"CONSERVATION BOOMS" WITH AGRICULTURAL GROWTH?

Sustainability and Shifting Environmental Governance in Latin America, 1985–2008 (Mexico, Costa Rica, Brazil, Peru, Bolivia)

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Abstract: Conservation-development interactions intensified as a consequence of environmental and land-use changes in Latin America during the 1985–2008 period. This study examines predominant changes in five countries (Mexico, Costa Rica, Brazil, Peru, and Bolivia). Multifold increase of protected areas for environmental conservation occurred together with agricultural growth and intensification. Conservation and agricultural trends were fraught with conflicts and contradictions, yet they also showed partial compatibility in the search for sustainability. Conservation, indigenous, and social movement organizations operating at multiple scales (local, national, and international) contributed to distinctly configured national conservation "booms" and sustainability discourses in the five countries. Neoliberal governments and global organizations sanctioned protected-area conservation via increased state institutions, national and subnational administrative mechanisms, widely publicized sustainability rationales, expanded territorial management and a property rights focus, spatial devolution, and official multiculturalism—the 1990s were a heyday of these activities. Subsequently Latin American conservation and sustainability efforts have evolved both as a global center of governance through payment for environmental services and under increased and diverse social agendas.

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CONSERVATION AND DEVELOPMENT: CONFLICT OR COMPATIBILITY?

Numerous Latin American countries have emerged as global centers of environmental conservation and land-use modernization during recent decades (Brandon, Redford, and Sanderson 1998). Between 1985 and 2008, protected natural areas in Latin America, such as parks and reserves, grew more than threefold in number and area to cover nearly 3,500 sites and more than 3 million square kilometers in Latin America (UN Environmental Programme [UNEP] and World Conservation Monitoring Centre [WCMC] 2008). This expansion consisted of conservation booms in each of the individual countries as well as a composite Latin America–wide trend (Zimmerer and Carter 2002, 207). Countries of Latin America now account for nearly 15 percent of global coverage of protected areas. Governance of environmental conservation has included civil society groups, ranging from nongovernmental organizations (NGOs, both international and national), indigenous groups and federations, communities, and political networks (Brush and Orlove 1996; Keck 1995; Lemos and Agrawal 2006; Stocks 2005), as well as state agencies from municipal to national levels, international organizations, and multilateral lenders. At the same time, increased scientific, technological, and legal capacities have been designed to support the protected areas and thereby promote environmental conservation in Latin American countries.[1] The majority of these conservation areas, as elsewhere globally, have functioned reasonably well, albeit incompletely and subject to continued evaluation and debate (Bruner et al. 2001; Joppa, Loarie, and Pimm 2008). Expansion of protected-area conservation runs counter to earlier arguments of the political and economic infeasibility of significant environmental advances in Latin America (on Mexico, see Mumme, Bath, and Assetto 1988).

Concurrent with protected-area expansion was the widespread modernization of land use and agriculture in Latin American countries (International Assessment of Agricultural Knowledge, Science and Technology for Development 2009). Marked by global market integration and the privatization of land, resource inputs, and agricultural research and extension, this multifaceted modernization has produced some environment-friendly and socially favorable outcomes, such as expanded organic, fair trade, and certified "sustainable" production (Bray, Plaza Sánchez, and Contreras Murphy 2002; Bray, Merino-Pérez, and Barry 2005; Mutersbaugh 2006). It has also propelled the adoption of environmental and sustainability themes in the formerly powerful international agricultural centers (e.g., Centro Internacional de Mejoramiento de Maíz y Trigo; Centro Internacional de Agricultura Tropical; Centro Internacional de la Papa) of the so-called Green

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1. Significant expansion since the mid-1980s did not diminish the importance of previous advances in environmental conservation in Latin American countries. Numerous environmental gains occurred in the 1960s, 1970s, and early 1980s, and some date to the early twentieth century and even earlier if conservation is broadly interpreted (Evans 1999; Mumme et al. 1988; Simonian 1995; Young and Rodríguez 2006; Zimmerer 2006b).

Revolution in Latin America. Still, the bulk of expanded export agriculture and new national production has tended, on the whole, to contribute to environmental destruction under neoliberal policies that predominated in the study countries between 1985 and 2008 (Barham et al. 1992; Brannstrom 2009; Hamilton and Fischer 2003; Hecht 2005; Nepstad, Stückler, and Almeida 2006; Roberts and Thanos 2003; Walker et al. 2008). Though incongruous at first glance, this expansion and intensification of land use and agricultural production occurred in conjunction with the national-level conservation booms as described earlier. My study addresses basic questions about this pair of trends in each country: What are the characteristics and magnitudes of these trends? How have compelling forces—environmentalist, social, political, economic—distinguished each trend? How do the trends correspond to national and international policies and institutions?

The portrayal of powerful, albeit parallel, trajectories, suggested already, belies the complex and paradoxical co-occurrence of the expansion of environmental conservation with agriculture and land use in Latin America. This study's analysis focuses on intensified interactions since 1985, including both conflicts and compatibility, of protected-area conservation units and land-use modernization (principally in agriculture and forestry) of Mexico, Costa Rica, Brazil, Peru, and Bolivia. Indeed, the trends toward agricultural and land-use modernization and intensification suggest the possibility of a beneficial relation to the expansion of protected natural areas (Grau and Aide 2008; Matson and Vitousek 2006). Though focused on estimates of areal interactions and future prospects, the scholarly works conducted to date have not examined combined national-level trends of conservation, agriculture, and environmental governance. While other important political and resource-use interactions with protected areas in Latin America include forestry, mining and energy development, military and narcotics, urban growth, tourism, and coastal and marine resource use, this study is focused on the interactions of agricultural land use with terrestrial protected areas. These conservation types are central and most influential in the ideas and applications of nature protection, sustainability, participatory development, and payment for environmental services (PES), which have evolved since the mid-1980s and are still principal themes today.

The five countries (Mexico, Costa Rica, Brazil, Peru, and Bolivia) illustrate an ample range of political and economic conditions and effects in which national conservation booms were concentrated in tropical forest environments of Latin America (e.g., Rodríguez and Young 2000; Zimmerer and Carter 2002). These countries also followed characteristic pathways of agricultural modernization, such as the nontraditional agricultural exports (NTAEs) and the widespread expansion of soy agriculture in South America. New agricultural cropping along with transportation infrastructure and cattle ranching are the most important causal forces of tropical deforestation and conservation threats in Latin American countries (Geist and Lambin 2002; Lambin et al. 2001; Schmink and Wood 1992; Walker et al. 2008). By contrast, so-called secondary forest transitions have occurred in marginal land-use areas within these countries (Grau and Aide 2008). These newer factors frequently coexisted with familiar features—such as small-scale cattle ranching and logging—as prominent Latin American environmental

challenges. The present study examines how both the newer and the already-existing factors distinguish the country-level configurations of the entwined expansion of land use, together with conservation areas, in Mexico, Costa Rica, Brazil, Peru, and Bolivia.

This study's focus is national-level institutions and policies, especially the unfolding of territorial designations (i.e., territorializing), as both a condition and an effect of expanded environmental governance in Latin America. In addition to nature protection per se, political and economic functions of conservation areas in these countries have ranged from legal, territorial, and business based (e.g., tourism) to serving as important discursive foundations of national sustainability efforts and as a way of thinking in popular media and increasingly in the personal subjectivities of citizens (Zimmerer 2006a, 2006b; Zimmerer, Galt, and Buck 2004). Expanding protected-area designations and environmental governance amid land-use change have also created political winners and losers in these countries (on Brazil, for example, see Fearnside 2003). These trends raise the question of how conservation expansion, growth of land and resource use, and environmental policy making more generally occurred between 1985 and 2008 in Latin America in the context of mostly neoliberal national policies. Central to this question is the role of social movements, indigenous federations, NGOs, citizen groups, and environmental activists and institutions that have been highly effective in conservation-related environmental politics and governance (e.g., Lemos and Agrawal 2006; Stevens and De Lacy 1997). Influence of these civil-society groups was especially marked in the conservation boom in Brazil (Hecht and Cockburn 1990; Keck 1995; Pieck 2006; Schmink and Wood 1992).

How did Latin American governments interact with and respond to the environmental agendas and political pressures of conservation organizations, social groups, and private interests propelling protected-area expansion? More broadly, how were national approaches to protected areas shaped amid other state policies toward land and resource use? Predominantly neoliberal governments and resource policies, which varied throughout Latin America, were characteristic of the period from 1985 to 2008. Governments in Mexico and Costa Rica pursued chiefly neoliberal policies throughout this time, and shifts to the center-left and nationalist-populist political regimes have occurred in Brazil since 2002 and in Bolivia since 2006. Moreover, there has been a mixed political model in Peru since 2003 (Petras 2006; Roberts 2009; Weyland 2004, 2009). This study's principal framing from 1985 to 2008 enables comparative analysis of state-sanctioned environmental conservation under shifting neoliberalism, with a secondary focus on potential shifts associated with country-specific movements at least partly away from neoliberal policies. Finally, the 1985–2008 period encompassed emphasis on both protected-area expansion and the newer PES. Championed by the influential Millennium Ecosystem Assessment in the early 2000s, PES is globally concentrated in Latin American countries.[2]

2. Payment for environmental services is an economic agreement over a specific environmental service. A related land use or vegetative cover (e.g., intact forest cover) is often used for the purpose of practical monitoring.

This study's second goal is to identify the persistent tension between the successful political activism of civil-society groups (e.g., social movements, indigenous organizations, conservation supporters) and the typically depoliticizing national technocratic approaches toward protected areas for environmental stability and sustainability. The former has contributed to the notable, albeit partial, shift of protected-area governance in Latin American countries from the strict dictates of the so-called Yellowstone Park model to the broader compass of protected area-related social issues, including the territorial roles of peasant, indigenous, and resource-user groups. This shift in environmental conservation policy has been incorporated into a wide spectrum of political perspectives on social welfare, poverty alleviation, development, demographic growth, and economic markets (Adams et al. 2004; Brockington, Igoe, and Schmidt-Soltau 2006; Naughton-Treves, Buck Holland, and Brandon 2005).

