Wide Fund for Nature (WWF), the government of Germany, the state and municipal environmental agencies of the Brazilian Amazon and a number of private foundations and donors (ARPA 2014; 2018). Thanks to the financial and technical assistance coming from transnational and international

actors, as well as continued financial and political support by the Brazilian government, ARPA's first implementation phase (2002–2010) was renewed twice (2010–2017 and 2014–2039) to expand and consolidate the network of protected areas (PAs) in the Amazon region of Brazil. Its approach seeks to bring together the creation of new reserves with an increase in support to PA managers, the development of new tools to monitor PA management, the promotion of income-generating activities for local communities and the identification of innovative financing mechanisms that could ensure the long-term sustainability of the system of Amazon's PAs (World Bank 1998b; 2002).

Finally, the Galápagos Wind partnership was established in 2003 as a project-based initiative between the municipality of San Cristóbal Island, the local electricity utility ELECGALAPAGOS S.A., the government of Ecuador, a commercial trust created by the Global Sustainable Electricity Partnership (GSEP) and GSEP member companies, such as American Electric Power (US) and RWE (Germany), the United Nations Foundation (UNF), the UN Office for Partnerships (UNOP), the UN Development Program (UNDP) and local non-governmental organizations (GSEP 2008). Its activities resulted in the establishment of a business operation aiming to partially replace the diesel-based electricity generation system on San Cristóbal with a hybrid wind and diesel system in order to address the island's dependence on fossil fuels and reduce the risk of oil spills that threatened the marine environment and biodiversity. Operation of the new system was ultimately transferred to the local electricity utility in order to also stimulate local economic development and knowledge transfer.

For each case study, we conducted an extensive documentary research based on a wide range of primary sources and secondary literature. The primary sources include publicly accessible partnership documents (i.e., annual reports, research papers, memoranda of understanding, project appraisals, etc.); policy papers, monitoring reports and communication materials developed by the partners or other relevant actors; and other online sources including newspaper articles and the partnerships' web pages. We complemented the desk research with some 20 semi-structured interviews to gain a direct perspective from organizations that were involved in the partnerships, supplement insufficient data and allow for the triangulation of findings.

Pathways to Effectiveness: Comparative Findings

Goal Attainment

The first dimension of effectiveness explored with respect to the three case study partnerships relates to the extent to which they have been able to meet their overarching objectives identified at the time of establishment. Owing to the complex nature of the respective partnership activities, our analysis proceeds to identify, based on partnership documents, one overarching objective and a series of corollary objectives that are intended to support the achievement of the former. Table 2.1 summarizes these objectives and the level of their attainment.

Table 2.1 Partnership objectives and levels of attainment

Case Study	*Overarching Objective*	*Corollary Objectives*	*Level of Attainment*
ARPA	Expand and consolidate PAs in the Brazilian Amazon to cover 10% of total area.	Creation of new PAs covering 50 million hectares (later expanded to 60 million hectares).	**Attained**: in 2017 ARPA encompassed 117 PAs covering 60.8 million hectares, or 15% of the Brazilian Amazon.
		Consolidated and improved management of existing PAs.	**Largely attained**: staff and capacity constraints at local level remain.
		Establish innovative mechanisms for generating and managing funds for long-term sustainability of PAs.	**Attained**: Protected Areas Fund and Transition Fund. **Not attained**: local revenue-generating mechanisms within PAs.
		Strengthen coordination, monitoring, management, and communication.	**Largely attained**: published academic assessments more critical than official ones.
Galápagos Wind	Replace diesel-based electricity generation with hybrid wind-power system. Supply 50% of the island's electricity needs through wind power.	Construct the San Cristóbal Wind Park and hybrid wind-diesel control system. Reduce fossil fuel dependence, CO_2 emissions and oil spill risk.	**Attained**: constructed 2.4 megawatts wind park. **Partially attained**: Avoided 21,000 tons of CO_2 emissions. But current consumption covered by renewables is 30% due to increased demand.
		Reduce energy costs for the Ecuadorian government (reduced subsidy burden).	**Attained**: with estimated USD 2.5 million in savings.
		Knowledge transfer and capacity in the host country.	**Attained**: local utility ELECGALAPAGOS fully assumed operations in 2016.

(*Continued*)

Table 2.1 Continued

Case Study	*Overarching Objective*	*Corollary Objectives*	*Level of Attainment*
		Demonstrate feasibility of wind energy as a renewable technology and foster replication in Galápagos Islands and Ecuador.	**Attained**: San Cristóbal Wind served as a model for other renewable energy projects in Baltra, Santa Cruz and Isabela islands and inspired other projects in Ecuador.
		Protect local biodiversity, mitigate risk posed by wind turbines to bird populations.	**Attained**: improved hatching reproduction rates of endangered Galápagos petrel; monitoring failed to uncover evidence of significant injuries to protected birds.
INBio	Finance biodiversity conservation in Costa Rica by undertaking a National Biodiversity Inventory and marketing access to the related ecological, biochemical and genetic information.	Create National Biodiversity Inventory, 1993–2003.	**Attained**: over 23,000 species catalogued; 2,000 new species discovered.
		Integrate biodiversity information in a single administrative entity, using digital and physical formats.	**Attained**: several innovative biodiversity information management systems developed by INBio.
		Facilitate access to biodiversity information for commercial use and benefit-sharing to finance conservation.	**Not attained**: economic returns from early bioprospecting agreements not sustained over time.
		Increase "bio-literacy" in Costa Rica.	**Largely attained**: environmental education activities conducted by INBio and INBioparque.

