Brazil Under the Workers' Party

Continuity and Change from Lula to Dilma

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Environmental Policies in the Lula Era: Accomplishments and Contradictions

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The environment dilemma

In the last few decades, environment has become a contentious theme in Brazil's national politics. The country's environmental challenges are directly linked to its vibrant economic growth, which relies on primary industry with significant and growing energy demands. The increasing share of commodities in export value, from 23 percent in 2000 to 46.7 percent in 2012, has driven the so-called 're-primarization' of the economy (Figure 10.1). The national development program (Growth Acceleration Program), based on the expansion of agricultural land, energy production and infrastructure, has sparked harsh criticisms from civil society organizations and environmentalists regarding negative impacts such as biodiversity loss, erosion of ecosystem services and social disruptions (Fearnside, 2006; Zhouri and Laschefski, 2010). At the same time, the country hosts approximately 65 percent of a mega-biodiversity biome and important carbon sink, which makes land cover change a key environmental concern at the global scale. Pressured by its uncomfortable position as one of the top greenhouse gas (GHG) emitters, mostly from deforestation and land use (La Rovere *et al*., 2013), the government faces major conflict between carbon mitigation policies and the national development agenda, based on expansion of extractive industries.

In this complex context, contestation over natural resources is closely connected to demands by rural social movements whose environmental justice discourse unites social, environmental and territorial issues (Acselrad, 2008). Despite a highly heterogeneous cultural background and social organizations of different social actors, their claims coincide in terms of fair distribution of land and resources, partnership in

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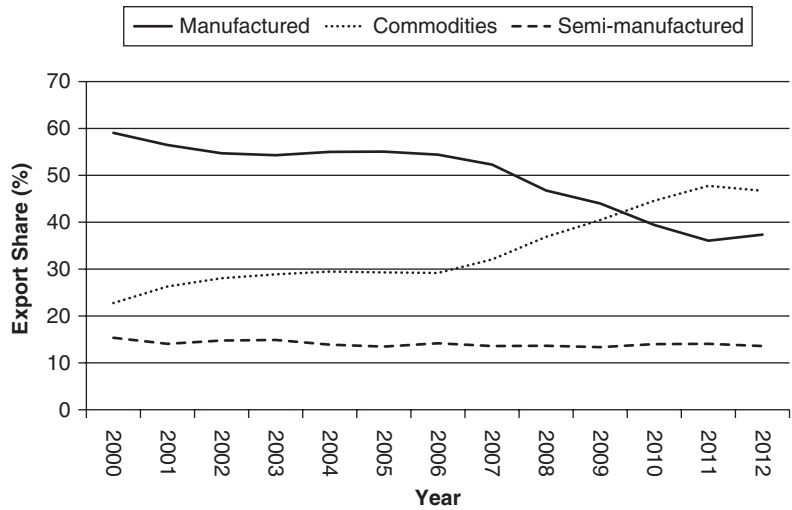

Figure 10.1 Share of exported products, 2000–12
Source: MDIC.

conservation policies, and improved territorial governance in a country with a highly skewed landholding distribution (Buainain *et al.*, this volume). Closely related to this political agenda are cultural-related claims of traditional identities and historical justice by ethnic communities such as indigenous, maroons, rubber tappers, coastal and riverine communities, to name a few. Such rural groups have been particularly successful in their efforts to show how poverty alleviation, increased equality and job generation are compatible with biological and cultural conservation (Acselrad, 2008).

In addition to rural populations, state governments have increasingly engaged in multi-jurisdictional alliances to attract funds for forest conservation and voluntary certification schemes (Toni, 2011). Environmental issues also reach foreign politics, as Brazil has become a key player in the international efforts for mitigation of biodiversity loss and carbon emission (Viola, 2010). The fact that a large proportion of the Amazon lies within its national borders gives Brazil leverage in global environmental governance as a major source of ecological services and as a source of innovative technologies and institutional arrangements to mitigate global climate change.

From a large range of traditional and peasant groups, to the increasing relevance of commodities in the national economy and the international

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demand for ecological services, natural resources have been highly politicized among different sectors of the Brazilian society. In this complex socio-environmental context, environmental governance in Brazil has gone through major institutional changes in the last two decades, from a centralized, national structure to a 'participatory' approach, in which ethnic groups have been engaged in the design and implementation of land tenure and land use in protected areas.

Considering the multi-scale, multi-sector connections of nature, it is no surprise that environmental politics in Brazil have been characterized by clashes between policies addressing environmental protection and social justice of rural populations, on one hand, and policies addressing infrastructure development and expansion of large-scale production systems on the other. A clear example of how environmental issues have become relevant in national politics is the presidential election of 2010, when the former Minister of Environment, Marina Silva, forced a second round by attracting one-fifth of the voters (Power, this volume). Although this event was more an expression of dissatisfaction at the options available than of a clear preference for the environmental agenda, the sudden increase of Silva's constituency revealed the potential for an alternative approach to the mainstream politics and for a development model in which 'environment' occupies a central position. More importantly, it raises questions about how the environment dilemma may influence national politics in Brazil. In this chapter I address this question by assessing the environmental policies implemented during the Lula government and during the outset of Dilma's government.

Due to complex connections across sectors and scales, a thorough accounting of environmental politics would deserve a full volume. Alternatively, I offer in this chapter a general discussion on how formal institutional transformations to tackle environmental issues have been connected to broader national politics in the last decade, and highlight some accomplishments and contradictions in the aim for sustainable development. The chapter starts with a brief history of institutional changes in pre-Lula governments, followed by a discussion of changes during his two terms. Following this, I provide an analysis of environment-related policies, grouped into three broad categories: (1) land governance with focus on territorial policies for protected areas and traditional populations; (2) energy governance with focus on renewable sources; and (3) climate governance with focus on the role of Brazil in the negotiation of global initiatives for mitigation policies. A final section highlights the prospects of environmental politics in

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the post-Lula era. The chapter closes with some final remarks linking environmental politics with development, democracy and citizenship.