The shifts in conservation in Latin American countries during the 1985–2008 period highlight the role of national protected-area agencies in designing territorial strategies to demarcate human populations and activities in state-designated units. All five case-study countries undertook the major reorganization of protected-area agencies since 1985—detailed in the following sections—as integral pieces of environmental governance. Multiple territorial designs became increasingly central to state-level conservation. My study examines the hypothesis that this reliance on territorialization of conservation units is central to depoliticization in the Latin American case-study countries under national programs and in the state's strategic accommodation of the social activism of diverse civil society groups that have engaged in protected-area conservation as political issues.

Sustainability institutions and discourses are the final focus. These elements have been applied widely to protected-area designation and management in all the case-study countries. Highly publicized government efforts range from design and coordination of special-purpose sustainable-use units within protected areas; growing and persistent use of sustainable development and participatory development in institutions and discourses; the significant role of indigenous people and their territories in growth of protected areas; and, finally, the emergence of PES as a major conservation trend that, outside of the United States and a few other countries (primarily in the global North), is concentrated to a significant degree in Latin American countries (McAfee and Shapiro 2010). Payment for environmental services is centered at the intersection of the protected-area conservation and land use. Institutional actors active in environmental conservation range from prominent global environmental NGOs to multilateral lending agencies. Tracing these institutions shows not only commonness but also the distinctness and specificity of state agencies and national approaches of Latin American countries that fostered both conservation booms and modernizing land use (on Brazil, see Drummond and Barros-Platiau 2006).

The concept of nature-society hybridity, as used in geography and environmental planning and management, considers conservation and use of land and other resources "coproduced" through governance and human-environment interactions, rather than as strictly social outcomes (Swyngedouw 1999; Zimmerer 2000, 2006). A second, albeit distinct, concept of hybrid also is used here to refer

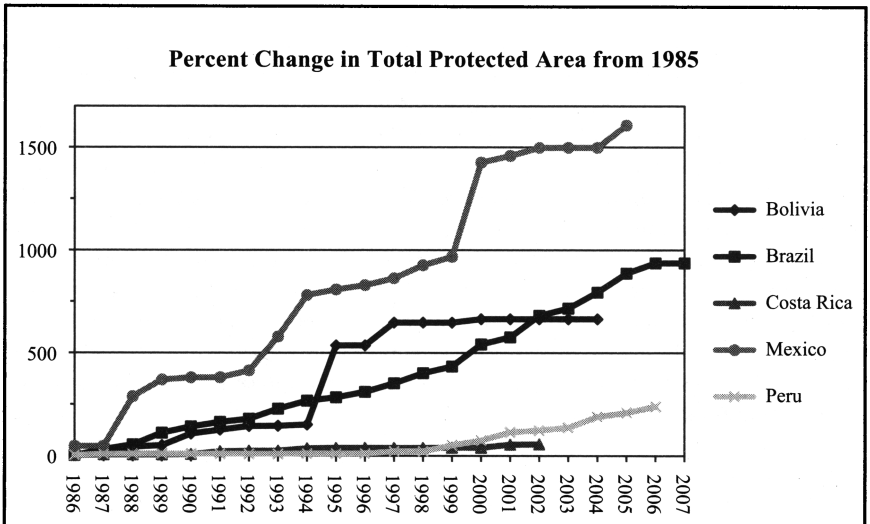
to variants of neoliberal governments that may foster, even conspicuously, certain sustainability policies and environment protection (on protected-area conservation and community-based resource management of hybrid neoliberalism in Latin America, see Zimmerer 2009). Coproduction of conservation relies also on the concept of territory making or territorialization, which is integral to national policies and statecraft in environment and resource management (Orlove 2002; Scott 1998). Conservation territories have often arisen through multiscale interactions with international and global organizations as well as local and regional institutions. Taken together, these concepts are associated with the approach of Latin American political ecology (Campbell 2007).[3] They enable an understanding of protected areas and PES as not merely gatekeepers and reinforcement of wilderness relicts but as arising through socioeconomic, political, environmental, and spatial processes involving the broader organization of resource sectors and environmental governance.

METHODS

The first set of methods involves analysis of country-level estimates of changes in protected-area conservation and land-use coverage (detailed in Zimmerer and Carter 2002; Zimmerer et al. 2004). For protected areas (PAs), estimates of areal data were created for the case-study countries (Mexico, Costa Rica, Brazil, Peru, and Bolivia) by reconciling and using the compilations of four global data sets in which Latin American countries are prominent (Chape et al. 2003; International Union for the Conservation of Nature [IUCN] 1985; World Conservation Union and WCMC 1998; UNEP and WCMC 2008). These estimates treat national PA coverage in 1985, 1997, 2003, and 2007, respectively. The 2007 compilation also provides establishment dates of individual PAs. Estimates were calculated of annual change in protected area coverage of each country since 1985 (figure 1); this evaluation contains approximately 1,700 protected areas. Estimates of annual changes of agricultural land use in each country were created using national estimates available through the Food and Agriculture Organization of the United Nations (FAO 2008; see also figure 2).

The second set of research methods is concerned with the state agencies and institutions of environmental governance and management in each country since 1985 (see the appendix). It interprets the role of institutions and their projects involving protected-area conservation and land use. These institutions include national ministries and subnational and local offices in each country. Also included are international and multinational governmental and lending organizations, in addition to the world's largest and most active global conservation NGOs. Prominent in the former group are the United Nations and the World Bank along with its Global Environmental Facility, as well as the development and aid agencies of European countries, Japan, the United States, and Canada. The latter includes the

3. Political ecology is the approach in which the concepts of territory making (i.e., territorialization) and nature-society hybrids are most extensively developed in research and policy analysis of environmental conservation and land use (Zimmerer 2000, 2006a, 2006b).



Country	1985 PA Area (Km²) / % of Total Area of Country	Current* PA Area (Km²) / % of Total Area of Country	Percent Change	Examples of Major PAs
Bolivia	44,066 / 4.0%	336,802 / 30.7% (*2004)	664.3	Kaa-Iya del Gran Chaco (1995), Madidi (1995), Amboró (1995)
Brazil	220,037 / 2.6%	2,281,168 / 26.8% (*2007)	936.7	Central Amazon Corridor, Terra do Meio (2005), Juruena (2006)
Costa Rica	10,429 / 20.4%	16,286 / 31.9 % (*2002)	56.2	Santa Rosa (1987), Guanacaste (1991), Juan Castro Blanco (1992), Corcovado N.P. into Osa Conservation Area, Tortuguero (1990), Isla del Coco (2001)
Mexico	11,349 / 0.6%	193,683 / 9.8% (*2005)	1606.7	Biosphere Reserves, Mesoamerican Biological Corridor (MABC), including: Cakamul (1989), El Triunfo (1990), Pantanos de Centla (1992), Alto Golfo de California y Delta del Río Colorado (1993), El Pinacate y Gran Desierto de Altar (1993), Archipiélago de Revillagigedo (1994), Tehuacán-Cuicatlán, Los Petenes (1999), Islas Marías (2000), Mapimí (2000), and Isla Guadalupe (2005)
Peru	56,196 / 4.4%	190,967 / 14.9 (*2006)	239.8	Yanachaga-Chemillén National Park (1986), Communal Reserve Tamshiyacu-Tahuayo (1991), Cordillera Azul, Otishi, Alto Purus, Yanesha, El Sira, Amarakaeri, Machiguenga, Ashaninka, Purus, Tambopata, and Allpahuayo (2001-2004)

Figure 1 Protected Area Expansions since 1985 in Latin American Countries (Bolivia, Brazil, Costa Rica, Mexico, Peru)

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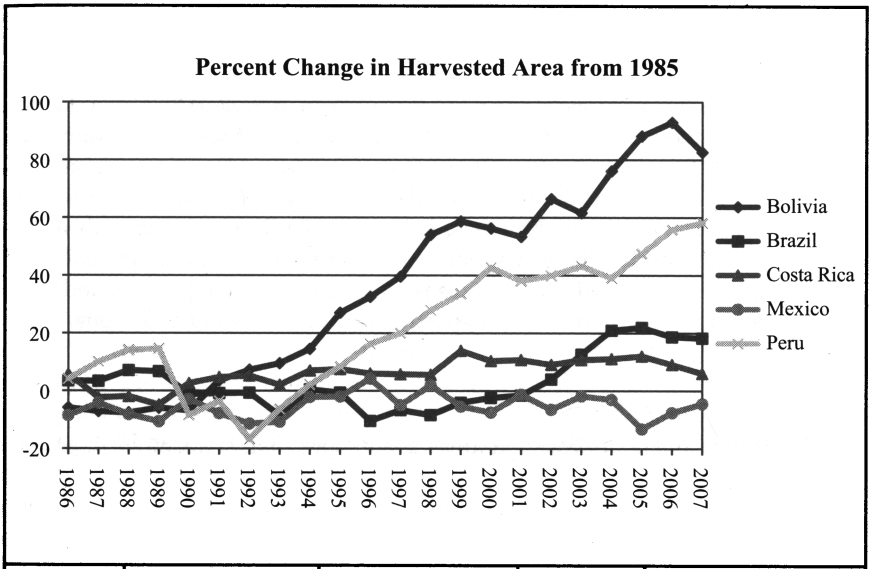

Country	1985 Cultivated Area (Km²) / % of Total Area of Country	2007 Cultivated Area (Km²) / % of Total Area of Country	% Change	Crops with largest % Area Increase
Bolivia	13,891 / 1.3%	25,365 / 2.3%	82.6	Soybeans (1486%), Seed Cotton (683%)
Brazil	519,845 / 6.1%	614,823 / 7.2%	18.3	Maté (1206%), Sesame Seed (400%)
Costa Rica	4,428 / 8.7%	4,694 / 9.2%	6.0	Melons (4950%), Pineapples (1850%)
Mexico	170,645 / 8.7%	162,972 / 8.3%	-4.5	Rapeseed (3900%), Oil Palm Fruit (2271%)
Peru	19,010 / 1.5%	30,061 / 2.3%	58.1	Artichokes (3682%), Asparagus (672%)

Figure 2 Change of Agricultural Areas since 1985 in Latin American Countries (Bolivia, Brazil, Costa Rica, Mexico, Peru)

Nature Conservancy (TNC), the World Wildlife Fund (WWF), Conservation International (CI), and the IUCN (which in the 1990s used the name World Conservation Union). My analysis considers a total of approximately 85 specific policies and projects on protected areas in the case-study countries and approximately 245 specific policies and projects dealing with land use and environmental management in those countries (the appendix contains examples).