Source: Authors, based on information from ARPA 2018; Conniff 2012; Enerwhere 2016; Fonseca 2015; Gámez 2007; GSEP 2016; Iles 2003; Instituto Nacional de Pesquisas Espaciais 2020; UNDP 2014; Wade 2014; World Bank 2012; 2018; WWF 2018.

Table 2.1 reveals that overall, ARPA and the Galápagos Wind partnership successfully attained their overarching objectives. In 2017, ARPA celebrated the achievement of its principal target, namely the protection of 60 million hectares of rainforest across 117 PAs (ARPA 2018). Despite some persistent shortcomings in terms of management effectiveness, it is widely credited with strengthening the governance of the PA system of the Brazilian Amazon (World Bank 2012; 2018). Similarly, the Galápagos Wind project substantially increased the share of renewable energy in electricity consumption on San Cristóbal Island to 30 percent by 2016; the reason it did not reach its 50 percent target was due to greater increase in electricity demand over time compared to baseline estimates (GSEP 2016). The partnership further contributed to decarbonizing the economy of San Cristóbal Island, resulting in an estimated 21,000 tons of avoided CO_2 emissions (GSEP 2016). It reduced the Ecuadorian government's energy costs and subsidy burden, mitigated the risk from oil spills in a fragile marine environment and opened a path for future renewable energy projects in the Galápagos (Enerwhere 2016). INBio attained its original goals only partially. The success of its national biodiversity inventory is internationally recognized. This allowed the institute to generate a treasure trove of information that greatly improved Costa Rica's scientific capacity and policy making on biodiversity issues (Gámez 2007; Iles 2003; ten Kate and Laird 2000). However, expectations for a consistent stream of economic returns from initial bioprospecting agreements, such as the ones with Merck and Co. and Diversa Corporation, ultimately did not materialize. The institution thus failed to raise substantial market-based financing for biodiversity conservation (Iles 2003).

Creation of Value for Partners

As discussed in the analytical framework (Chapter 1) and in the broader literature, creating value for partners is a core rationale for both private actors and public institutions to engage in partnerships and, hence, an essential pathway to effectiveness (Austin and Seitanidi 2014). For the governments of the three host countries studied in this chapter, entering into a partnership was seen as important for mobilizing sufficient funds and institutional capacity toward the implementation of ambitious domestic commitments on biodiversity conservation (INBio and ARPA)[4] and decarbonization (Galápagos Wind).[5] Considering the counterfactual, our research and interviews suggested that these three partnership projects could probably not have been undertaken with existing public sector resources. Moreover, the partnerships also served to experiment with new and additional types of financing mechanisms. In two of the cases, ARPA and the Galápagos Wind Park, the financial and management instruments contributed to building long-term domestic capacity for sustainable management of resources. The evidence is more mixed in the case of INBio, given that despite the important results of its national biodiversity inventory,[6] INBio did not lead to an expected increase in the country's income from bioprospecting. This made it impossible to channel part of the additional resources toward biodiversity conservation or

opportunities for sustainable livelihoods, as had been expected (Richerzagen and Holm-Mueller 2005).

For partnering UN agencies, international NGOs and multilateral financing institutions (such as GEF or the World Bank), the value created by the partnerships translated primarily into the advancement of their strategic objectives and sustainable development activities. ARPA and INBio built on and extended GEF programs, and they supported the World Bank's strategy for greening the organization in response to strong advocacy pressure in the 1990s. Partnership outcomes were thus inscribed within strategic programs such as the World Bank's Country Partnership Strategies for Costa Rica (e.g., World Bank 2004) and Brazil (e.g., World Bank 2011), as well as in the World Bank Operational Programs on Forest Ecosystems and Freshwater Ecosystems (World Bank 2009; 2012). The ARPA partnership contributed to the strategic conservation initiatives of the Brazilian government, but also those of its global partners, such as the World Bank-WWF Forest Alliance (World Bank 1998b) and the WWF Forests for Life Campaign (WWF 2018, p.6). For its part, the San Cristóbal project was embedded in a long-standing cooperation between UNDP and Ecuador on issues ranging from climate change to local economic development (UNDP 2014). The successful implementation of the Galápagos Wind Park, furthermore, reinforced the strategy of the UN Secretariat, facilitated through the UN Foundation, to engage private foundations and subnational actors in partnerships for sustainable development and clean energy (Andonova 2017). In a similar vein, for donor countries providing assistance through their development or technical cooperation agencies in the ARPA and INBio case studies, the supported activities were fundamentally seen as aligned with their respective priorities for development cooperation, as well as with these countries' international commitments to technology and , under the CBD (e.g., Hansson 1997; NORAD 2009).

Private companies were centrally involved in two of the partnerships. In INBio, these were the pharmaceutical and cosmetic companies that acted as commercial partners in the bioprospecting agreements. In this last case, enhanced legal security in the access to, and exploitation of, genetic resources, was the most important value created for the private sector partners. At the same time, there is limited information on the extent to which such access translated into commercial benefits for the companies. For example, no product based on the samples obtained by Merck and Co. had reached the market by the late 2000s (Gámez 2007). In ARPA, private actors became involved primarily through the contribution of financing for the creation and consolidation of PAs, as well as through an ARPA Private Sector Task Force that was established by WWF-International to provide technical assistance in the preliminary phases of the partnership. However, private donor representatives were also appointed to the two main ARPA governing bodies (the ARPA Program Committee and the Transition Fund Committee).