Institutional legacies from previous governments

Environmental politics under Lula cannot be understood as an isolated process, disconnected from previous administrations. Since the democratization process, a few accomplishments have set the stage for recent political actions to take place. Needless to say, the Constitution of 1988 is a major benchmark in national environmental politics, defining rights to a healthy environment for all and responsibilities of the state and society to defend it and preserve it for future generations. In addition, a few biomes have been defined as national heritage to be protected, including the Amazon, the Atlantic Forest, the Pantanal wetlands and the coastal zone. The environmental legislation has also mandated participatory mechanisms in the design, implementation and monitoring of environment-related projects. One emblematic example is the Environmental Impact Assessment (EIA) for the approval of large-scale infrastructure projects, submitted to public hearings. The EIA has been a key instrument used not only by civil society organizations to fight against high impact projects, but also by the Public Ministry, an actor that has become fundamental in environmental politics (McAllister, 2008). The Public Ministry is in charge of 'diffuse and collective interests' and – due to historical factors and political demands – many prosecutors have specialized in environmental law and have become close allies of civil society organizations in the struggle against actions of the private sector and state agencies.

Another important element of the new Constitution is the multijurisdictional responsibility to preserve 'an ecologically balanced environment'. According to the Constitution, the three levels of government – municipal, state, and federal – are placed in the sphere of common and convergent competencies and none of them has exclusive power to legislate or implement environmental policy. However, despite this decentralized arrangement, the federal state holds some level of control in setting national plans to be adjusted by state and municipal governments according to their local contexts (Hochstetler and Keck, 2007).

The development of solid environmental legislation led to the creation of a federal environmental agency (IBAMA) in 1989, as part of a strategy to further develop and implement environmental policies. Brazil's government has shown bold signs of commitment to sustainable

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development by hosting the 1992 UN Conference on Environment and Development in Rio de Janeiro (UNCED Eco-92), and by signing international agreements elaborated in that meeting. The Eco-92 also opened new opportunities for both formal and informal national environmental politics. The Ministry of Environment was created as part of the national commitment to climate governance while national civil society organizations became more actively engaged with transnational networks of socio-environmental movements (Hochstetler and Keck, 2007).

Despite these institutional changes, it was not until Fernando Henrique Cardoso (FHC) took office that the federal government had a more active role in environmental policies. The Environmental Crimes Law of 1998 – addressing hunting, deforestation, pollution and damage to protected areas – gave the Public Ministry better institutional tools to issue complaints against individuals or legal entities who violate environmental regulations. In 1999, the Inter-ministerial Commission for Global Climate Change, composed of 16 ministries, was created in order to articulate governmental policies related to global environmental governance. Another important milestone during the FHC administration was the collaborative program among the Brazilian government, the World Bank and the European Commission, called Pilot Program to Conserve the Brazilian Rain Forest (PPG-7). The PPG-7 was designed as a participatory plan to mitigate carbon emission from deforestation, preserve biodiversity and promote sustainable development (Mello, 2006). Throughout the 1990s, approximately 200 projects were carried out in partnership with NGOs, including several community-based initiatives (Lemos and Roberts, 2008). Finally, two crucial innovations emerged during FHC's second term. First, in collaboration with the US Defense Department, the System for the Vigilance of the Amazon (SIVAM) was implemented, among other security goals, to control illegal land use activities in the Amazon. This cutting-edge technological surveillance system – comprised of more than 500 monitoring devices – covers 5.2 million km^2 of the Amazon, and is controlled by three observatory centers scattered in the region. Second, after nearly a decade of negotiation in Congress, the National System for Protected Areas (SNUC) was approved in 2000. The SNUC encompasses several categories of conservation units, including protected areas inhabited by traditional populations (Medeiros, 2006).

The advances before and during FHC were mostly reactive, pressured by demands from socio-environmental movements and international donors. From the creation of the Ministry of Environment on the eve

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of Eco-92 to the creation of a committee to articulate policies related to climate change after Kyoto, or the Environmental Crimes Law as a response to a sharp increase in the deforestation rate in 1998, the federal government was mainly responsive to political pressure from both below and above. By the same token, the PPG-7 program – designed when the environment was high on the global governance agenda – has been mainly undertaken by international donors. The limited involvement of the federal government suited the neoliberal perspective taken by FHC but did not fit the demands of the socio-environmental movements that called for increased institutional support from the state to empower marginalized groups. The Lula government fulfilled this gap by changing the perspective of national environmental policies. As part of the strong commitment to a social justice agenda and the repositioning of the state in the decision-making process, Lula took on a proactive approach that led to important accomplishments but also to some puzzling contradictions. The following section describes some important institutional changes under Lula and highlights the tension between socio-environmental and economic goals in three main domains of national environmental policy.

Institutional changes under Lula

The outset of Lula's administration was marked by a strong message of social inclusion and sustainable development. The appointment of senator Marina Silva as the head of the Ministry of Environment (MMA) in 2003 was a clear message that conservation, sustainability and traditional populations were at the core of Lula's environmental policy agenda. During this period, the MMA was marked by two main structural changes. First, following other Ministries (see Abers *et al.*, this volume), Silva sought close collaboration with civil society organizations, not only through improved channels for dialogue but also by appointing activists to positions in governmental offices. Secondly, the concept of 'transversal integration' was introduced in the MMA. According to Silva, environmental issues cross over different ministries and, therefore, engagement of the MMA in the planning process was crucial to ensure coherent national policies.

This new institutional rearrangement brought the state back to an active role in the decision-making process, but also set the stage for local actors to directly influence numerous state initiatives. It did not take long for the inclusive, transversal, integrated role of the MMA to be confronted by resistance from powerful political groups. The first lost

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battle was the institutional consolidation of transgenic soy in Brazil. After the embarrassing political situation of a decade of cultivation of irregular genetically modified (GM) soybeans in the country, Lula gave in to the agribusiness caucus and approved the regulation of the use of GM crops against the strong opposition of the MMA (Mueller, 2009). The major impact on MMA, however, came a few years later from inside the government. The licensing process of hydroelectric power plant projects planned in the national development plan (PAC) was held back by the environmental agency in charge of the Environmental Impact Assessment (EIA), due to irregularities and violations of environmental legislation. Resistance to pressure from the secretary of state, Dilma Rousseff, to approve the projects led to a gradual isolation of MMA from the decision-making process. The tension between MMA and the government culminated in the resignation of Marina Silva in 2008.

In sum, the institutional arrangement of environmental policy has changed radically during both Lula terms, from close association with socio-environmental movements and a solid sustainable approach, through integration with other ministries, to a developmentalist, pragmatic perspective characterized by a national discourse of sustainability under deepened socio-environmental conflicts. Under this conflicting institutional arrangement, it is no surprise that accomplishments during the Lula government are marked with contradictions. Below I offer some illustrative examples of how discourse and the practice of sustainability have clashed during the Lula years in three different domains.