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Field research experience is also important to this study. I have conducted and participated in several prolonged field studies of local and regional political and environmental dynamics of land use and conservation management in rural communities located in and near protected areas of Peru, Bolivia, Mexico, and Costa Rica (e.g., Zimmerer 2000, 2006a, 2006b). These protected areas include Manu National Park and Biosphere Reserve (Peru); Carrasco-Ichilo, Isiboro-Sécure, and Tunari protected areas (Bolivia); Sierra de Manantlán Biosphere Reserve (Mexico); and La Selva, Palo Verde, and Monteverde National Parks (Costa Rica). My activities in these field studies have incorporated extensive interaction with land users and personnel of protected-area and community conservation projects and institutions, including international NGO partners and funding organizations.

MEXICO

Reported coverage of protected areas grew more than sixteenfold in Mexico during the period since 1985, from 11,348 square kilometers to more than 193,683 square kilometers (figure 1). Administrative oversight was initially established mostly in the numerous biosphere reserves administered through the UN Educational, Scientific, and Cultural Organization (UNESCO; Simonian 1995). The large number and areal extent of these units—Mexican biosphere reserves numbered thirty-five by 2005, nearly 10 percent of the world's total, and covered more than 100,000 square kilometers—represented a unique emphasis, with strong UNESCO connections, of Mexican conservation dating to the 1970s (Simonian 1995).[4] Growing importance of protected-area conservation, both biosphere reserves and nationally administered units, led the administration of Carlos Salinas de Gortari (1988–1994) to integrate protected-area conservation into the newly formed Secretariat of the Environment, Natural Resources and Fisheries (Secretaría de Medio Ambiente, Recursos Naturales y Pesca) in 1994. It was subsequently redesigned as the Secretariat of the Environment and Natural Resources (Secretaría de Medio Ambiente y Recursos Naturales, SEMARNAT) in 2000 under the administration of Vicente Fox (2000–2006), which took an active role in protected-area conservation. The National Commission of Protected Areas (Comisión Nacional de Áreas Protegidas, CONANP; see the appendix), created within SEMARNAT in 2000, and the National System of Protected Areas (Sistema Nacional de Áreas Protegídas) offered further specialized administration of Mexico's protected areas.

Establishment and management of numerous Mexican protected areas were coordinated with the big international environmental NGOs (TNC, CI, and

4. Major biosphere reserves that were added to Mexico's protected areas, along with estimated dates of establishment and territorial areas, included Calakmul (1989, 7,232 square kilometers); El Triunfo (1990, 1,192 square kilometers); Pantanos de Centla (1992, 3,027 square kilometers); Alto Golfo de California y Delta del Río Colorado (1993, 9,364 square kilometers); El Pinacate y Gran Desierto de Altar (1993, 7,146 square kilometers); Archipiélago de Revillagigedo (2008, 6,367 square kilometers); Tehuacán-Cuicatlán (1998, 4,902 square kilometers); Los Petenes (1999, 2,829 square kilometers); Islas Marías (2000, 6,413 square kilometers); Mapimí (2000, 3,424 square kilometers); and Isla Guadalupe (2005, 4,770 square kilometers) (UNEP and WCMC 2008). Numerous marine conservation areas—including several in the foregoing list—were established in the 1985–2008 period.

WWF), along with Mexican partner NGOs, including regional and local counterparts (Berlanga and Faust 2009).[5] In 1991, CI purchased US$4 million of Mexico's discounted national debt, valued at US$1.8 million, which contributed to the establishment of protected areas in Chiapas and elsewhere. Later international financing included projects for Mexican portions of the Mesoamerican Biological Corridor (MBC), the conservation corridor running from Panama to southern Mexico that was launched by international environmental NGOs and Central American countries in the 1980s and early 1990s. In 1997 and 2000, the World Bank's Global Environmental Facility (GEF) dispersed loans totaling more than US$25 million to Mexican agencies responsible for the MBC. Significant national involvement in protected-area conservation in Mexico, synopsized already, occurred in the context of neoliberal policies under the ruling administrations of Salinas de Gortari, Ernesto Zedillo, Fox, and Felipe Calderón.

Agricultural change was multidirectional in Mexico under the governments of the post-1985 period. On the one hand, the area of cultivated land is estimated to have been reduced from 170,645 square kilometers to 162,972 square kilometers, a decrease of 4.5 percent (figure 2). On the other hand, NTAE crops supplied principally to the U.S. and Canadian markets grew significantly, especially after the creation of the North American Free Trade Agreement (NAFTA) in 1994. Much agricultural growth occurred in the tropical and subtropical areas of Mexico in environments suited to winter vegetable and fruit production. In the late 1990s, expanded agriculture exerted pressure on tropical deforestation, estimated at 2.4 percent annually in Mexico (Alix-Garcia et al. 2005). Cattle production also exerted pressure, albeit less than previously and mostly through smaller herds (less than one hundred head). The latter continued to serve as risk-adverse social insurance for peasant, indigenous, and small-scale producers, which was often self-funded through investing migration remittances. This trend contrasted earlier subsidies that included the estimated US$2 billion in cattle credits granted to Mexico in 1986–1989 through the Inter-American Development Bank.

Logging, including the rise of illegal operations, combined with expanded maize production for use as livestock feed, also led to deforestation and threats to Mexican protected areas. In addition, government farm-support programs, such as the Program of Direct Rural Support (Programa de Apoyo Directo al Campo, PROCAMPO), also led to expanded cultivation (PROCAMPO funding included US$1.5 billion from the Inter-American Development Bank in 2001; Klepeis and Vance 2003). At the same time, increased maize imports, a result of NAFTA, had reached 5.45 million metric tons annually between 2000 and 2004. Various areas of rural Mexico experienced the abandonment of land use, thus resulting in newly regrown secondary forest corresponding in part to the approximately one quarter of Mexico's municipalities undergoing population decline (Bray and Klepeis 2005; Klooster 2003).

Land-use activities have intertwined with protected areas in new ways in

5. Mexican conservation NGOs partnering in protected-area projects included Pronatura Peninsula de Yucatán, Amigos de Sian Ka'an, Sociedad de Historia Natural Niparajá, Conservación del Territorio Insular Mexicano, Grupo Ecologista Arustos, and Pronatura Noreste.

Mexico since 1985. Multiple Mexican state institutions have been created to oversee these interactions, which has produced a prominent governmental emphasis on the social management of environmental conservation. For example, Mexican governments created a triad of so-called sustainable community development institutions to guide land use in conjunction with CONANP's implementation of protected areas (see the appendix). These institutions, reflecting a distinctly top-down form of decentralization in Mexico during the study period (Mizrahi 2004), included ones for participatory environmental planning, conservation, and sustainable-use programs. Community forestry programs gained a prominent place in Mexican environmental governance, with support of international environmental NGOs (Klooster 2003; Bray et al. 2005). Although state programs were purportedly participatory and sustainable, they tended not to offer significant empowerment and, in general, resembled the failures of supposedly participatory NGO projects (Chapin 2004; Walker et al. 2007). Nonetheless, the discourses of Mexican state institutions on participatory and sustainability development have continued as central to environmental governance, including protected-area conservation.[6] Federal programs implemented in Mexico beginning in 2003 have shifted to the PES model (Alix-Garcia et al. 2005; McAfee and Shapiro 2010). Administered under the National Forestry Commission (Comisión Nacional Forestal), Mexico's PES programs and activities that have expanded rapidly include carbon sequestration, biodiversity conservation, agroforestry, hydrologic services, and watershed management.

COSTA RICA

Protected areas have expanded significantly in Costa Rica since 1985 (by approximately 50 percent; see figure 1). Legal, institutional, and administrative mechanisms and capacities, which were already in place and subsequently refashioned further under a string of governments supporting neoliberal-type economic and political policies, are recognized as having fueled the national conservation boom of Costa Rica.[7] Several important protected areas were featured as additions to the country's renowned national park system after 1985 (figure 1).[8]

6. Although Mexican governments significantly expanded these conservation and land-use institutions, important precursors had existed. For example Salinas de Gortari's administration developed Mexico's first comprehensive environmental law in 1988 (the Ley General del Equilibrio Ecológico y Protección al Ambiente). In 1996 and 2007, the government crafted important amendments to the law. These amendments shifted conservation and protected areas to higher-ranked national priorities than previously. Sustainable development has been promising discursively in rural Mexico, as the ethnological concepts of various indigenous peasant cultures tend similarly to consider land a place of work (Haenn 1999).

7. Costa Rica passed important laws for national park creation (Ley No. 6084) and "national park and biological reserve creation and expansion" (Ley No. 6794) in 1977 and 1982, respectively. Protected-area estimates and chronology indicate that Costa Rica was uncommonly successful in creating many national parks during the 1970s and 1980s (Evans 1999).

8. These included Santa Rosa (1987, 372 square kilometers), Guanacaste (1991, 385 square kilometers), and Juan Castro Blanco (1992, 143 square kilometers), as well as the incorporation of Corcovado National Park in the new Osa Conservation Area.