The different dimensions of value created by the Galápagos Wind project are widely discussed in the reports of the GSEP industry group (GSEP 2008;

2016). As the project manager from an international electricity utility company that was involved in the partnership explained in an interview, the Galápagos Wind Park was "designed with a business case in mind, but not on a commercial basis,"[7] elaborating further that it was a "hard project, which does not pencil out quickly from the perspective of commercial developers and in terms of returns on investment." Industry actors viewed the partnership as a potentially very high-value project in terms of innovation, breaking new ground for the deployment of renewable electricity and corporate sustainability.[8] The substantial investment of USD 10.8 million was made possible through a substantial GSEP capital fund contribution, soft loans by GSEP companies and UNDP, a grant by the UN Foundation and a series of innovative financial arrangements with the government of Ecuador (GSEP 2014). The partnership operated on a non-profit basis, as there was no capital reimbursement and all income generated from the first phase of project was reinvested to support further renewable energy development and biodiversity conservation in San Cristóbal (GSEP 2016). For investors and international contractors, the primary value was therefore the demonstration effect of implementing the first wind energy project ever installed in a remote and ecologically vulnerable site, with measurable impacts in terms of decarbonization, carbon offsets and collaboration with UN agencies.[9] For GSEP and its member companies, Galápagos Wind is furthermore considered a flagship initiative for advancing its mission to demonstrate the potential for wind energy development, deployment and replication, including in developing countries with high vulnerability to climate change.[10] Finally, according to the perspective of a project manager in Ecuador, "the most important value" created was for the municipality and the local utility ELECGALAPAGOS, which established "its own renewable energy division using engineers and operators adequately trained by Galápagos Wind staff."[11] The partnership was viewed as a "window to demonstrate to the Ecuadorian mainland that people of San Cristóbal were able to own such an important investment," and to promote sustainability in the Galápagos.[12]

Collaboration Inside the Partnerships and Broader Institutional Impact

In the three partnerships included in this study, the more immediate effects on horizontal collaboration are often relatively easy to identify, as they are usually evaluated in project documents and independent appraisals. In contrast, in some cases it becomes difficult to evaluate these effects against a counterfactual, as project activities can overlap with other preexisting efforts and collaborations. For example, Brazil had seen forest partnerships with entities such as the World Bank and the German government emerge in the Amazon region since the end of the 1980s. Although ARPA presented a significantly new arrangement with the same actors and WWF, focused on the expansion of PAs, some of the previous efforts continued in parallel.

While only minor setbacks and challenges to collaboration were reported in most project documents (GSEP 2016; World Bank 2006; 2009), the outcomes for this dimension of effectiveness appear particularly mixed in terms of the level of support provided by the host governments and the durability of the partnership arrangements. On one end of the spectrum, the Galápagos Wind Park project appeared relatively well-insulated from potential shifting political interests, as it prompted both the national government and the municipality of San Cristóbal to mobilize significant resources through innovative means (e.g., the allocation to the project of local income tax revenues, the provision of special government grants). An interview with a senior staff member of an industry association further emphasized that managing collaboration between partners and with local constituencies was a fundamental aspect of the implementation of the partnership.[13] GSEP companies saw the Galápagos Wind project as a complex and high-risk endeavor in terms of investment, transaction costs and operation in a sensitive natural environment. As a consequence, it was critical that collaborative arrangements and consultation processes were conducted upstream in partnership implementation in order to establish trust. This strategy was also a matter of clarifying goals, assigning responsibilities and distributing risk. As the senior staff member explained: "success is contingent on the right risk allocation. You allocate the risk to the party that can bear it, otherwise you will fail. Different partners have different capacities to manage environmental, financial, technical, community and policy aspects of the partnerships."[14]

On the other end of the spectrum, despite strong political backing by the Costa Rican government in establishing INBio, this support suffered during times of political change, particularly with the rapid decline of the external resources funding INBio between 2005 and 2013 (Fonseca 2015). Relations became increasingly contentious due to the latter's perceived lack of transparency and accountability, culminating in a controversial bailout of the failing institution in 2015 (Wade 2014; Fonseca 2015). Between these two extremes, the ARPA case experienced several phases in which Brazil's leadership was committed to domestic policies consistent with the objectives of the partnership and supported its extension.[15] The level of coordination between the Federal Ministry of the Environment and agencies such as the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) and the Chico Mendes Institute for Biodiversity (ICMBio)[16] with core partners was such that, in several interviews, former government officials referred to ARPA as being part of "public policy of the Brazilian government."[17] Indeed the creation of ARPA was formalized by government decree No. 4326 (2002), and there is high degree of engagement and ownership by the Ministry of the Environment. The scale and complexity of the partnership made it necessary to conduct regular consultations among the partners through the establishment of clear management processes for approving action strategies, allocating funding to PAs and monitoring the conditions for disbursements. This resulted in the creation of several governing and advisory bodies, including the ARPA Program Committee under the Federal Ministry of the Environment, a Scientific Advisory

Panel and (in the third phase of the partnership) a Transition Fund Committee. Interview respondents noted, however, the more limited voices of representatives of local civil society organizations, which only hold two seats in the Program Committee – a body that tends to be dominated by the main donors and federal agencies.[18] More recently, the election of President Jair Messias Bolsonaro in 2019 has changed the political environment dramatically, with soaring deforestation rates prompting international concern and a more confrontational stance taken toward transnational NGOs, thus making the collaboration in the ongoing third phase of ARPA more uncertain (Hecht 2020; Instituto Nacional de Pesquisas Espaciais 2020; WWF 2018).