Rural land governance

During the Lula terms, the rural territorial configuration has undergone a major transformation, driven by policies targeting three broad categories of land use: (1) expansion of protected areas that recognize ethnic communities, to promote historical justice and social inclusion, and to help fulfill carbon mitigation targets; (2) expansion of production area, including small farms, agribusiness and extractive activities, to meet increased national and international demand; and (3) infrastructural development to promote regional integration and energy generation, and to facilitate transport of primary goods. I will focus on the first territorial category to highlight some accomplishments related to socio-environmental goals and I will refer to the production area and infrastructure to discuss some contradictions.

Protected areas have long been a key element in conservation policy in Brazil. Until recently, the northern model – focused on biodiversity hot spots and flagship species – has driven the creation of no-take

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conservation areas that restrict traditional communities from living in their territories and using local natural resources (Diegues, 1994). This picture started to change during the FHC terms, when manifestations of environmental citizenship among rural communities flourished in the country (Hochstetler and Keck, 2007) and the implementation of the National System for Protected Areas (SNUC) provided legal mechanisms to support local demands for rights to nature and land. Territorial rights claims resonated in the discourse of social inclusion, participation and empowerment deployed by Lula's government agenda, driving a boom of sustainable conservation units in the Amazon. Such areas comprise of a range of territorial models regulated by a Management Plan that is usually formulated by state agencies in collaboration with local residents. In addition, the implementation of indigenous and maroon territories, contemplated by the Constitution, was initiated in the new millennium as part of the PPG-7 program PPTAL (Projeto Integrado de Proteção às Terras e Populações Indígenas da Amazônia Legal) and the INCRA/MEC partnership, respectively.

As a result, Lula's terms have been marked by a major increase in protected areas and ethnic territories, the latter of which have grown remarkably in the last decade (Figure 10.2). Together with full protection conservation units, the spatial configuration of rural Brazil has been transformed into a mosaic of thousands of protected areas, covering approximately one-fifth of the national territory and almost half of the Legal Amazon. Supported by the PPG7 program, indigenous territories increased by over 400,000 km^2 during the FHC term and close to 200,000km^2 during Lula's years in office. Likewise, the national government formally recognized more than 100 maroon territories between the FHC and Lula terms, and approximately 1,000 communities are in different phases of territorial recognition. Finally, 57 extractive reserves have been created in both upland and coastal areas since 2001, while more than 240 agro-extractive settlements have been created along the Amazonian floodplain since 2006 (Table 10.1).

Protected areas combined with the surveillance systems (SIVAM) and enforcement measures implemented in the last decade have driven a positive result of a steady decrease in the Amazon deforestation rate since 2004 (Figure 10.3). Although this trend has been influenced by external factors such as the global economic crisis, it is clear that conservation policies have had an important impact on this trend. However, optimism about growth of protected areas and decline in deforestation rate in the Amazon contrasts with a few contradictions regarding patterns of land use on private lands, and deforestation in other biomes.

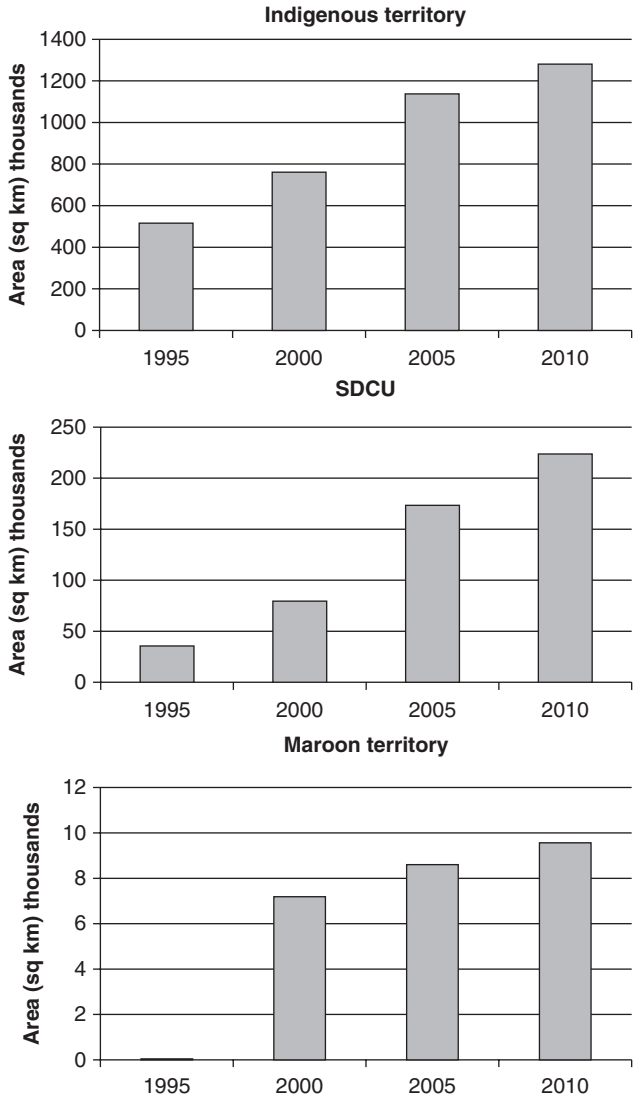

Figure 10.2 Expansion of ethnic territories in Brazil, 1995–2010 (SDCU = sustainable development conservation units)

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Table 10.1 Number and area of ethnic communities created during FHC and Lula presidencies

	Indigenous[1]		Maroons[2]		SDCU[3,4]	
	N	Area (km²)	N	Area(km²)	N	Area(km²)
FHC (1995–2002)	145	412,269	42	7,753	20	29,377
Lula (2003–2010)	87	187,857	66	2,126	277*	93,454*

* includes 246 Agroextractive Reserve Projects (PAE) in the Amazon floodplain (INCRA).
Sources: 1 – ISA; 2 and 4 – INCRA; 3 – MMA.