The National System of Conservation Areas (Sistema Nacional de Areas de Conservación, SINAC) was created in 1995 (and refashioned in 1998) to replace the earlier National Park System (Sistema Nacional de Parques) and to manage "beyond the borders" of nature reserves per se (Vaughan and Flormoe 1995, 1; see the appendix). Later, SINAC generated the addition of numerous marine conservation areas and wildlife refuges.[9] The category of "national wildlife refuge," less strictly protected than park and reserve designations, also became increasingly common in Costa Rica's new conservation units beginning in the 1990s. Still Costa Rica's long-standing image and nearly iconic status as a conservationist green republic belies more complex recent pathways of protected areas and interactions with land- and resource-use development (Evans 1999).

The first administration of Óscar Arias Sánchez formed the Costa Rica Debt Conservation Plan in 1997, which gained funding for national protected-area purchases and implementation through debt purchases by international organizations, principally TNC and the WWF (Evans 1999). Multilateral lending agencies subsequently initiated new activity in conjunction with Costa Rica's ratification of the Convention on Biological Diversity in 1992. That same year, the Inter-American Development Bank loaned US$2.2 billion to Costa Rica in support of the national system of conservation areas. In 1994, the GEF approved lending for "biodiversity management capacity and networking biodiversity information" of Costa Rica, which targeted the country's well-known National Biodiversity Institute (Instituto Nacional de Biodiversidad) that had been founded in 1989. A few years later, in 1997, GEF funding initiated support for Costa Rica's National Biodiversity Strategic Action Plan with a loan of US$7 million. That same year, GEF granted US$10 million to Costa Rica for consolidation of the country's sections of the MBC, which also involved the active role of major international environmental NGOs, principally TNC.

Cultivated area increased by approximately 6 percent in Costa Rica since 1985, expanding from 4,428 square kilometers to 4,694 square kilometers (figure 2). At the same time, Costa Rican agriculture underwent significant intensification and characteristic shifts, such as widespread pesticide use, which caused significant environmental damage (Galt 2008). These developments owed to increased production of both foodstuffs for national markets (e.g., potatoes) and exports (e.g., melons, pineapples, bananas). Expanded export production was accomplished through agricultural restructuring overseen through the Costa Rican state, lenders, and private companies that dominate this sector (Barham et al. 1992). Loans from the Inter-American Development Bank and the World Bank spurred nontraditional export crops in conjunction with the growing investments of private-sector firms. These cropping increases impinged directly on Costa Rica's tropical forest areas. Deforestation as a result of cattle raising also persisted as an im-

9. Larger coastal and marine areas created beginning in the 1990s include Tortuguero (1990, categorized as a protected zone); Marino Las Baulas de Guanacaste (1991, national park), and Isla del Coco (2001; see Campbell 2007). National wildlife refuges fall under category IV (sustainably managed) according to the International Union for the Conservation of Nature. This designation is a contrast to national parks, which are classified as IUCN category II (strictly protected).

portant element of the economic strategies of Costa Rican smallholder farmers, notwithstanding reduced support from multilateral lenders. Significant deforestation has included areas within close proximity of protected areas (less than ten kilometers), whereas effective enforcement has kept to a minimum the extent of deforestation within conservation units (Sánchez-Azofeifa et al. 2003).

Sustainable development and participatory development have served as longstanding discursive and institutional bridges in interactions of environmental conservation with land and resource use in Costa Rica (Campbell 2007). Arias Sánchez relied heavily on sustainable development in the national development plans of his administration (1986–1990), as did Álvaro Umaña, who headed the Ministry of Natural Resources, Energy, and Mines (Ministerio de Recursos Naturales, Energía y Minas), which Arias had founded. The ministry worked closely with the WWF, the Costa Rican Neotropical Foundation (Fundación Neotrópica), and local institutions through the Osa Peninsula Forest Conservation and Management Project, using the name of BOSCOSA. The BOSCOSA project was begun in the late 1980s and consisted of various sustainable-use initiatives centered on the protected area (Donovan 2004). The administration of Rafael Calderón Fournier (1990–1994) created the Agenda 21–inspired National System for Sustainable Development (Sistema Nacional de Desarrollo Sostenible) premised on the "participation of Costa Rican civil society" (see the appendix). Although "sustainable farming" was important to these institutions and their rhetoric (Evans 1999, 163), it has become largely removed from the reality of Costa Rica's agrarian change. Instead, state-led sustainability initiatives tended to target participatory zoning of protected-area conservation (Pfeffer, Schelhas, and Meola 2006), as well as participatory watershed management (Sinclair, Sims, and Spaling 2009). Overall, Costa Rican conservation, along with participatory development and sustainability initiatives in the country, has featured the notable role of business interests, especially in the ecotourism sector. It also has entailed a minor role of social movements, notwithstanding superior-level support of indigenous rights, whereby Costa Rica has made "a high-level commitment" through its constitution and international agreements (e.g., ILO 169) to indigenous rights (Roldán Ortiga 2004, 5; Stocks 2005; see the appendix).

Market-based approaches have represented one of Costa Rica's best-developed and distinctive responses to intensifying intersections of environmental conservation and land use. In PES, for example, Costa Rica, along with Mexico, Brazil, and Chile, has become a leader globally and in Latin America in particular (Barton et al. 2009; Goldman et al. 2008). These payments include watershed-, carbon-, and biodiversity-related environmental services that are disbursed through new programs using a concept commonly referred to as *pagos por servicios ambientales* (PSA). Many PSA projects are located in and near protected areas (e.g., Osa Conservation Area, Nicoya Peninsula). The growing number of PSA projects seek to offer a common currency, literally, between land-use activities and the goals of Costa Rica's national programs for environmental conservation. Currently, the country's PSA program is administered through the National Fund for Forest Financing (Fondo Nacional de Financiamiento Forestal). Still, the scope of the en-

vironmental services approach must be seen as extending well beyond these administrative-style relations. Indeed, a currently proposed overhaul of Costa Rica's environmental agencies is founded on the logic of comparative international advantage in environmental goods and services. At least in Costa Rica, then, PSA/PES represented a major environmental paradigm shift. It gained momentum through the 2001–2005 UN Millennium Assessment and has been promoted as a new chapter in the fifteen-year-plus prescriptions of Agenda 21, which conceived of a comprehensive plan for actions on sustainable development, as an outcome of the UN Conference on Environment and Development held in Rio de Janeiro, Brazil, in 1992.

BRAZIL

Protected-area conservation in Brazil has been distinguished by sustained growth of the establishment of new units since 1985 (figure 1; see also Mittermeier et al. 2005; Rylands and Brandon 2005). Regular successful expansion of protected areas has resulted in a more than ninefold increase of coverage to more than 2.5 million square kilometers in 2007, from less than 250,000 square kilometers in 1985. Initial expansion and significant gains in protected-area conservation were carried out under Presidents José Sarney (1985–1988) and Fernando Collor de Mello (1988–1994; see Hall 2000, 2008).[10] The Brazilian Institute of the Environment and Renewable Natural Resources (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis, IBAMA), which was founded in 1989, developed extensive national-level planning of conservation-unit initiatives and participatory approaches in the 1990s. Fernando Cardoso's administrations (1994–1998, 1998–2002) oversaw the designation of hundreds of new protected areas, which peaked in the late 1990s. In 1998, Cardoso committed to creating strictly protected areas that would cover 10 percent of Brazil's Amazonian forests by 2004 (Drummond and Barros-Platiau 2006).[11] Although these neoliberal presidencies enacted administrative guidelines and sometimes support, the actual conservation of protected areas in Brazil owed heavily to indigenous and social movement initiatives and conservation organizations.

Brazil's protected-area policies and designations have continued apace following election of Luiz Inácio Lula da Silva (2002–2006, 2006–2010) as center-left leader of the Workers Party. The Lula da Silva government has remained heavily involved with international environmental NGOs and multilateral environmental lenders (principally the GEF), which has resulted in a substantial increase of

10. In 1985, Sarney created the Ministry of the Environment (Ministério do Meio Ambiente). In 1990, Collor de Mello integrated environmental agencies into the Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis. He also created Brazil's National Environment Fund (Fundo Nacional do Meio Ambiente, FNMA) within the Ministry of the Environment; FNMA was capitalized through the Inter-American Development Bank and Brazil's national treasury (see appendix 1). Further national-level reorganization of these institutions occurred between 1990 and 1999.

11. Cardoso's commitment was in response to the Forests for Life campaign of the WWF and the World Bank.

both strictly protected and sustainable-use units within the mix of Brazilian conservation territories.[12] Similarly, the Lula da Silva administration has continued support for major internationally led protected-area efforts in the Amazon, such as the Central Amazon Corridor (figure 1). With GEF funding, it established the Instituto Chico Mendes de Conservação da Biodiversidade in 2007 to "administer the ecology of the nation's protected areas" (see the appendix). Approximately 40 percent of Brazilian Amazonia is currently set aside in protected areas in types of units that range from total conservation to sustainable use, including indigenous reserves (Hall 2008).[13]

Notwithstanding continued establishment of protected areas, a changing course of national policies has shifted environmental conservation in Brazil. The latter's changes are reflected in distinct phases of Brazilian environmental policy making that include (1) state-led "colonization" of the Transamazônia and Poloamazônia in the mid- and late-1980s; (2) donor-led socioenvironmental management in the 1990s with major roles of the multilateral Pilot Program to Conserve the Brazilian Rain Forest (a partly World Bank–funded project referred to as the PPG-7, as its funding originated with the G-7 group of donor countries) and the Rondônia Agriculture and Forestry Plan (Plan Agropecuario y Forestal de Rondônia); (3) state-led pro-development initiatives of the 2000–2003 Pluriannual Plan (Plano Pluriannual, or PPA), known also as Avança Brasil, was marked by rapid soya frontier expansion) in the early 2000s; and (4) emerging by 2009, avoided deforestation and/or compensated reduction (AD/CR; Lemos and Roberts 2008).[14] Politicized dynamics of protected areas have been evident at the local and state levels in Brazil. Indeed, party politics are an "omnipresent consideration in decisions to establish conservation units" at these subnational levels (Fearnside 2003, 759), as "each conservation unit creates winners and losers." Political activism at multiple levels—particularly social movements of indigenous people effectively allied to national and international political supporters—contributed most noticeably to the shifts in Brazil's protected-area policies (Hochstetler and Keck 2007; Keck 1995). Engaged in shifting political alliances, these social movements were effective in creating the use of extractive reserves and increasingly indigenous areas as key conservation units in Brazil (Brandon and Rosendo 2000; Hecht and Cockburn 1990; Mittermeier et al. 2005; Salisbury and

12. Strictly protected areas established during Lula's administration included Terra do Meio (33,731 square kilometers), designated as an ecological station (and assigned the strictest protected category in global classification), which was created in Pará in 2005. Another example was Juruena in Amazonas, created as a national park in 2006 (19,570 square kilometers).