Since partnerships typically seek to make a contribution to problems that are large in scope and for which the solutions might hinge on the targeting of underlying drivers and behavior of actors outside the partnership, it is also important to evaluate the three case studies against their impact on external collaboration and other institutions. From this perspective, a first layer concerns the partnerships' effects on public policy and the behavior of relevant private actors, while a second layer relates to the spillover of knowledge and practices at the national and international level.

The experience of both the ARPA and INBio cases attests to modest success in influencing external private actors whose behavior was contributing to the issues being addressed. While ARPA resulted in a significant strengthening of domestic capacity relating to the management of biodiversity and deforestation in Brazil, it largely avoided targeting large private interests surrounding the country's most problematic "arc of deforestation" along the southeastern edge of the forest. The initiative focused rather on the creation and management of PAs in areas that are less affected by the politics of the agro-industrial complex (Trancoso et al. 2010).[19] In turn, the legal framework governing access and benefit-sharing in Costa Rica had a temporary impact on the behavior of the private companies by stipulating specific conditions for access in bioprospecting agreements with INBio (Richerzagen and Holm-Mueller 2005). However, this was quickly rendered obsolete, as companies progressively abandoned natural samples to embrace research on synthetic compounds and digital sequencing information techniques (Conniff 2012).

With respect to broader institutional effects, these three partnerships constituted pioneering efforts in their own fields and, for this reason, represent important opportunities for institutional learning and testing of new methodologies.[20] At the same time, their replicability and scalability outside the specific geographical and political context has been limited – a finding that suggests a certain contextual specificity in the implementation of the partnership model of governance. Their positive spillover effects have been more directly relevant to broader infrastructure and institutional developments for sustainability in the hosting countries. These include, for instance, the development of other renewable energy projects in the Galápagos Islands which were also co-financed by international partners, supported by the open sharing of knowledge and feasibility studies by the GSEP

and managed by local utility ELECGALAPAGOS. Examples include a wind park in Baltra Island, a photovoltaic power station on Santa Cruz Island and a hybrid power generation system on Isabela Island.[21] ARPA and its financial instruments have, in turn, contributed to the creation of the Amazon Fund as a major new financing instrument for reducing deforestation in the Brazilian Amazon, stimulated the broader uptake of REDD-plus initiatives in Brazil (ARPA 2012b, p.36 and pp.43–46) and inspired the recent development of the multi-country Amazon Sustainable Landscapes Program.[22] All three cases, partly due to their visibility and strong public engagement, have contributed to strengthening the position of Brazil, Costa Rica and Ecuador in influencing global environmental negotiation and instruments.

Impact on Affected Populations and Wider Sustainable Development Objectives

The impacts of these partnerships appear generally more difficult to assess with respect to their anticipated socioeconomic and welfare effects, including the contribution to local economic development and the promotion of forms of participatory decision making.

The Galápagos Wind initiative provoked controversy in its preparatory stages, as it envisaged the development of new infrastructure in a highly sensitive ecological context. The implementation and indeed the very existence of the partnership, therefore, depended on close consultation and collaboration with local authorities, the Galápagos National Park Service and the Charles Darwin Foundation.[23] Because the primary objectives and structure of the Galápagos Wind partnership were localized at the municipal level, the project produced more readily demonstrable economic and social effects. These included increased economic opportunities during the construction phase of the installation, a net reduction of air pollution due to the displacement of diesel combustion with related health benefits, an improved energy service and the uptake in energy efficiency programs with related savings in terms of electricity bills.[24] The San Cristóbal project was also one of the first projects on the island to include a public communication and consultation program upstream and collaboration with civil society organizations on environmental management activities through the Charles Darwin Foundation. As noted in the discussion on value creation, perhaps the most sizable impact on the sustainability and welfare of the citizens of San Cristóbal has to do with the substantial transfer of technology and management capacity relating to renewable energy projects.

In the case of INBio, the scale of support to sustainable livelihoods was widely seen as insufficient to create long-lasting economic benefits and incentives for conservation (Castree 2003; Iles 2003), adding to a perception that the Institute never liaised appropriately with local communities and indigenous groups (Castree 2003; Miller 2006; World Bank 2006). Several studies note that the initiative contributed primarily to strengthening the position of

private companies as the main actors deciding the fate of genetic resources and biotechnology development (Iles 2003; Royas and Aylward 2003; ten Kate and Aylward 2000). However, before their financial downturn, INBio and INBioparque provided widely recognized public value at the local level, becoming a popular outlet of educational and recreational initiatives centered around the themes of biodiversity conservation and sustainable use (Fonseca 2015).[25]

Finally, while ARPA succeeded in making the management process of PAs more inclusive, through the establishment of participatory management councils and community-level subprojects, the partnership's impact on poverty alleviation in the region of implementation has been estimated to be limited (Leme da Silva and Ferreira Bueno 2017; Pinho et al. 2014; World Bank 2018). In particular, not only did a vast majority of PAs report difficulties with the financial sustainability of this aspect of the program, it was also concluded that the support provided to traditional income-generating activities in these areas was insufficient to address local socioeconomic needs or alter the opportunity costs of forest users (World Bank 2018).[26] Moreover, ARPA itself acknowledged that it failed to substantially reduce land tenure conflicts and ensure the legal security of tenure rights, an issue which also contributed to exacerbating deforestation pressures (ARPA 2012c). The initiative remained known mainly to PA managers and community leaders, while the role of local NGOs as important intermediaries between transnational programs and local implementation and sustainability has not been sufficiently documented or formally recognized[27] (a notable exception is discussed in Chapter 3 of this volume). More generally, the project assessments and reports of the three global partnerships examined here provided relatively limited data on the welfare implications for affected populations and on-the-ground socioeconomic effects, focusing primarily on established goals and formal partners that are directly engaged in project activities.