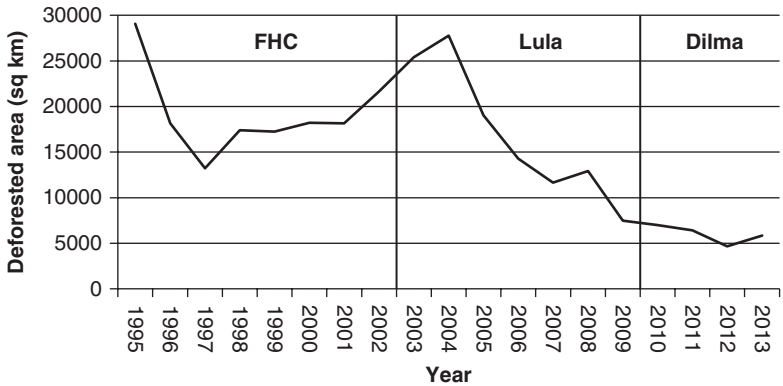

Figure 10.3 Deforestation rate in the Amazon, 1995–2013
Source: PRODES, INPE.

Rapid expansion of agribusiness has caused impacts on both protected areas and peasant territories. Land use in private territories is regulated by forest legislation, in which two sets of restrictions are of particular relevance for biodiversity conservation: Permanent Protection Area (APP) and Legal Reserves (LR). The former includes vulnerable terrains such as river fringes, hill summits and hilly areas; the latter includes a percentage of the property that must be protected, according to specific biomes: 80 percent in the Amazon and Atlantic Forest; 35 percent in the Savanna; and 20 percent in the remaining areas. The formal restrictions, however, have not stopped farmers from illegal deforestation in these areas. According to Sparovek *et al*. (2012), 25 percent of the private

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forest has not been effectively protected, which generated a deficit of 86 million hectares of forest in APP and LR. There was a consensus that the Forest Act needed to be adjusted to the new rural context, and to better tackle illegal deforestation in APP and LR. However, this process was captured by the rural caucus in the national congress and the decision was postponed until the following presidency (see Section 4).

Monitoring of forest legislation faced a chronic problem related to irregular land tenure. To tackle this problem, the Terra Legal Program was created in 2009 to foster the regularization of land tenure in the Amazon, where half of the territory is under unclear tenure status. However, civil society organizations have accused this program of facilitating land grabbing because it targets landholdings up to 1,500 hectares and provides formal channels to legalize a small number of large landholdings instead of providing land security to a large number of migrant small-scale farmers (Portal do Purus, 2012). According to Brito and Barreto (2011), although 70 percent of the illegal landholdings are less than 100 hectares, about half of the landholdings benefited by the program are properties of 400 hectares or more. In other words, while private landholdings reveal major flaws in compliance of forest legislations, protected areas remain the main source of forest protection and provision of ecological services in the Amazon.

Another contradiction in the conservation strategy is the political efforts to halt deforestation centered in the Amazon region, while other threatened biomes are overlooked. Lack of attention from both the national government and international community has allowed the rapid land cover change in the Savanna, which has gradually become a major source of carbon emission (Sawyer, 2008). Agricultural expansion and charcoal are the main drivers of increased deforestation in this biome, estimated to be as high as over 20,000 km^2/year in 2005 (Sawyer, 2008), although recent official figures estimate around 7000 km^2/year in 2009. About 80 percent of the territory has been degraded and only 2.6 percent is legally protected. Despite the high level of endemism and major carbon sink, the Savanna is not included on the list of national heritage in the Constitution.

In other words, accomplishments in forest protection in the Amazon contrast with growing socio-environmental conflicts mainly driven by the expansion of large-scale production and infrastructure in their surrounding territories (ISA, 2009). Lack of transparency, non-participatory methods and illegal practices have been some of the strategies used by private and public agencies to facilitate the implementation of large-scale infrastructure projects, which can render major

socio-environmental impacts in the region (Fearnside, 2006). The focus on large-scale infrastructure and agribusiness in rural areas has directly affected the conservation agenda, enhancing environmental injustices in rural areas. While local social groups struggle for access to land and natural resources, rural development policies related to agribusiness, infrastructure expansion and extractive activities drive increased environmental degradation and socio-environmental conflicts (Sauer and Almeida, 2011). Along the new agro-pastoral frontiers mostly in the Savanna, the rural elite has gradually appropriated new agricultural lands and pushed rural populations into more isolated areas with limited access to market, infrastructure and information (Wolford, 2008). As a result, traditional populations in the Amazon struggle to protect their territory against large-scale projects, while large-scale farmers in the Savanna have freely violated the forest legislation to increase their production at the expense of environmental degradation. Ironically, under the label of 'guardians' of the global commons, traditional populations in the Amazon are not only excluded from the development agenda but also legitimize the expansion of highly impactful activities elsewhere (Castro, 2012).

Energy governance

The reliance of the Brazilian energy grid on a high proportion of renewables is well known worldwide. Two main sources compose the cornerstone of renewable energy, each targeting different purposes. Hydroelectric power is responsible for 74 percent of electricity generation, whereas biofuel is responsible for approximately one-third of transportation fuel for small vehicles. Together, they amount to 30 percent of the energy source, a figure much higher than the world average of 16 percent and 1.4 percent, respectively (Figure 10.4). Although these figures have been used by Lula to support the image of a green state in international climate governance, this unique feature had been established a few decades earlier as part of a strategy of energy sovereignty deployed by the military government. In fact, the proportion of renewables has been relatively stable in the last decade (Figure 10.5). Nevertheless, the accomplishments of Lula are related to initiatives to expand renewable energy production to meet the increasing demand. Below I briefly present these initiatives and discuss the implications of the recent finding of a large offshore oil reserve on the southern coast of Brazil for the future of renewable energy in the country.

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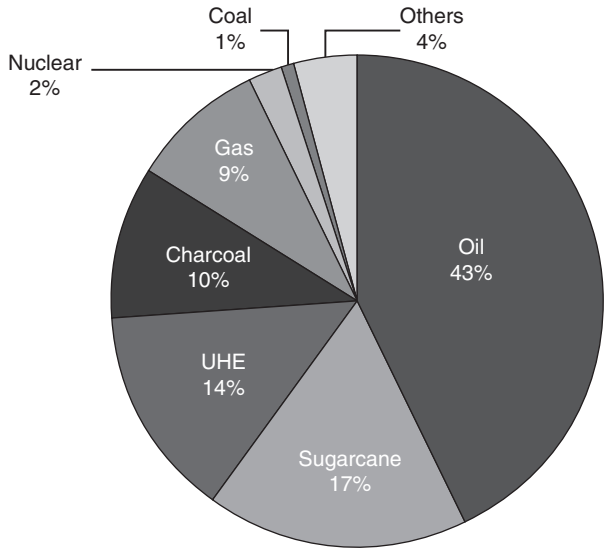

Figure 10.4 Distribution of energy source in 2012
Source: MME.