13. Of this, approximately 40 percent currently designated for both "total [strict] conservation and sustainable use, including indigenous reserves," although the level of strict protection is still probably less than 10 percent (Hall 2008, 1926).

14. Fearnside (2003) offers a similar chronological framework while identifying state-led pro-development planning through policies of Avança Brasil and the Growth Acceleration Program (Programa de Aceleração de Crescimento) as having originated with and included the 1996–1999 period under the national policies of Brazil in Action (Brasil em Ação), that invested heavily in soybean infrastructure and that was followed by continued state infrastructural investment similar to the third phase, or state-led pro-development initiatives, as formulated in the previously mentioned schema of Lemos and Roberts (2008).

Schmink 2007; Schmink and Wood 2002; Schwartzman and Zimmerman 2005). In general, a suite of varied units, which the Collor de Mello government integrated into a national network under the Sistema Nacional de Unidades de Conservação da Natureza (National System of Conservation Units) in 2000 (see the appendix), has been effective in curbing deforestation when analyzed across regions such as Rondônia (Pedlowski et al. 2005). At the same time, the role of social-movement actors has become less clear in Brazilian conservation as groups such as rubber tappers and indigenous people increasingly pursue cattle ranching (Salisbury and Schmink 2007). Ecopolitical power of the latter has been destabilized, if not lessened, as a result of shifting ideological and financial fissures in rain forest conservation (Pieck 2006).

Deforestation has occurred widely in lands surrounding Brazil's expanding conservation units. Driving much deforestation during the past decade was the rapid, widespread expansion of soybean cultivation and pasture expansion in response to growing global markets and neoliberal policies (Brannstrom 2009; Fearnside 2005; Hecht 2005; Nepstad et al. 2006; Walker et al. 2008). Brazilian agriculture is estimated to have expanded from 519,844 square kilometers in 1985 to 614,822 square kilometers in 2007, an increase of nearly 100,000 square kilometers. Highly mechanized and capitalized, the spread of soybean cultivation accelerated in Brazil in the mid- and late-1990s. Brazil's soy boom resulted in at least 50,000 square kilometers of new cropland (Morton et al. 2006). New soybean cultivation occurred on postcropping pasturelands and clearings of Amazonian tropical forest and subtropical savanna-scrub (*cerrado*) as the "arc of deforestation" spread northward from Paraná into Mato Grosso (Fearnside 2005, 680; see also Fearnside 2001). It fueled deforestation rates in the early 2000s that were among the highest in the world. Expansion of soybean production and cattle raising—increasingly for export (Walker et al. 2008)—has been coordinated with government investment in transportation infrastructure. Both highways, such as the Cuiabá-Santarém Highway (BR-163), and waterways are integral to national transportation and tied closely to Amazonian deforestation. Logging also has provided impetus for clearing tropical forest, though it has become a less important factor since the mid-1980s. Notwithstanding extensive deforestation in the Amazon, other regions of Brazil, such as the Atlantic Forest in Santa Catarina, underwent regrowth in new secondary forest transitions (Baptista 2008).

Sustainability and participation emerged as important principles in Brazilian government programs, especially after the UN Conference on Environment and Development in Rio de Janeiro in 1992. The government of Itamar Franco endorsed the subsequent Convention on Biological Diversity in 1993 and launched initiatives and planning on sustainable development in accord with Agenda 21. Brazil's emphasis on conservation units is politically well measured in the context of continued large-scale deforestation, a persistent frontier-type view of much national development and environmental policy, and an actively respatializing state that has overseen major decentralization and devolution reforms under neoliberal governments (Brown, Desposato, and Brown 2005; Drummond and Barros-Platiau 2006; Oxhorn, Tulchin, and Selee 2004). More than 60 percent of conservation units in the Brazilian Amazon involve the direct participation of

resource-user populations in managing the nationally designated units. Participatory development initiatives, often framed as "partnering," abound in and near these units, involving community and indigenous groups and oftentimes international NGOs. In addition to these explicitly territorial approaches (often referred to as zoning), Brazilian state-level conservation has also relied, albeit to a lesser extent thus far, on transferable development rights mandated as set-asides, known as legal reserve, stipulated at 80 percent of forest on private landholdings in the Amazon (Legal Amazonia) and, correspondingly, 40 percent in the cerrado and 20 percent elsewhere in the country.

Intensified interactions of protected-area conservation and land use led to recognition that protected areas alone, even if strictly enforced, would not ensure environmental conservation in the Brazilian Amazon (Soares et al. 2006).[15] Additional approaches include both zoning and other spatially based planning (e.g., community-based models), which build on the existing emphasis (see Drummond and Barros-Platiau 2006; Fearnside 2003) as well as market-based and transferable-development-right approaches. Recently, market-based approaches have become central to calls for Brazil's management of these interactions (Hall 2008; Lemos and Roberts 2008; Soares et al. 2006). Politically, these calls are contentious, as Brazil is opposed to market-based limits in the Kyoto protocol–influenced approach of the Coalition of Rainforest Nations. Payment for environmental services appears to be a potentially suitable approach, perhaps especially if funded through an international framework for reduced emissions from deforestation (known as REDD; see Hall 2008).[16]

PERU

The government agency known as the State's National System of Protected Natural Areas (Sistema Nacional de Areas Naturales Protegidas por el Estado), which has been administered since 1992 through the National Institute for Natural Resources (Instituto Nacional de Recursos Naturales, INRENA), oversaw a nearly fourfold increase of conservation coverage in recent decades (figure 1). The chronology of this expansion was distinctive, as few significant protected areas were established between 1991 and 2000. Marred by the economic and political turmoil of Shining Path, and military violence of the corrupt and authoritarian Alberto Fujimori regime (1990–2000), this hiatus had actually been preceded by a fairly brief, albeit productive, period for Peruvian protected-area conservation in the mid- and late-1980s, with governments creating numerous conservation units, including the 3,225-square-kilometer Communal Reserve Tamshiyacu-Tahuayo (Reserva Comunal de Tamshiyacu-Tahuayo), which gained official recognition in

15. To be sure, the continued expansion and successful implementation of strict protected areas are considered necessary conditions, albeit insufficient given the pressure of soybean cultivation along with secondary impacts of new transportation infrastructure and such continued land-use pressures as cattle ranching.

16. Hall (2008) describes PES support coming from recent shifts in the positions of both Brazilian state governments and federal legislation.

1991 (Bodmer 2004).[17] The lack of new protected-area establishment during the 1990s stood in contrast to the continued presence and active role of international environmental NGOs in Peru during the decade and was also somewhat incongruous to the significant pro-conservation legal and institutional developments within Peru's national government (e.g., the Law of Natural Protected Areas created in 1997).

Beginning in late 2000, the administrations of interim president Valentín Paniagua and subsequently that of Alejándro Toledo (2001–2006) launched a new surge of protected-area establishment that was set in the context of relative political and economic stability. Designation and implementation of new protected areas, though incompletely administered and sometimes weakly enforced, built on existing administrative capacity and a new infusion of major international financing that was unloosed for the purpose of Peruvian protected areas beginning in the late 1990s (see the appendix). By 2004, the Toledo government had overseen the establishment of three sizable new national parks (Cordillera Azul, Otishi, and Alto Purus), as well as communal reserves that incorporated indigenous territories (Yanesha, El Sira, Amarakaeri, Machiguenga, Ashaninka, and Purus) and a pair of new national reserves (Tambopata and Allpahuayo).[18]

International agencies, predominantly multinational lenders and environmental NGOs, have been instrumental in the expansion of protected areas in Peru. In 1991, the World Bank loaned US$7.88 million to fund Peru's new National Trust Fund for the Conservation of Protected Areas (Fondo Nacional para Areas Naturales Protegidas por el Estado, FONANPE) that would finance the country's conservation efforts (see the appendix).[19] The Nature Conservancy opened an office in Peru in 1993 and pursued numerous protected-area projects, both the implementation of existing units and the establishment of new ones. The Nature Conservancy helped form ProNaturaleza, a Peruvian counterpart NGO, with the goal of aiding conservation efforts in Peru. Following Peru's signing of the Convention on Biological Diversity in 1994, numerous national scientists were actively involved in protected-area conservation (e.g., Rodríguez 1996). International environmental NGOs continued to work extensively in Peru during the 1990s (Young and Rodríguez 2006), and lending climbed late in the decade. The World Bank and the Inter-American Development Bank provided financing of tens of millions of dollars for new protected areas in Peru between 2000 and 2004 (see the

17. Designations shortly before this hiatus included Yanachaga-Chemillén National Park, established in Pasco in 1986 (1,220 square kilometers). The general growth of protected areas in Peru during the 1980s was built on government institutional interest; designation capacity; and significant expansions that occurred in the 1960s and 1970s, including under the military governments of Generals Juan Velasco and Francisco Bermúdez, which ruled Peru between 1968 and 1976 (Young and Rodríguez 2006).