Ultimately, all three partnerships were expected to complement their project goals with a series of broader sustainable development objectives that included, among others, reduced greenhouse gas emissions from deforestation and forest degradation (ARPA), decarbonization through the deployment of renewable technology (Galápagos Wind), the creation of mechanisms for financing biodiversity conservation (all three) and the promotion of local sustainability and socioeconomic development (all three). Beyond their specific goals, a more complete picture of the partnerships' wider environmental impacts suggests that the ARPA and Galápagos Wind partnerships have made effective contributions to addressing complex global problems, such as biodiversity conservation and reduced GHG emissions, despite the inevitability of the remaining challenges (summarized in Table 2.2). In contrast, the activities of INBio suffered from a lack of consistent monitoring and evaluation of biodiversity impacts (Castree 2003), and their positive effects relate primarily to increased biodiversity knowledge, public awareness about biodiversity values and influence on Costa Rican policy developments (World Bank 2006).

Table 2.2 Partnership effects and limitations on environmental sustainability

Case Study	*Environmental Issue*	*Sustainability Effect*	*Limitations*
ARPA	Protected areas and biodiversity conservation	Significantly extended the area of the Brazilian Amazon under protection. High ecological representativeness of PAs overall	Absence of overarching biodiversity monitoring
		Significant potential impact on biodiversity	
	Deforestation and climate change	Significant GHG emissions avoided due to reduced deforestation	PAs mainly implemented away from most rapidly affected arc of deforestation, with further PA expansion likely to be more difficult
		Lower deforestation reported in ARPA vs. non-ARPA PAs	
		Capacity built for other climate initiatives in Brazil	
Galápagos Wind	Biodiversity conservation	No protected fauna significantly affected by the turbines	Some deaths of non-endangered birds recorded due to the turbines
		2.3 million gallons in fuel shipments avoided; reduced risk of oil spills	
		Adoption of a conservation program for endangered petrel populations; by 2016, no petrel had been injured by the turbines and hatching and reproduction rates increased	
	Climate change & clean energy	Avoided cumulative CO_2 emissions of 21,000 tons Deployment of renewable energy to account for 30% of electricity supply	Growing electricity demand in the Galápagos, due to population growth and development, has increased use of diesel. New investment and efficiency measures needed if share of renewables is to remain at 30% or increased
		Built capacity to decarbonize Galápagos, support Ecuador's commitment under the Paris Agreement	

(*Continued*)

Table 2.2 Continued

Case Study	*Environmental Issue*	*Sustainability Effect*	*Limitations*
INBio	Biodiversity conservation	Biodiversity knowledge developed through the National Biodiversity Inventory; important in a wide range of policy and legal developments in Costa Rica	No clear indicator linking the development of the National Biodiversity Inventory with improved biodiversity outcomes
		Costa Rica established as an attractive hub and testing ground for innovative practices in biodiversity conservation	
		Some resources generated through bioprospecting channeled to PAs or used to support research efforts	Funding stream for biodiversity conservation and sustainable economic activities in PAs remained inadequate

Source: Authors, based on data from ARPA 2012a, 2012b; Castello et al. 2013; Castree 2003; Fonseca and Venticinque 2018; GSEP 2014, 2016; government of Ecuador 2015; Iles 2003; Ministério do Meio Ambiente 2007; Nagoda and Tveteraas 2001; Oliveira et al. 2017; Royas and Aylward 2003; Soares-Filho et al. 2010; Trancoso et al. 2010; UNDP 2014; World Bank 2006, 2015.

Conditions for Effectiveness

Having presented our findings with respect to the different pathways to effectiveness, we now turn to exploring their implications for the conditions for effectiveness linked to partnership characteristics: sophisticated contracting, credible commitment of resources and adaptability and innovation (see Chapter 1 in this volume). As a starting point, it should be emphasized that, in the same way that co-occurring contextual factors shape partnership outcomes, these specific conditions for effectiveness are also unlikely to operate in isolation. On the contrary, they should be expected to interact with each other through positive (or negative) feedback loops throughout a partnership's governance history. Moreover, our findings suggest that sophisticated forms of contracting, by which we mean contractual arrangements that are sufficiently specific but not excessively rigid to allow for ongoing communication, accountability and learning, may play an early role as a core driver and enable other conditions for effectiveness.

The significance of contracting is directly evident in the cases of ARPA and the Galápagos Wind. In both partnerships, explicitly clarifying common objectives and establishing partners' commitments and responsibility contributed to a process that built trust, established the value expected by each partner and determined the level of risk they manage together and individually.[28] Furthermore, all institutional partners were expected to provide a high degree of transparency and a continuous flow of information in the management of the partnerships, whether through independent evaluations, the setting of specific targets or the definition of strict conditions for financial disbursement (GSEP 2016; ARPA 2018). These types of arrangements prepared partners to address hurdles in implementation and risks associated with political change or shifting interests as they emerged (GSEP 2008; World Bank 2012; WWF 2018).[29] In contrast, the INBio case shows that a lack of coherence and insufficient accountability mechanisms in the initial structure of a partnership can contribute to significantly altering its budget and planning from one year to the next (Fonseca 2015; Wade 2014). Furthermore, INBio exposed its activities to severe criticism for their perceived lack of transparency (Iles 2003; Isla 2015; Royas and Aylward 2003).