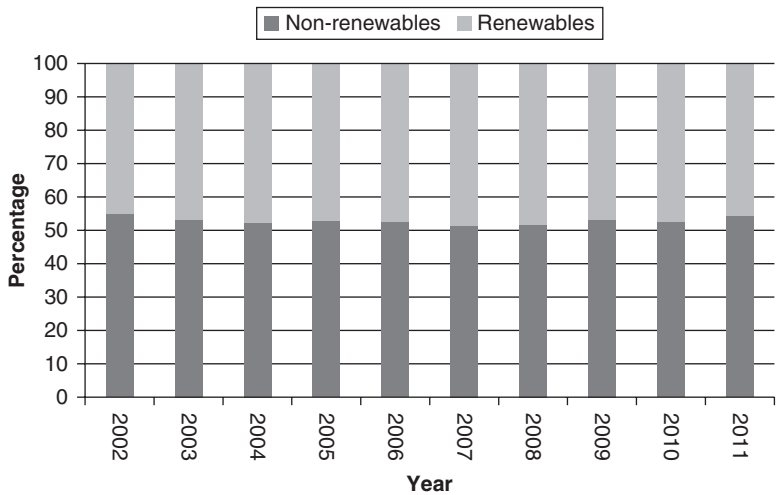

Figure 10.5 Proportion of renewables (hydroelectric power plant, sugarcane, charcoal, wind) and non-renewables (oil, gas, coal, nuclear) in the energy grid, 2002–11
Source: MME.

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Hydroelectric power expansion

Brazil's abundant river basin systems and strong engineering capability have been the main pillars of the consolidation of hydroelectric power plant as the key energy source for electricity production. As part of the energy sovereignty policy implemented by the military government, a series of hydroelectric power plants have been constructed in the southern part of the country since the 1970s. Due to an overload of hydroelectric power plants in this region, more recent plans turn to the Amazon Basin as the new frontier for expansion of hydraulic energy. In particular, the electricity crisis between 2001 and 2002 pushed the national government to implement infrastructure projects to support increased energy consumption in the country. FHC's successful campaign to lower energy consumption among the population helped to avoid regular outages that could have affected economic growth. During his presidential campaign, Lula used this energy crisis ('crise do apagão') to accuse FHC of bad planning, and promised to expand energy generation under his presidency.

Lula's first term went relatively smoothly as the national government benefited from the inherited energy expansion program set up by FHC to address the energy crisis. A new energy expansion plan, released in 2007 and adjusted in 2010, anticipated a 4.5 percent annual increase in energy production, amounting to 40,000 MW by 2020, mostly from new hydroelectric power plants to be built in northern river basins (EPE, 2007). Needless to say, the expansion of hydroelectricity in Brazil became one of the major sources of socio-environmental threats in the Amazon. Considering the sensitivity of the Amazon region, dam construction has become an iconic example of the clash between development and conservation policies. On one hand, electricity generation is necessary to supply increasing household and industrial energy consumption; on the other hand, the reliance on large-scale hydroelectric power plants in the Amazon has triggered major debates regarding issues related to the actual sustainability of this energy source, unequal distribution of benefits and socio-environmental costs. The political discourse of renewable energy is confronted by empirical evidence of the social and ecological impacts of large-scale large dams in the Amazon, including high emission of greenhouse gas (Fearnside, 1995; 2005; 2006). Moreover, in the affected areas of Xingu, Tapajos, Madeira, Araguaia and Tocantins, the main rivers targeted for the hydroelectricity expansion overlap with territories of several traditional communities (ISA, 2009). As a result, new dam projects have driven reclassification of conservation units, which slashed more than 30,000 km^2 of protected areas (EcoDebate, 2012).

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As discussed earlier, internal conflicts around the licensing process for the construction of hydroelectric power plants caused major institutional changes in Brasília, leading to the resignation of the environmental minister. Marina Silva justified her decision by accusing the government of a lack of political support for the Ministry of Environment, and overruling the democratic procedures of environmental licensing. Ever since, governmental agencies and the Public Ministry have been engaged in an arm wrestle between legal embargos and permissions. This issue is particularly relevant as it touches upon the tension between the democratic process and energy security. On one hand, the government promotes a large-scale plan to increase energy generation from renewable sources; on the other hand, the government has consistently overruled the national constitution, overlooked the claims of social movements, and promoted unequal distribution of the costs and benefits of these projects, as in the case of Belo Monte (see Section 4).

Biofuel expansion

Ethanol has long been a cornerstone of transportation fuel in Brazil (Wilkinson and Herrera, 2010), available in gas station pumps since the mid-1970s as special fuel (hydrous) or blended with gasoline (25 percent since 2007). However, the boom in ethanol production was possible only after the introduction of flex-fuel engines for small vehicles, which can run on both gasoline and ethanol. In addition, fuel demand has increased with the recent growth in car sales as a result of the emergence of the middle class combined with government incentives for the automobile industry. In the last decade, car sales grew 150 percent and the proportion of flex-fuel cars increased from 4 to 91 percent of total sales (Figure 10.6). As a result, biofuel production has proportionally increased far more than any other energy source in the last decade. Sugarcane-based energy (ethanol and bagasse) has grown 75 percent between 2003 and 2010, in contrast with a 38 percent increase in energy production in the same period. This striking difference reflects the aggressive policy that was implemented by Lula for the expansion of ethanol production from 12 to 27 billion liters between 2003 and 2010, bringing Brazil to the position of the world's second largest producer and first exporter of this renewable fuel (Figure 10.7).

Ethanol export has increased fivefold since 2003, peaking at 5.1 billion liters in 2008. The aspiration to tap into the new green energy market was hindered by two major trade constraints. First, competitive prices of Brazilian ethanol were curtailed by a protectionist US tariff set at $0.54/gallon

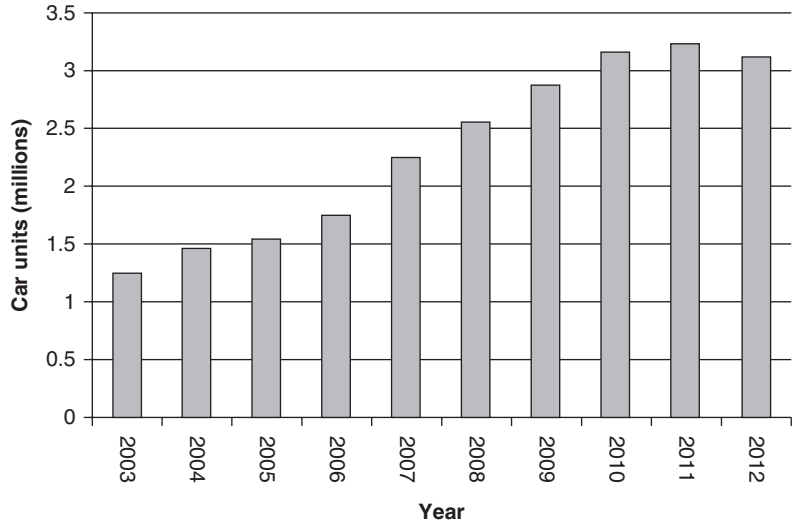

Figure 10.6 Car sales, 2003–12
Source: Anfavea.