18. More recently, in 2008, the Peruvian government, under the second administration of Alan García (2005–present), has created Servicio de Areas Naturales Protegidas (SERNAP) within a proposed new Ministry of the Environment that Garcia's government is developing as part of Peru's potential free-trade agreement with the United States.

19. Peru channeled bilateral debt-for-nature swaps with at least six bilateral creditors (Canada, Germany, Finland, the Netherlands, Switzerland, and the United States) through FONANPE. As much as US$1 billion in debt—resulting in approximately US$250 million, given application of the 25 percent discount rate—is estimated to have been channeled in this way into Peruvian conservation.

appendix).[20] The majority of these projects, located in the Peruvian Amazon, involved the role of lowland indigenous groups, especially through new government organizations such as the National Commission on Andean, Amazonian and Afro-Peruvian Peoples (Comisión Nacional de Pueblos Andinos, Amazonicos y Afroperuanos, CONAPA) that was established in 2001. These projects commonly involved government recognition and titling of indigenous land rights and territorial claims, and a continued principal emphasis on biodiversity conservation (see the appendix). Still, the incursions persisted with illegal logging, cattle ranching, and agriculture (often small scale) and mining operations, as Peruvian state agencies, such as INRENA, provided only weak support for the indigenous conservation territories (INRENA 2006; Stocks 2005). More recently, the stream of international funding has shifted to the maintenance and enforcement of Peru's newly established and already-existing protected areas.

Peru underwent one of the most significant expansions of agricultural area, relative to preexisting cultivation, of the case-study countries (figure 2). Estimates show the country's cultivated area expanded from 19,010 square kilometers to 30,060 square kilometers, an increase of more than 50 percent. Nontraditional agricultural exports, including asparagus, artichokes, and new coffee cultivation, were mainstays of expanded cultivation. Net increase of land use occurred in coastal areas under irrigation and in coffee-growing lands. Multinational lending helped propel these agricultural changes; for example, the World Bank loaned US$35 million in 2005 to the Peruvian government for the twin purposes of agricultural research extension and irrigation designed to build agricultural "competitiveness" through international exports. Cattle grazing and smallholder colonization have also expanded and pose threats to Peru's protected areas, although these have decreased from the early part of the period. Construction of the Inter-Oceanic Highway connecting through the Amazonian lowlands to Brazil (passing in or near Bolivia) poses a probable scenario of intensified deforestation pressures and conflicts with protected areas, although financing agencies, government agencies, and supporters claim ample environmental safeguards.

Sustainable development and participatory development became common in Peruvian state institutions and discourses following adoption of Agenda 21, and they are mirrored, to a lesser degree, in World Bank lending projects and, most recently, in the Inter-Oceanic Highway project. Peruvian governments, NGOs, and international organizations have tended to channel planning and projects for sustainable development and participatory development toward rain forest environments and peoples of the eastern Amazonian lowlands. Ecotourism involving indigenous communities served in numerous cases as the practical example, and

20. Examples of some larger elements of these funding packages are the following: Conservation and Sustainable Development of the Northwest Biosphere Reserve received US$2.10 million in 1997, Permanent Protected Areas of the Vilcabamba received US$1.16 million in 1998, Biodiversity Conservation and Community Natural Resource Management in the Nanay River basin received US$1.58 million in 1998, Indigenous Management of Protected Areas in the Amazon received US$23.1 million in 1999, Community-Based Conservation and Sustainable Use of the Atiquipa and Taimara Lomas Ecosystems was granted US$2.22 million in 1999, and Conservation and Sustainable Use of Biodiversity in the Amarakaeri Communal Reserve was awarded US$1.88 million in 1999.

the potential success, of wedding these twin themes in the Peruvian Amazon. By contrast, such initiatives in sustainable development and participatory development were important but less predominant in projects located in coastal and Andean regions.[21]

Peru's recent experience illustrates dimensions of the increased intersections of environmental conservation and land use. Perhaps most notably, Peru's case highlights the role of increased competition and political conflict over water resources. Large inputs of water are the sine qua non of expanded cultivation in Peru, principally in the semiarid and arid coastal areas of NTAE cultivation. Extensions of existing irrigation, and new projects, have numbered in the hundreds in the past decade; they rely on unprecedented supplies of water. Use of water for agricultural purposes and NTAEs in particular pose increasingly serious risks to natural ecosystems and protected areas; the coastal region of Peru is notable in this regard, as it warrants high priority in Peruvian conservation (Rodriguez 1996; Rodríguez and Young 2000).[22]

A second example of the Peruvian experience is the expanded role of indigenous people and their territories in issues of environmental conservation and land use. (This example is shared with the other case-study countries, especially Bolivia, as detailed in the following section.) Beginning with Paniagua in 2000 and central to the administrations of Toledo (2001–2006) and García (2006–2011), Peruvian governments have adopted a moderate level of neoliberal multiculturalism (Stocks 2005). Peru's multicultural policies are incorporated into the current mix of predominantly populist and neoliberal political and economic policies. These Peruvian governments, backed by substantial international funding (see the appendix), relied on a territorial approach and conservation unit—the communal reserve—that become widely designated as a means of responding to land claims of indigenous groups over their territories and, at the same time, expanding environmental conservation in the country (Newing and Wahl 2004; Stocks 2005). Although the communal reserve designation had little importance before 2000, it became a principal unit in Peru's portfolio of ten main categories of protected areas.

BOLIVIA

The estimated coverage of protected areas has expanded nearly sevenfold in Bolivia—from an estimated 44,066 square kilometers to 336,802 square kilometers—in recent decades (figure 1). A majority of expansion occurred under the string of neoliberal administrations that governed Bolivia until 2006. The peak

21. Examples in Peru's coastal and Andean regions have included the World Bank agro-biodiversity project funded in 1995 with nearly US$7 million for the in situ conservation of nature cultivars and their wild relatives, and the huge agricultural ministry–based Sierra Natural Resources Management and Poverty Alleviation Project (Programa Nacional de Manejo de Cuencas Hidrográficas y Conservación de Suelos), which received nearly US$200 million from the World Bank between 1997 and 2000.

22. These potential conflicts with environmental conservation resemble the regions of central and west-central Mexico, central Costa Rica, and northeastern Brazil, which are other major areas subject to water shortages and to significant intensification of the use of water for NTAE production.

of new protected-area establishment took place in 1995 under the second administration of Gonzalo Sánchez de Lozada (1992–1998), with official protected-area designations of Kaa-Iya del Gran Chaco in Santa Cruz (103,233 square kilometers), Madidi (50,731 square kilometers), and Amboró (15,660 square kilometers).[23] Sánchez de Lozada's government also created SERNAP in 1998 (see the appendix). International environmental NGOs, principally the WWF, CI, and TNC, have been heavily involved in protected-area issues in Bolivia (e.g., analysis, financing, designations, management, and support), including coordination with national and region-level NGO counterparts.[24] Multilateral lending agencies have been central to Bolivia's protected areas. International financing has channeled more than US$100 million toward protected areas in Bolivia. It included significant GEF funding for SERNAP during the 2000–2006 period (US$43.99 million). Since 2006, the administration of Evo Morales has continued support for protected areas, and recently in 2008, it gained major new World Bank funding through the GEF to strengthen and enforce twenty-two protected areas in Bolivia. At the same time, the administration's strong support of indigenous movements has resulted in instances of government backing for their sovereignty vis-à-vis conservation interventions, as occurred in 2004 in a conflict over the proposed Altamachi protected area in Cochabamba.

The expansion of agricultural land use in Bolivia—which nearly doubled from 13,891 square kilometers in 1985 to 25,365 square kilometers in 2007—has been the highest, percentage-wise, of any of the case-study countries (figure 2). This expansion owes principally to increases of industrial cultivation of soybean (1,486 percent) and seed cotton (683 percent) in eastern Bolivia. Financed and owned partly by Brazilian firms, as well as the national agribusiness interests of Bolivia's Santa Cruz region, these cultivation increases were a response to international markets and to international funding that included Inter-American Development Bank loans to Bolivia for the Agricultural Global Credit Program (1989–1998, US$51.2 million) and the Eastern Lowlands Project (1990–1997, US$54.6 million; Hecht 2005; Killeen et al. 2007; Pacheco 2006).

While Bolivian governments oversaw and promoted application of the developmentalist model (the natural gas and petroleum sector in particular), the Bolivian state and internationally funded projects deployed the themes of sustainable development and participatory development as major discursive tools. The

23. These protected areas were composed of the combination of strictly protected national park units (category II in the IUCN classification) with sustainable-use integrated management areas (category IV).

24. Conservation International, for example, inaugurated the first debt-for-nature swap in 1987, when it purchased a portion of Bolivia's foreign debt that was then applied to creation of the Beni Biosphere Reserve. The WWF has managed numerous programs in Bolivia that support protected areas in their global priority regions of the Amazon and Pantanal. The WWF's activities in these regions have involved the corridor projects of Amboró-Madidi and Iténez-Mamoré. The Parks in Peril program (1990–2007) of TNC, which focused on sixty parks in Latin America and the Caribbean, included a major emphasis on Bolivia, as well as on Peru and Ecuador (Brandon et al. 1998). Partnering national and subnational region-level NGOs in Bolivia include Asociación Boliviana Para la Conservación (also known as TROPICO), Fundación Amigos de la Naturaleza, and Protección del Medio Ambiente Tarija.

second Sánchez de Lozada administration created the Ministry of Sustainable Development in the mid-1990s and incorporated these themes as central elements of national protected-area conservation (creation of SERNAP in 1998, which replaced a short-lived Biodiversity Department, was publicized as focusing on "areas protegidas con gente"; see the appendix). Sizable financing in the range of US$1 million–$10 million from Western European countries (United Kingdom, Germany, Netherlands, Switzerland, France, Denmark, Belgium, Spain, and the European Commission–European Union), for example, has been designated for the purpose of agricultural development, with emphasis on environmental management. The level of this European funding increased significantly beginning in the mid-1990s. Until removed by the Bolivian government in 2007, the U.S. Agency for International Development (USAID) also had used these themes in funding "alternative" development, aimed mostly unsuccessfully at coca substitution and eradication in Bolivia's Andean foothills (the Chapare region in particular).[25]

Sustainable forestry and indigenous territories illustrate the substantial interactions of conservation units and sustainable-use initiatives in Bolivia, which contains the world's largest extent of natural tropical forests certified as sustainable, principally through the Forest Stewardship Council (FSC). The FSC program now certifies approximately 22,000 square kilometers of tropical forests in Bolivia. Forest certification—squarely at the intersection of protected-area conservation and land use—owes to powerful combinations of international conservation interests and mainstream Bolivian sustainable development.[26] International aid has been provided through multinational lenders and USAID, as well as large environmental NGOs. For example, WWF supports more than twenty-five community forest operations in Latin American countries (in addition to Bolivia, these are Brazil, Mexico, Colombia, Nicaragua, and Guatemala). Certified sustainable forestry has been coordinated with municipal-level governments, the backbone of Bolivian decentralization, which was implemented nationally under the 1994 Law of Popular Participation (Roberts 2009). Decentralization in Bolivia has relied heavily on local territory-based organizations, especially government municipalities and indigenous communities. These governance units delivered on the promise of increased local stakeholder participation, whereas effectiveness was often muted as a result of geographic size, modest resources, and limited administrative experience and authority (Andersson and Gibson 2007; Bottazzi 2008).