The introduction of sophisticated forms of contracting further interplayed with other conditions for effectiveness, namely credible commitment of resources, innovation and adaptability. First, the presence of clear and specific contractual and governance arrangements was found to encourage the commitment of significant amounts of resources that are adapted to the issues being addressed in the ARPA and Galápagos Wind partnerships (GSEP 2014; WWF 2018). This commitment took place both in the initial stages of partnership planning and in subsequent stages of implementation. For example, the structuring of the necessary financial, technical and administrative agreements in the Galápagos Wind case took three years to prepare, as opposed to the one-year construction of the wind park (GSEP 2014). This involved setting up a Commercial Trust to manage the assets for the construction, with ELECGALAPAGOS as the ultimate beneficiary, and a Trust Committee as a governance body. In addition, a special purpose vehicle company called EOLICSA was created, which owned and managed the wind park facilities until their transfer to ELECGALAPAGOS in 2016.[30]

Second, in the initial phase of a partnership, the credible commitment of resources can also feed back into the outcomes of contracting, as partners anticipate having to manage significant amounts of funding, technology and knowledge. In ARPA, the need to ensure long-term resource allocation for the program motivated a series of sophisticated institutional innovations. These included the creation of a permanent endowment fund from the management of grant resources, known as the Protected Areas Trust Fund. The objective was to insulate to some extent grant-based biodiversity financing from the political risk associated with electoral cycles and appropriation of public resources. The Fund was in turn administered by Funbio, a non-governmental and independent financial institution which was created with the support of GEF and other public and private donors in the 1990s. In 2014, a new financial plan was set up by ARPA partners in order to guarantee the long-term sustainability of project activities. The plan, known as *ARPA for Life*, created a long-term sinking fund (called Transition Fund and also managed by Funbio) to ensure that sufficient resources are available to cover the recurring costs of ARPA until a progressive transition to full government funding is completed by 2039 (WWF 2018). As evident from our discussion of both ARPA and Galápagos Wind, sophisticated, innovative financial and resource arrangements, as well as related contracting and institutional features were an essential element of the planning and durability for both partnerships. In contrast, in the case of INBio, despite the significant initial commitment of resources (Gámez et al. 1993), the absence of a shared, long-term funding vision and transparent and durable contractual arrangements became a significant source of uncertainty when bioprospecting failed to become a viable source of revenue (Conniff 2012; Gámez 2007).

Third, sophisticated contracting in the ARPA and San Cristóbal partnerships provided the basis for the deployment of monitoring mechanisms and other technical tools aimed at assessing the intermediate progress of project activities, thus creating the space for adaptation to shocks and changing contexts. For instance, ARPA partners adopted several changes to the program as a result of their periodic evaluations, including increases in ambition, the ongoing revision of its timeline for implementation and the introduction of the *ARPA for Life* financing model, inspired by the concept of project finance for permanence (WWF 2015). Similarly, specific elements of the project for a San Cristóbal electricity generating system were modified due to the results of preliminary and intermediate studies, including changes to the project location and design and the introduction of environmental mitigation measures (Eurekalert 2016; GSEP 2008; UNFCCC 2007).

At the same time, our case studies make it clear that sophisticated contracting itself neither emerges from nor exists in a vacuum. At the level of partnership design, the quality of contracting can be positively influenced by preexisting experiences of successful collaboration among partners, which contribute to raising capacity for implementation and trust in the mutual adherence to partnership terms. In the case of ARPA, these collaborative arrangements were embedded in a broader context of prior and parallel initiatives related to the Amazon biome that included the same partners, including multilateral, bilateral, and subnational arrangements on forest conservation (Hecht 2011; World Bank 1998b; WWF 2018). As a former government official who was directly involved in ARPA summarized in an interview, “Classic

governance of PAs has ceased to exist … conservation is collaborative in various ways. [Our government agency] signed 50 new partnerships in 2017 alone."[31]

Finally, sophisticated contractual arrangements may in turn be strengthened by the emergence of adaptive responses and innovations. All three partnerships had strong ambitions for innovation. INBio was the first initiative to substantially engage in bioprospecting agreements with a view to creating both financial benefits and public value. The Galápagos Wind partnership was the first project to invest in wind technology in a remote island setting – a decarbonization experiment that entailed many unknowns associated with both the technology and fragile environment. ARPA blended transnational and domestic resources via an independent financial entity to implement a conservation program of unprecedented scale. In all three cases, the mobilization of a partner's comparative expertise facilitated the delivery of innovative products and services, ranging from INBio's pioneering biodiversity inventory to the innovative tools and methodologies used by ARPA to prioritize the allocation of resources and evaluate project implementation.[32]

These aspects of innovation, scale, and bringing together private and public interests inevitably involve risk and unanticipated challenges, which may be internal or external to the respective projects. Adaptability is therefore essential for effectiveness, especially in partnerships with a life span expected to extend over several years. In the case of ARPA, adaptability has been supported through the extension and revision of initial partnership arrangements. For instance, in the early stages, amendments were necessary to include sustainable livelihoods components in the scope of the program and, subsequently, the development of a new financing model in the third stage of partnership implementation.