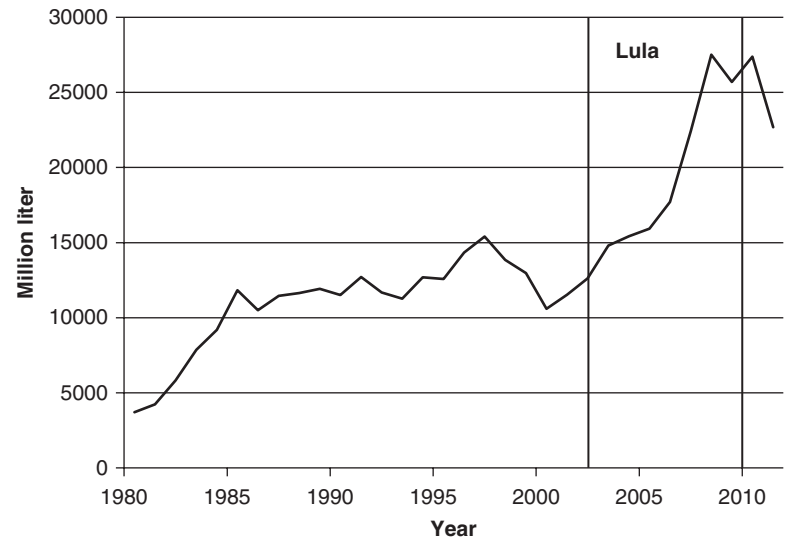

Figure 10.7 Ethanol production, 1980–2011
Source: UNICA.

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of imported ethanol. Second, as of 2009 the European Union required certification of sustainable production from Brazilian ethanol producers. These restrictions brought the ethanol export figures down to less than two billion liters in 2010. As a response, the national government worked closely with main stakeholders (e.g., UNICA and CONTAG) to address the bottlenecks in the process of getting certification for the Brazilian ethanol. Voluntary agreements with the ethanol processing plants, mechanization of sugarcane harvest, and sugarcane zoning in non-forested areas are some of the outcomes of this process to address criticisms of labor conditions, harvesting methods and indirect deforestation related to ethanol production.

At the same time, the government was proactive in creating a certification scheme for the creation of a new market for biodiesel, which was implemented in 2005. The National Plan for Biodiesel Production and Use (PNPB), carried out by the Ministry of Agrarian Development, was primarily aimed at the inclusion of small farmers in the biodiesel production chain through a certification scheme: the Social Fuel Stamp (SFS). The SFS provides special benefits – such as tax exemptions, access to special rural credits, and privileges to participate in auctions organized by the National Agency of Petroleum, Natural Gas and Biofuels (ANP) – to both small-scale producers and biodiesel processing plants. Tax exemption was higher in poorer regions such as the north and northeast of Brazil. To facilitate the negotiations between small farmers and the biodiesel producers and distributors, the government carried out auctions in which amount, price and delivery date with winning producers were agreed upon. In a way, the biodiesel program was designed as an antithesis of the ethanol program, conceived with a very distinct production system, institutional arrangement, goals and socio-environmental implications. The program combined economic, social and political goals. In economic terms, it aimed at supplying the marginal biodiesel that needed to be blended with mineral diesel to reach self-sufficiency. In contrast to ethanol, the PNPB was planned only for domestic use and blending purposes, initially 2 percent of biodiesel (B2), with a gradual increase to 5 percent (B5) in 2013. The social dimension of the program addresses the criticisms of social exclusion in sugarcane/ethanol production. Issues related to poor labor conditions, food insecurity and environmental impacts were addressed by a provision for peasants to engage in a new market (Abramovay and Magalhães, 2008). Emphasis on large-scale, mono-crop, high-input agriculture and land concentration in the ethanol production system were replaced by small-scale, crop diversity and sustainable production of oilseeds.

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The PNPB has been successful in reaching the biodiesel production targets but did not live up to its social goals. Biodiesel production reached two billion liters in five years, anticipating the B5 blending in 2010, three years ahead of the original plan. Figures on social inclusion, however, have been way below expectations. Four years after the implementation of the program, only 51,000 families were involved – one fourth of the target – and nearly 80 percent of the biodiesel was produced from soybeans cultivated in the southern region (Reporter Brasil, 2010). In 2008, the PNPB underwent a few adjustments to improve the social component of the initiative. Petrobras invested in three biodiesel plants in the semi-arid region of Brazil, raising the participation of small farmers to 109,000 families in 2010.

In sum, ethanol and biodiesel production are two faces of the same coin. Under the discourse of sustainable energy, they are both promoted by the national government as a unique opportunity for Brazil to use its large agricultural land, technological know-how and rural labor force to combine sustainability, job generation and energy security. In this national strategy, ethanol is targeted at the rural elite to expand the sugarcane farms and reach out to new international markets, while biodiesel is targeted at small-farmers to provide them with an opportunity to reach out to new domestic markets. However, both ethanol and biodiesel production have increased exponentially during the Lula years, and they have both relied on mono-crop feedstock: sugarcane and soybeans, which are key drivers of deforestation and social injustices in the rural areas. In other words, to what extent the biofuel program can be a sustainable and inclusive solution for energy production remains to be seen.

The expansion of biofuel in Brazil took place in the midst of major changes in the country's oil production profile. With a 7 percent annual growth rate in oil production since 1997, Brazil reached self-sufficiency in 2006. This accomplishment was followed by major news only a year later: the discovery of a deep offshore oil reserve below the pre-salt layer, a few kilometers off the southern coast. Estimated to be between 50 and 100 billion gallons, attention was shifted to this new opportunity, referred as 'the second independence of Brazil' by Lula and 'the passport to the future' by the Secretary of State at the time, Dilma Rousseff. Although the oil production profile has not been affected yet, a few socio-environmental concerns have been raised, such as increased carbon emission from the burning of gas during the oil extraction, risks of oil leakage (especially in high-depth drilling) and impacts on commercial fishing activities.