The Bolivian state's approach to multiculturalism under neoliberal governments—which responded to the territorial demands of indigenous and community groups—was developed by ruling governments in the early 1990s in response

25. Funding from USAID, though substantial, was aimed principally at the eradication of coca growing. The USAID efforts worsened conflicts within Bolivia and international relations, and they contributed to the agency's removal from Bolivia in 2007.

26. Much forest certification in Bolivia is targeted in and near protected areas. Forest certification is also promoted as a social goal of increasing incomes among persons whose livelihoods might otherwise be negatively affected by protected-area designations (i.e., the losers of protected-area establishment; see Bottazzi 2008; Fearnside 2003).

to massive protests and mobilizations that included national indigenous marches (e.g., the March for Territory and Dignity in November 1989). Effective and widely supported indigenous activism led the Bolivian governments to incorporate tenets of neoliberal multiculturalism into national constitutional changes in 1994 (see the appendix). Bolivian recognition of indigenous rights in environmental conservation arose at least partly from the outcry over the debt-for-nature swap that CI financed in 1987 without significant indigenous involvement (Stocks 2005). Indigenous rights became integral to major protected-area establishment only a few years later. Examples included the Isiboro-Sécure Indigenous Territory and National Park (Territorio Indígena y Parque Nacional Isiboro-Sécure) and Pilón Lajas Biosphere Reserve and Indigenous Territory (Reserva de la Biósfera y Territorio Indigena Pilón Lajas) that were recognized by Bolivia's national governments in 1990 and 1992, respectively (see the appendix). Comanagement of the Bolivian indigenous territories as protected areas is premised on still mostly hypothetical scenarios of mutual benefit, whereby sustainable land use is planned to positively reinforce environmental conservation (Bottazzi 2008).

CONCLUSION: CHARACTERISTICS IN THE CO-OCCURRENCE OF CONSERVATION AND DEVELOPMENT

Interactions between conservation and development—specifically protected areas and agricultural development—were magnified during recent decades (1985–2008) in Latin American countries. The characteristics of conservation-development interactions were intensified, albeit distinctly, in Mexico, Costa Rica, Brazil, Peru, and Bolivia. The overall extent of protected-area expansions was substantial, thus leading Latin America to become a global center for this form of environmental conservation and outpacing the relative increase of agricultural land use. Indeed, the scope of protected-area expansion represents a historical shift in these countries. At the same time, pronounced development-driven change led to intensified resource pressures in agriculture and land use (e.g., water use in NTAEs) and vast areal extension (e.g., the South American soy boom). Predominant changes were both continuations of previous environmental challenges and new trends that in the 1985–2008 period included (1) NTAE and soya expansions impinging directly on conservation units through deforestation and impacts on water resources, which are estimated to intensify further through climate change (Hannah et al. 2007); (2) new secondary forest transitions of regrowth in marginal land-use areas; and (3) expansion of existing and new frontier land use, such as grazing, and development changes that include the expansion of road building, transportation infrastructure, and migration remittances.

The strongly territorial dimension of conservation-development interactions in the 1985–2008 period was coupled with a range of political institutions, interests, and discourses. The beginning of the conservation booms in the case-study countries featured a confluence of efforts and activism among environmental organizations, indigenous groups, social movements, communities, government planners, and niche business sectors such as tourism. Politics of indigenous territorial

rights especially propelled conservation in the Amazon regions of Brazil, Bolivia, and Peru. The 1992 UN Conference on Environment and Development meeting and subsequent Convention on Biological Diversity (including Agenda 21) were landmark outcomes and subsequent powerful influences on conservation across a broad political spectrum. At the same time, new funding (principally debt for nature) was secured through international environmental NGOs, multilateral lending, and private bank financing. Funding from the World Bank, the Inter-American Development Bank, and other international sources supplied up to 90 percent of conservation funding during the 1985–2008 period. International environmental NGOs and private interests also exerted a strong influence. These groups, either headquartered or with major offices in and near Washington, D.C., capitalized effectively on networks and proximity to visiting political leaders during the Washington Consensus phase of Latin American neoliberalism (1992–2002). Latin American protected areas were established or expanded on numerous occasions via these Washington-based connections of neoliberal policy making and conservation.

Conservation booms in the case-study countries were politically conditioned and subsequently exerted political effects in the context of national conservation and social-movement pressures. Important ties were forged with neoliberal policies—in addition to the funding linkages described earlier—in each country and, especially, with hybrid second-stage strategies following the initial phase of state downsizing and economic restructuring. These ties included (1) governments that executed conservation booms using state-centered spatial power that fit neatly with neoliberal decentralization and devolution policies; (2) neoliberal multiculturalism, based on political recognition of cultural rights (Hale 2002; Roberts 2009), which was compatible with conservation through recognition of the property rights of indigenous people; (3) governments that responded to and managed the need for protected-area conservation through technocratic and antipolitical approaches involving rhetoric of sustainable development and participatory development; and (4) the conservation booms that were coordinated loosely with the neoliberal-led intensification of resource and land use. Neoliberal foundations of conservation booms were well established in each of the case-study countries during the 1985–2008 period, though discernable lessening of this condition occurred in one country (Bolivia) during the final years.

National-level organization of conservation booms centered on territorial management involving the designation of both protected areas in general and the multiple designs of specific conservation units in particular. Protected areas were typically designed for a combination of conservation rationales and social goals. Although one common rationale was protection of unique biota, the conservation areas were also chosen for the purpose of providing protection against expanding and intensifying land and resource use. At the same time this entwined goal was addressed and accomplished unevenly. Each of the case-study countries overhauled the administrative design of special-purpose national agencies one or more times during recent decades. Proliferating national conservation agencies

were closely guided through international NGOs and multilateral agreements and institutions. The latter, which featured the World Bank and other lenders, promoted a neoliberal-led approach to property rights, which often translated into a territorial emphasis. The administrative redesign of conservation agencies separated protected-area governance from other national agencies responsible for related activities, such as agriculture and land use (with the exception of forestry, which was commonly the closest kin, administratively, of conservation agencies).

Territorial emphasis of the proliferating state agencies was largely compatible with the environmental role of indigenous people and organizations in the first part of the study period (before the mid-1990s). Indeed, their influence on newly designated conservation was prevalent in Brazil, Bolivia, and Mexico, implemented later in Peru, and least important in Costa Rica. A mix of indigenous and conservationist ecopolitics forged compatibility of indigenous territorial and conservation goals. This blend of ecopolitics remained important, as did the widespread activism and territorial struggles of indigenous people engaged in conservation policies (Bottazzi 2008; Brosius 2004). At the same time, however, indigenous ecopolitical capital significantly decreased as a result of ideological and financial fissures in the rain forest conservation movement (Pieck 2006). The territorial emphasis of the Latin American conservation boom, highlighted in the case-study countries, was central to this shift. The reliance on state-designated conservation areas tended to conceal differences that ultimately fueled the split over nature conservation and sustainable use in the ranks of rain forest conservationists. Indeed, the split centered in many cases on deciphering and determining a single intent—whether for nature preservation or indigenous territorial control—of conservation units. Outright political opposition also became more common in certain places where mostly indigenous and peasant groups actively opposed conservation as a consequence of perceived threats to land and resource access and environmental quality (see Hvalkof 2000; Sundberg 2002).

Political support of protected-area conservation was weakened, albeit only partially, among various civil society sectors (indigenous organizations, community groups, and environment-related social movements) in the case-study countries during the final phase of the 1985–2008 period. In addition, Bolivia's Movimiento al Socialismo government, which had begun to question market-based conservation and to favor a social agenda such as land distribution for the highland migrants to tropical lowland frontiers, has posed a significant shift for international conservation planners. A separate source of uncertainty in Latin American conservation unfolded in conjunction with the expanding PES model, which has been especially well established in Mexico and Costa Rica. Indigenous and social movement support will depend on the negotiated designs of new PES programs in which territorial components are central. National conservation institutions established during the past few decades will also be key to the now accelerating transitions to PES-based conservation in Latin America.