In the case of San Cristóbal, the project had to be adapted at the very beginning to reflect a more participatory approach and make use of local knowledge and scientific expertise on birds' migratory routes and safety around the site of the installation. Adaptive management was also important with respect to policy changes introduced by the government of Ecuador and relating to contractual financing arrangements. Furthermore, the project had sufficient flexibility with respect to delaying the registration and sale of carbon offsets, when prices slumped in international markets in 2013 (Newell, Pizer and Raimi 2013).

On the one hand, the founders of INBio had not immediately considered long-term alternatives to bioprospecting revenues, which had been expected to rapidly emerge as the Institute's core business due to a series of overly optimistic expectations (Coughlin 1993; Zebich-Knos 1997). By the time these revenues collapsed, its original partners had started decreasing their contributions to INBio, and the relationship with the Costa Rican government had become strained (Gámez 2007; Miller 2006). As a result, not only did INBio fail to raise sufficient resources through potential new revenue-generating mechanisms (e.g., environmental consulting, the management of INBioparque), but the government's decision to bail out the Institute and rescue its biodiversity collection only came when the fate of the institution was already sealed (Fonseca 2015).[33]

Conclusion

This chapter examines the mechanisms through which three partnerships in the areas of biodiversity and clean energy have exerted influence on their partners,

as well as the key factors shaping their variable sustainable development impacts. The selection of case studies deliberately focused on transnational partnerships, whose creation was inspired by similar sets of considerations operating in specific geographical and political contexts and characterized by a sufficiently long history in order to evaluate systematically the extent to which different effects materialized. This case selection, aiming to ensure a reliable comparison, is also a source of potential limitations. For instance, with the adoption of the Sustainable Development Goals, the phenomenon of global partnerships for biodiversity and clean energy has been on the rise, mobilizing new coalitions and modalities that are too recent to be meaningfully evaluated.[34] In this sense, we do not necessarily capture the full variation across a large number of partnerships, some of which may never commit meaningful resources or undertake implementation activities (Pattberg et al. 2012). We have focused on cases that have been implemented with sufficient data to examine the variation in effectiveness and limitations across different pathways, as stipulated in the analytical framework of the volume (Chapter 1).

Furthermore, our empirical analysis suggests that it might be difficult to neatly isolate the effects attributed to the partnerships from those of other institutions and policies in which they are embedded or with which they coexist. Nevertheless, our findings suggest that an analysis of different dimensions and pathways to effectiveness can help reveal a more nuanced picture. More specifically, three challenges emerged as particularly relevant across the three case studies. First, achievement of long-term financial sustainability through the creation of a reliable funding model appears to be critical for the durability of partnerships and their effects, as illustrated in the ARPA and Galápagos Wind partnerships and the contrasting unraveling of INBio. Even in the cases of ARPA and Galápagos Wind, the durability of the financial models could not be taken for granted, and partners had to adapt to changing circumstances. Second, the cases also highlight the importance of domestic institutional support and related elements of unpredictability, owing to the possibility of rapidly changing political contexts. This finding highlights the interplay between contextual factors and conditions for partnership effectiveness, which runs across several other chapters in this volume. Third, we found that it is generally more difficult to discern the extent to which partnership activities effectively targeted socioeconomic co-benefits and support for local livelihoods. Due in part to their global design, the partnership initiatives themselves have provided relatively limited reporting on this dimension.

When the above-mentioned effects and challenges are evaluated against the conditions for effectiveness, i.e., sophisticated contracting, commitment of resources, innovation and adaptability, it is evident that different institutional features and dynamics interact with each other to shape the long-term impacts of a partnership. To begin with, a level of contracting that clarifies common objectives, responsibilities and conditions for accountability can be seen as an important underlying factor in strengthening trust and mobilizing the comparative advantages of each partner. Furthermore, the credible commitment of resources, which appears to be stronger when a partnership builds upon preexisting collaborative efforts and sophisticated forms of contracting, may further contribute to raise capacity and stimulate innovation in governance mechanisms. Finally, we find that the capacity to foster adaptation through clear partnership arrangements

and learning-by-doing approaches can also provide an explanatory factor for the longevity of partnerships, although it might not be able to overcome a lack of commitment by partners and major flaws in the initial partnership strategy.

Finally, our case studies appear to suggest that the success of a partnership model does not guarantee that it would be replicated outside of its geographical and political context. This is to some degree surprising, given the significant ambition and innovation of all three cases examined. While the three partnerships have certainly had important spillover influence, disseminating new knowledge and practices at different scales, their direct impact on international collaboration on biodiversity and clean energy outside of their context has been more limited or indirect. Further, large-*n* studies could examine the plausibility of discerning cumulative effects across larger groups of transnational partnership and across different pathways of effectiveness. This speaks to the magnitude and complexity of the Sustainable Development Goals' implementation gap, especially on issue areas that remain characterized by rapid changes in national political environments and ongoing gridlock in intergovernmental negotiations.

Acknowledgments

The authors acknowledge with gratitude the support of the Swiss Network of International Studies (SNIS), which was provided as part of a grant awarded under the Network's 2017 Call for Proposals (Grant No. 3369). We are also grateful to all the individuals who agreed to be interviewed and shared their experiences with public-private partnerships. These firsthand insights have been essential for the depth and quality of our analysis. We are indebted to Livio Miles Silva-Müller for conducting field research on the project in Brazil. The contributors to this volume, together with others who have participated in project workshops in Florence and Geneva (including Thomas Biersteker, Cecilia Cannon, Jerome Duberry, Özgü Karakulak, Lea Stadtler, and Oliver Westerwinter), have provided invaluable comments which have helped us to further strengthen our arguments.