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In contrast to the direct social impacts of hydroelectric power plants on rural territories, offshore oil reserves have no immediate social threats. However, Lula has adjusted his political discourse of a green state and has proposed a series of policy initiatives to justify the eventual change in the energy grid. A major benefit of the Pre-Salt program has been its coupling with social development through a proposal for a new royalties scheme. On the other hand, major changes in the energy grid may come from an impact on ethanol consumption in the case of the domestic price of gasoline being set too low, thereby limiting the use of ethanol to blending purposes only. In any case, possible changes in the energy grid may have a direct effect on Brazil's positioning in climate governance, a topic to which we now turn.

Climate governance

Brazil's positioning in global climate governance has always been balanced by the country's ambiguous profile, characterized by a high deforestation rate on one hand and a clean energy grid on the other. As mentioned previously, Brazil is the world's second-largest carbon emitter from land use change (La Rovere *et al*., 2013). At the same time, the large portion of mega-biodiversity biomes (e.g., the Amazon, Atlantic Forest and Savanna), as well as the remarkable renewable energy program, have given Brazil leverage to play an active role in international mitigation-policy negotiations. The national government has used these two features strategically to strengthen Brazil's profile among industrialized nations.

Before Lula, Brazil played an important role in climate policy decisions. In 1992, the country hosted the UNCED Eco-92 and influenced the elaboration of the Biodiversity Convention, Agenda 21 and negotiation of the climate convention (Viola, 2010). In 1997, Brazilian diplomats teamed up with the USA delegation to propose the Clean Development Mechanism (CDM), perhaps the most concrete initiative of the Kyoto protocol, in which developed countries financially support projects for energy efficiency in developing countries. Brazil ranks third in reduction of carbon emission from CMD projects, half of which is related to renewable energy production from a sugarcane byproduct (bagasse), small hydro power plants and wind power (Friberg, 2009). However, it was not until the new millennium that Brazil took a higher stand on the climate agenda, both nationally and internationally.

At the national level, Lula built upon the Inter-ministerial Commission on Climate Change (created by FHC) to develop a more coherent domestic climate policy-making structure, by engaging ministries, private actors

and civil society organizations in the process (Viola, 2004). At the international level, the climate governance diplomacy has been coupled with an ambition to become a leading voice that represents the Southern hemisphere in decisions regarding mitigation and measures to adaptat to climate change. By tackling deforestation more aggressively, the government shifted the Amazon question from a burden to an asset in the negotiations. The deforestation rate has dropped from over 25,000 km^2/year in 2003 to less than 10,000 km^2/year in 2010 (Figure 10.2). In addition, increased investment to expand ethanol production revealed the government's intention to shift climate governance from a threat to an economic and political opportunity. Steps to turn ethanol into a commodity, transfer of technology for ethanol production to other southern countries, and concrete measures to match international trading standards reflect the government's ambition to become a major supplier of ethanol and support mitigation policies set by industrialized countries.

In 2009, the Inter-ministerial Commission on Climate Change elaborated the National Plan for Climate Change (NPCC). The NPCC lays out a strategic shift from a conservative to a reformist position in climate governance, in line with industrialized economies. From the past position of adamant rejection to a set carbon emission target for emerging economies, the NPCC sets ambitious national targets to mitigate carbon emission by between 36 and 39 percent until 2020. Among several measures to reach this target are an 80 percent reduction of the deforestation rate and a doubling of planted forest until 2020; an 11 percent increase of domestic use of ethanol until 2018; and increased energy generation from an ethanol byproduct (bagasse) to 11 percent of the total electric energy by 2030 (CIMC, 2008). The proactive position of the government was supported by the important accomplishment of a steady decline in carbon emission. After a fast increase in carbon emission from 1.3 billion tons in 1990 to 2.2 billion tons in 2005, the country has experienced a continuous decrease ever since and has reached 1.8 billion tons of carbon more recently, mainly as a result of the lowered deforestation rate (Friberg, 2009). However, while land use change has dropped 20 percent between 1994 and 2009, carbon emission has increased 40 percent in industry, energy, agriculture and waste sectors in the same period, as part of the increased consumption pattern (La Rovere *et al.*, 2013).

With decreasing deforestation and carbon emission rates, a solid renewable energy grid, and a sound national mitigation plan, the Brazilian delegation arrived at the United Nations Framework Convention on

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Climate Change (UNFCCC) in Copenhagen as a powerful player ready to push forward the proposal for reduced emission from deforestation and degradation (REDD+), a partnership between highly industrialized countries and mega-biodiversity countries. REDD+ is based on initiatives that create incentives to reduce deforestation and degradation (Tollefson, 2009). In 2008 the national government created the Amazon Fund, managed by the national development bank BNDES, to attract financial support from potential sponsors to support projects to prevent, monitor and combat deforestation in the Amazon. Until 2012, the Amazon Fund had attracted 128 million dollars, mainly from Norway. This initiative has been far from successful. The program has experienced problems in attracting effective projects in the first five years and only one-fifth of the promised funds has been transferred to the program. Notwithstanding these hurdles, the Amazon Fund has enabled the national government to re-centralize the negotiations for mitigation measures, and to engage international support in the governance of the Amazon forest without losing sovereignty over the region.

In sum, climate policy under Lula has shifted from a formerly reactive, conservative perspective to a proactive, reformist approach, to raise the country's political profile as leader of the southern countries. This remarkable progress in global climate governance contrasts with recent developments in the national environmental agenda under the new president, as discussed in the following section.

Environmental policies under Dilma

Dilma has inherited both advances and conflicts that emerged from the environmental and development policies carried out by the Lula administration. However, the heritage was mostly shaped by her, as she was the secretary of state and a key actor promoting development policies that triggered conflicts with the MMA and social movements under Lula. Although these policies are reason for debate among social scientists, there is a consensus that conservation policies have gradually become an even lower priority on the national agenda under the new government. Considering Dilma's poor record on environmental policies, it is no surprise that conflicts and pending issues left off by Lula have only worsened in the last two years. In this section I will briefly address three emblematic cases, which clearly show the high polarization between conservation and development policies. The three cases illustrate the three pillars addressed in this chapter. First is the decision-making process regarding the new Forest Act (related to rural

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land governance), which has long been contested by peasants, agribusiness and environmentalists. Secondly, the decision-making process regarding the construction of the Belo Monte dam complex (related to energy governance) is an old conflict between ethnic communities, the national government and NGOs. Third, the role of Brazil at the United Nations Conference on Sustainable Development (UNCSD) also known as Rio+20 related to climate governance was characterized by a return to a conservative approach, distancing itself from the European target goals and approximating the green economy model.