Appendix: Governance Institutions and Agreements in Protected-Area Conservation of Latin American Countries (Bolivia, Brazil, Costa Rica, Mexico, Peru)

Country	Agency	International Agreements	International/National NGOs	Multilateral Funding	Indigenous Territories in Conservation
Bolivia	*SERNAP* (Servicio Nacional de Áreas Protegidas), Created 1998. *SNAP* (Sistema Nacional de Áreas Protegidas). Created 1998.	*CBD*[1] Ratified: 3 Oct 1994 *Cartegena Protocol* Ratified: 22 Apr 2004 *ILO Convention* Ratified: 11 Dec 1991	*Conservation International (CI):* first ever debt-for-nature swap in 1987[2] *World Wildlife Fund (WWF):* supports 4 major PAs and a sustainable forestry project in the Amazon, previously supported at least 5 other PAs. *The Nature Conservancy (TNC):* Parks in Peril program (1990-2007) emphasized Bolivia. Partnering NGOs include: Asociación Boliviana Para la Conservación, Fundación Amigos de la Naturaleza, and Protección del Medio Ambiente Tarija.	*GEF*– 43.99M US$ for SERNAP (2000-2006). *World Bank/GEF* – funding for 22 PAs in Bolivia (2008) *World Bank/GEF* - 4.54M US$ for Bolivia's Biodiversity Conservation Project (1992-1998). *European donors (UK)* - 4.6M US$ for Amboró Rural Development Program. *USAID* - funding for "alternative development" and eradication of coca; but USAID was removed by the Morales administration in 2007.	1990- titles for 9 lowland territories, (2.9 M Ha)(Stocks 2005: 94). Isiboro-Sécure and Pilón Lajas Indigenous Territories created in 1990 & 1992. 1996- Law 1715 created the category "tierras comunitarias de origen"(TCOs); 16 more territories applied for land, (total 20M Ha) (Stocks 2005: 94). 1990: March for Territory and Dignity 2001- government initiated additional 1.8M Ha of titled land (four TCOs) (Stocks 2005).
Brazil	*SNUC* (Sistema Nacional de Unidades de Conservação da Natureza). Created 2000. *FNMA* (Fundo Nacional do Meio Ambiente), with IADB Created 1989.	CBD Ratified: 28 Feb 1994 Cartegena Protocol Ratified: 24 Nov 2003 ILO Convention Ratified: 25 Jul 2002	*CI:* projects at over 25 sites. Important Amazonian corridor sites include: Amapá (2002), Central (2003), South (2003), Ecotones (2004). *WWF's* (and *WB's*) "Forests for Life" campaign conserved approx. 40% of Brazilian Amazonia, also "Saving the Amazon"(1998-present). *TNC* works with Brazilian Partners, through Parks in Peril.	*GEF*–10.3M US$ for National Biodiversity Project (PROBIO) (1991-2005). *GEF/IBRD*–20M US$ for Brazilian Biodiversity Fund (1991-2004). *GEF/World Bank*–30M US$ for Amazon Region PA Program (ARPA) (1998-2008). *GEF/World Bank*–8M US$ for Parana Biodiversity Project (2002-2009). *GEF/World Bank* – 22M US$ for National Biodiversity Mainstreaming and Institutional Consolidation Project (2005-present). *GEF/World Bank* - established Instituto Chico Mendes de Conservação da Biodiversidade (ICMBIO) (2007).	1988- Constitutional Article 231: Brazil's indigenous peoples'land rights (Stocks 2005: 91). 1988- Constitutional Article 67: deadline for demarcation of all Terras Indígenas (TI's) within 5 years. By 1993 - 291 of 559 TIs had been demarcated, 559 TIs in1996, 580 in 2004 (Stocks 2005: 92). By 2003 -TIs most important type of new PAs.
Costa Rica	*SINAC* (Sistema Nacional de Áreas de Conservación) Created 1995, reformed 1998. *SINADES* (Sistema Nacional para el Desarrollo Sostenible) Created 1994.	CBD ratified: 26 Aug 1994 Cartegena Protocol Ratified: 6 Feb 2007 ILO Convention Ratified: 2 Apr 1993	*CI* and *TNC* - 1.26M US$ each for a 12.6M US$ Debt-for-Nature Swap (2007). *TNC*- funding for Meso-American Biological Corridor (MABC).	*Inter-American Development Bank (IADB):* 2.2B US$ for SINAC (1992). *GEF* – loan for National Biodiversity Institute (INBio) (1994). *GEF* - 7M US$ loan for Costa Rica's National Biodiversity Strategic Action Plan (1997). *GEF* – 10M US$ for Meso-American Biological Corridor (MABC) (1997).	1973 – National Indigenous Affairs Commission (CONAI) created. 1977 – Indigenous Law of Costa Rica-supported territorial claims of indigenous groups. 1982 – La Amistad Biosphere Reserve, includes territory of 4 indigenous peoples (pop. over 40,000, including Cabecar and Bribri) (Stevens & De Lacy 1997: 53). 1993 – Costa Rica does not recognize indigenous rights in its constitution, but it has ratified ILO Convention 169 (Roldán Ortiga 2004: 2)

(*Continues*)

Appendix (Continued)

Country	Agency	International Agreements	International/National NGOs	Multilateral Funding	Indigenous Territories in Conservation
Mexico	*CONANP* (Comisión Nacional de Áreas Naturales Protegidas). Created 2000. *FANP* (Fondo para Áreas Naturales Protegidas). Created 1997.	CBD ratified: 11 Mar 1993 Cartegena Protocol Ratified: 27 Aug 2002 ILO Convention Ratified: 5 Sep 1990	*CI* - 1.8M US$ (for 4M US$ national debt) for rainforest PAs in Chiapas (1991). *TNC* and *WWF*, active with Mexican partner NGOs. Mexican conservation NGOs partnering in PA projects including: Pronatura Peninsula de Yucatan, Amigos de Sian Ka'an, Niparaja, Conservación del Territorio Insular Mexicano, Grupo Ecologista Arustos, and Pronatura Noreste.	*GEF* – 25M US$ for PAs program (1992-1997, supported over 10 PAs). *World Bank* (through *GEF, IBRD*) loaned 25M US$ to Mexican Gov't for Meso-american Biological Corridor (MABC), (1997 & 2000). *IADB*- 1.48M US$ for PROCAMPO *World Bank/GEF* - 15.2M US$ for "Indigenous and Community Biodiversity Conservation" (2000-2009). *World Bank* (through *GEF, IBRD*) 141.56M US$ for Environmental Services Project (2006-2011).	1990- Mexico was first Latin American country to ratify ILO Convention 169. 1992- Constitutional Article 27: allowed parcelization and privatization of ejidos. Article 4 recognized multicultural composition of indigenous population (Roldán Ortiga 2004:12). 1996- Agreements of San Andrés were signed in Chiapas. 2001- The proposed law on "Indigenous Rights and Cultures," sent to Congress.
Peru	*SINANPE* (Sistema Nacional de Áreas Naturales Protegidas por el Estado) created 1990. *SERNANP* (Servicio NANP), created 1997/2008. *INRENA* (Instituto Nacional de Recursos Naturales) created 1992. *FONANPE* (FondoNANP por el Estado) created1992.	CBD ratified: 12 Jun 1992 Cartegena Protocol Ratified: 14 Apr 2004 ILO Convention Ratified: 2 Feb 1994	*CI*- "Forests for Water in the Sacred Mountain" reforestation project (Cuzco, 2008-present); corridor projects in Ancash, Vilcabamba-Amboró and the Amazon (current). *WWF* – REDD Project in Amazon (2009), "Managing Community Resources in the Peruvian Amazon" (2006-present) *TNC* in Peru since 1983, its Peruvian counterpart, ProNaturaleza, created 1984.	*World Bank*- 7.88M US$ to FONANPE (1991) *World Bank/IADB* - 10+ M US$ for new PAs in Peru, mainly in the Amazon (2000-2004).[4] Debt-for-nature swaps with six creditors (Canada, Germany, Finland, the Netherlands, Switzerland, and the United States) through FONANPE. Estimated 1B US$ of debt (approx. 250M US$ given 25% discount rate) exchanged (Randall 1996). *World Bank* – 7M US$ for "in situ conservation of nativecultivars and their wild relatives", also 200M US$ for PRONAMACHCS Project (Sierra Natural Resources Management and Poverty Alleviation Project) (1997-2000).	1985–90 both Garcia Administration and Tupac Amaru/Shining Path created lowland forest refuges, but none protected indigenous rights (Stocks 2005: 96). 2000- 139 native communities (NCs) had legal titles pending, 300 more had applied , and 85% of titled NCs applying for expansion (Stocks 2005: 96). NGOs involved in land rights, including Oxfam, Moore Foundation, and the Danish International Development Agency (Stocks 2005: 96). Starting 1987- Article 17 of Law 26834 (Law of Protected Natural Areas)- created six new indigenous reserves co-managed by INRENA and indigenous communities (Stocks 2005: 96).

[1]The following abbreviations are employed: Convention on Biological Diversity (CBD), Cartagena Protocol on Biosafety (Cartagena Protocol), ILO Convention 169 on Indigenous Rights (ILO Convention).

[2]CI's purchase of a portion of Bolivia's foreign debt and contribution to creation of the Beni Biosphere Reserve was carried out without significant indigenous consultation, while the area included much land belonging to the lowland Chim'an. This led to widespread protests, and resulted in the Indigenous March for Territory and Dignity in 1990 (Stocks 2005: 94-95).

[3]Law 1715 has been criticized in its application, basically indigenous peoples have the lowest level or priority in cadastral studies (see Stocks 2005: 95).

[4]Examples include: (i) Conservation and Sustainable Development of the Northwest Biosphere Reserve: 2.10M US$ in 1997; (ii) "Permanent Protected Areas" of the Vilcabamba: 1.16M US$ in 1998; (iii) Biodiversity Conservation and Community Natural Resource Management in the Nanay River basin: 1.58M US$ in1998; (iv) Indigenous Management of Protected Areas in the Amazon: 23.1M US$ in 1999; (v) Community-Based Conservation and Sustainable Use of the Atiquipa and Taimara Lomas Ecosystems: 2.22M US$ in 1999; (vi) Conservation and Sustainable Use of Biodiversity in the Amarakaeri Communal Reserve: 1.88M US$ in 1999; and (vii) 31.99M US$ for "strengthening biodiversity conservation through the national protected areas program" (2005).

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