Notes

1 See https://sustainabledevelopment.un.org/partnerships/ (accessed 19 February 2021).
2 The majority of the support provided by the GEF, Norway and the Netherlands occurred through a joint funding program known as the *Biodiversity Resources Development Project* (World Bank 1998a; 2006).
3 For example, the 1992 Pilot Program to Conserve the Brazilian Rainforest (PP-G7) launched by Brazil, the G7 and the World Bank, and the 1998 WWF/World Bank Forest Alliance.
4 In Costa Rica, INBio's goal to increase knowledge about the country's biodiversity, while developing non-destructive uses of such biodiversity, was seen as a key contribution to the country's 1989 National Conservation Strategy for Sustainable Development (Gámez et al. 1993) and the implementation of the 1992 Convention on Biological Diversity (CBD). In Brazil, the ARPA partnership was considered necessary to achieve the commitment by the then-president Fernando Henrique Cardoso's commitment to increase areas of the Brazilian Amazon under strict protection to a minimum of 10 percent of its total area (World Bank 1998b), while also contributing to the country's commitments under the CBD, the Aichi Biodiversity Targets, the Paris Agreement and the 2030 Agenda.

5 At the beginning of the 2000s, the Ecuadorian government had launched a vision to reach zero fossil fuel use in the four populated islands in the Galápagos by 2015. As part of these efforts, which included the analyzed partnership, the government launched a broader partnership with UNDP and the GEF known as ERGAL (Renewable Electrification of the Galápagos Islands) (UNDP 2014).
6 By the end of the inventory activities supported by the GEF and by the governments of Norway and the Netherlands in 2005, INBio had become a worldwide leader in taxonomic inventory and largely exceeded its original goals, amassing an exceptional collection of more than 3.5 million specimens (around 23,000 species, of which 2,000 were newly discovered) (INBio 2010; World Bank 2006).
7 Interview with project manager from an international electricity utility company, September 2018.
8 Ibid.
9 Interview with project manager from an international electricity utility company, September 2018 and email exchange with project manager in Ecuador, September 2018.
10 Interview with senior staff member of industry association, September 2018.
11 Email exchange with project manager in Ecuador, September 2018.
12 Ibid.
13 Interview with senior staff member of industry association, September 2018.
14 Ibid.
15 Interview with former government official #1, February 2019.
16 Until 2007, the management of federal PAs, including those supported by ARPA, was assigned to IBAMA. In 2007, this responsibility was transferred to the newly-founded ICMBio.
17 Interview with former government official of Brazil #2, February 2019; interview with senior staff member of national NGO, March 2019.
18 Interview with senior staff member of national NGO, March 2019.
19 See also interview with former government official of Brazil #3, March 2019; interview with senior staff member of international NGO, March 2019.
20 See for example de Camino et al. 2000 for the World Bank and GEF's financing of INBio.
21 Email exchange with project manager in Ecuador, September 2018. See also Eras-Almeida and Egido-Aguilera (2019).
22 The Amazon Sustainable Landscapes Program is a regional program funded by the GEF which aims to increase the connectivity among, and integrated management of, PAs in Brazil, Colombia and Peru. See https://www.funbio.org.br/en/programas_e_projetos/asl/ (accessed 5 January 2019).
23 Interview with senior staff member of industry association, September 2018; interview with project manager of international electricity utility company, September 2018.
24 Email exchange with project manager in Ecuador, September 2018.
25 See also personal communication with former government official of Costa Rica, May 2018.
26 Interview with former government official of Brazil #3, March 2019.
27 Interview with senior staff member of national NGO, March 2019.
28 Interview with senior staff member of industry association, April 2019; presentation of former senior staff member of international NGO, March 2016.
29 Notably, there is limited evidence of involvement of local communities in these accountability mechanisms. In ARPA, affected communities have been represented primarily by more established NGOs that were assigned seats within its various committees and panels (World Bank 1998b). Similarly, in the Galápagos case, civil society participation was mostly facilitated through the local authorities and the Charles Darwin Foundation.
30 Email exchange with project manager in Ecuador, September 2018. See also GSEP (2014; 2016).
31 Interview with former government official of Brazil #3, March 2019.

32 For example, ARPA introduced an online system known as *Cérebro* to allocate resources to specific protected areas. In turn, *Cérebro* itself was based on another innovation, known as *conta vinculada,* which consisted in the use of special blocked accounts in order to ensure a faster and decentralized access by PA managers to the funds they needed. In terms of monitoring tools, ARPA relied on instruments including Conservation and Investment Strategy (ECI), which serves to identify existing financing needs at the PA level and compare them with available resources to facilitate prioritization; FAUC and SisArpa, which are monitoring tools to keep track of key information on PA management activities; and RAPPAM, a WWF-developed methodology to evaluate management effectiveness.

33 On the contrary, GSEP's continued commitment to Galápagos Wind allowed the San Cristóbal project to operate at a loss until its ownership was transferred to the local electricity utility in 2016.

34 A recently announced global partnership in the area of biodiversity is the UN Biodiversity Lab, which brings together UN entities, technical partners and data providers with the objective of scaling up the use of geospatial data on biodiversity and ecosystems in decision making (see https://www.unbiodiversitylab.org, accessed 12 January 2021). In the area of clean energy, a fitting example is represented by the coalition of national governments and private sector, known as Mission Innovation, launched in 2015 with the goal of doubling public investment in clean energy innovation (see http://www.mission-innovation.net, accessed 18 February 2021).

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