The revision of the Forest Act has become one of the main political battles between the rural and the environmentalist caucus in the National Congress. Although different proposals have been circulated, discussed and negotiated in the Congress since the 1990s, it was not until 2009 that concrete steps to vote for the new Forest Act were taken. Lula was able to drag out this process until the end of his term, and Dilma faced this highly politicized process in her first months as president. After several rounds of negotiation, the text from the opposition was approved by a massive majority on the eve of Rio+20. Among the changes are the flexibility of environmental protection on private land, related to the reforestation of illegally cleared areas, legal mechanisms to lower the Legal Reserves (LR) under certain conditions, and the decrease of Permanent Preserved Area (PPA). Despite a few vetoes from the president, the final text of the Forest Act became a formal instrument that encourages deforestation and is expected to lead to a 58 percent drop in reforestation, according to a recent estimate.

The construction of the mega hydropower scheme Belo Monte is a characteristic example of the tension between conservation and an economic development model. Formerly planned in the 1970s, civil society organizations were successful in silencing a few attempts to get the Belo Monte project off the ground. Under Lula, Belo Monte was not only revived, but also became a flagship project in his program to foster economic growth and to prevent energy shortages. Supported by a discourse of energy security, Lula stubbornly resisted repeated protests of civil society organizations; the environmental agency bypassed the mandatory environmental impact assessment, reclassified protected areas to accommodate the land to be flooded, and injected funding through the national development bank to make Belo Monte viable. Dilma followed Lula's steps to confront indigenous and peasant groups as well as national (Public Ministry) and international (Inter-American Commission on Human Rights of the Organization of the American

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States) organizations, escalating to one of the most serious socio-environmental conflicts in the country (Hall and Brandford, 2012). The result was not only the reduction of protected areas, increased socio-environmental impact and unequal distribution of benefits to high-consuming mineral companies, but also the crushing of citizenship and overuse of state power, thereby violating human rights and the national constitution.

Rio+20 was the first global arena on climate policy after Dilma took office. The event attracted more than 45,000 participants and mobilized about 10,000 NGO members, and 188 national delegations, to discuss a document addressing institutional arrangement to support a green economy and to develop instruments and guidelines to foster global cooperation. As host of the event, the Brazilian delegation led the negotiations and the writing of the final consensual document. During this process, the Brazilian diplomats showed clear signs of reshaping the country's position on climate governance to a more conservative approach with strong support for a mainstream development model (Hochstetler and Viola 2013). The result was a document with a wish list and voluntary agreements with neither concrete decisions about actions nor commitments of governments regarding institutional arrangements, targets and monitoring mechanisms. This final document was highly criticized by social movements, researchers and some politicians as a regression in comparison with Eco-92. Perhaps the major achievement of the meeting was the prevention of concrete decisions regarding the establishment of a green economy, which could have led to even more inequalities and environmental degradation. Dilma's position was ambiguous regarding the final product. On one hand, the Brazilian delegation worked to remove major themes from the document, such as the scaling up of the United Nations Environment Programme (UNEP), reproductive rights and sustainable development goals; on the other hand, Dilma blamed other governments for lack of political will to allow more concrete decisions. In any case, the empty document seems to match the conservative position taken by Dilma's administration.

These three examples reveal how environmental issues have lost relevance on the national agenda, widening the gap between economic growth and sustainability. The new Forest Act creates opportunities for the consolidation of deforested land and an increase in deforestation and biodiversity loss. The hydroelectric dam complex Belo Monte deepens inequality, not only in terms of who bears the environmental

costs of this high-impact infrastructure project, but also in terms of who receives the benefits of the energy produced. Finally, Brazil's position during Rio+20 not only reveals a missed opportunity to lead climate governance towards a progressive economic model, but also shows how the clash between the national government and the rural social movements is closely related to the increasingly carbon-intensive national economy. In all three cases, there is a clear prioritization of the neo-development approach, relying on short-term revenue from large-scale production of primary goods, and characterized by less sensitivity to long-term socio-environmental impacts.

Conclusions

The conservation agenda under Lula has moved forward in many ways. Environmental politics evolved to a governance perspective, in which different actors and policy sectors were engaged in different decision-making arenas. Furthermore, the national government moved from a reactive approach during FHC to a proactive strategy in both domestic and international affairs. The national government has used these achievements to overshadow conflicts and to improve its image as a green state within the international community. From the increase in protected areas and a drop in the deforestation rate in the Amazon, to expansion of renewable energy and a proactive plan to mitigate carbon emission, Lula succeeded in becoming a role model among emerging economies and mega-biodiversity countries. However, the development path taken by the government has often clashed with conservation and social inclusion measures. When contextualized in broader processes of reconfiguration of rural territories, environmental injustices and consolidation of a carbon-intensive development model, contradictions between conservation and development policies surface. The increase in protected areas has legitimized the expansion of large-scale farming and extractive activities, with direct impact on conservation targets. Renewable energy – praised by the government as a modern, low-carbon economy – contrasts with incentive measures to increase car sales and support for energy-intensive extractive industries. A national plan for climate change, including remarkable targets to mitigate carbon emission, does not match with the rules of the new Forest Act.

The environmental dilemma under Lula, and now under Dilma, goes beyond biodiversity conservation and carbon mitigation measures. It

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touches upon the development model, based on a gradual re-primarization of the economy, and reliance on energy – and water-intensive production activities. It touches upon citizenship issues and the role of the state in promoting the recentralization of political decisions regarding the environmental impacts of large-scale projects and limited participation of local communities and civil society organizations. Finally, it touches upon inequality issues as local communities, trapped in protected areas, are now in charge of reaching the zero deforestation targets, while private actors are allowed to continue their land use practices and the urban middle class increases its consumption of fossil fuel. In sum, environmental policy has become a battlefield where citizenship, democracy and sustainable development have been constantly challenged. As it seems, this picture will hardly change under Dilma.

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