

# **PEACE AND ENVIRONMENTAL PROTECTION IN COLOMBIA**

Proposals for Sustainable Rural Development

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# Foreword

We are pleased to present the report “Peace and Environmental Protection in Colombia: Proposals for Sustainable Rural Development,” by Lorenzo Morales, a journalist and professor at the Center for Journalism Studies at the Universidad de los Andes.

Peace in Colombia promises to bring many benefits to the country, but also poses environmental risks. The peace agreement signed by the Colombian government and the Revolutionary Armed Forces of Colombia (FARC) in late 2016 will enable the country to move forward with plans for rural economic development, land restitution, and reintegration of former combatants outlined in the accord. As the post-conflict agenda unfolds, it is crucial that policymakers consider the possible environmental impacts of these plans, especially in the Amazon—the world’s most biodiverse tropical forest and one of the largest carbon sinks—and in the Orinoquia (eastern plains) and Pacific regions.

This report aims to provide evidence-based analysis, current data, and the perspectives of diverse experts. We hope that by allowing the stakeholders in Colombia’s peacebuilding process to anticipate environmental risks and plan appropriate mitigation actions the post-conflict period will provide an opportunity to strengthen environmental protection and make sustainable development the foundation for social and economic conditions that lead to a lasting peace.

In this document, the author assesses the environmental impact of the armed conflict in Colombia, analyzes potential environmental risks in former conflict zones resulting from the implementation of the peace accords, and identifies the institutional, economic, and policymaking challenges to mitigating those risks. Finally, the report provides recommendations to foster environmental conservation while supporting Colombia’s economic development goals.

The report is based on the contributions of participants at a working group meeting organized by the Inter-American Dialogue in Bogotá on August 18, 2016, as well as interviews with meeting participants and other experts. The meeting brought together representatives of environmental organizations and government institutions such as the Post-Conflict, Human Rights, and Security Ministry; the Colombian Agency for Reintegration; the Ministry of Environment and Sustainable Development; the National Planning Department; and the Ministry of Agriculture and Rural Development, as well as business leaders from the agriculture, oil, infrastructure, and mining sectors. We thank all of them for their valuable contributions to that discussion. We are also grateful to Rodrigo Botero, director of the Fundación para la Conservación y el Desarrollo Sostenible, Hernando José Gómez, former director of the National Planning Department, Carlos Herrera, vice-president for sustainable development at the Asociación Nacional de Empresarios de Colombia, and Carolina Gil, director of Amazon Conservation Team, for their comments on this report.

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## A Message from the Gordon and Betty Moore Foundation

The majority of the Colombian Amazon is currently protected by some form of sustainable use and conservation. These protected lands are distributed among three large blocks: indigenous territories, national parks, and forest reserves. For several years, the Gordon and Betty Moore Foundation has supported Colombian public and civil society organizations in creating and strengthening protected areas, and in the integrated management of indigenous territories in the Amazon. As observers of how conservation and sustainable development in Colombia has evolved, we view positively peace agreement discussions that would finally end Latin America's last armed conflict, which has lasted for more than 50 years.

Peace also has implications for access to and use of Colombia's natural resources, and could put at risk important achievements such as the Special Management Regime and the Indigenous Territorial Entities. This is precisely the time, therefore, for the country to prepare for post-conflict conditions with more equitable land distribution that can foster sustainable and lasting development.

The Gordon and Betty Moore Foundation is pleased to contribute to this discussion and collective construction, and hopes that this report can add to Colombia's efforts to continue forging partnerships for peace. We are grateful to our partners and the Inter-American Dialogue for their work and willingness to share their opinions to find common goals that move us all forward.

Paulina Arroyo  
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## Introduction

Armed conflict and the environment are deeply intertwined in Colombia—the war has determined how land has been defined, occupied, and utilized. Given the weak state presence in conflict zones, land occupation has often been spontaneous and unplanned. Mass displacement of populations—Colombia has the world’s second highest level of internal migration after Syria—has extended the agricultural frontier and led to the creation of “poverty belts” in major cities. Displacement has sparked conflict and allowed armed groups to gain control over large swathes of the national territory, including many areas of vast natural wealth.

Ecosystems such as the Amazon, the Andes mountain range, and the eastern plains region make Colombia one of the planet’s most biodiverse countries,<sup>1</sup> rich in water sources and productive soil. But during the conflict, natural resources like soil, water, and forests became spoils of war that generated revenue through legal and illegal businesses, in turn nourishing the growth of armed groups. The absence of the state provided fertile ground for armed groups to impose their authority and for illicit economies, such as coca, illegal mining, logging, and wildlife trafficking, to flourish. This pattern has led to a vicious cycle whereby armed groups’ territorial control prevented the effective presence of the state and the provision of basic services such as education, health care, sanitation, roads, and justice. As a result, the country’s fractured geography parallels its fractured sovereignty.

Often, the areas in which the conflict has been most intense are also home to a significant share of the country’s natural resources (see Figure 1).<sup>2</sup> Of the 125 municipalities that require special attention in the post-conflict context, 90 percent have some type of environmental restriction, according to the United Nations Development Program.<sup>3</sup> The organization found that 41 of the 47 municipalities classified as “high priority” for attention because of the conflict’s impact are home to national parks or forest reserves, and in eight of the “priority” municipalities the entire area is regulated by some form of protection.<sup>4</sup>

The overlap of conflict zones with important, and often fragile, ecosystems has had two opposing outcomes. On one hand, armed groups, mainly through illicit economic activities, have caused severe environmental damage. However, on the other hand, the presence of armed groups has in some cases inadvertently fostered the

conservation of areas that remain beyond the reach of legal economic development projects.

But now, Colombia is turning a page in its history of armed conflict. After more than half a century of confrontation and almost five years of negotiations in Havana, on November 24, 2016, the government of Juan Manuel Santos signed a peace agreement with the FARC, Latin America’s largest and oldest guerrilla movement.<sup>5</sup> The agreement, more than a simple disarmament accord, proposes a profound transformation of the political and social organization in former conflict zones. Its ultimate aim is to integrate all territories within the country under one national policy framework and restore the state’s legitimate monopoly over the use of force.<sup>6</sup> Implementing the peace agreement will require enacting major rural reforms, fighting illicit economies, especially drug trafficking, and creating a democratic opening that allows marginalized sectors of rural, indigenous, and Afro-Colombian communities to participate in the political process while facilitating the economic reintegration of former combatants.

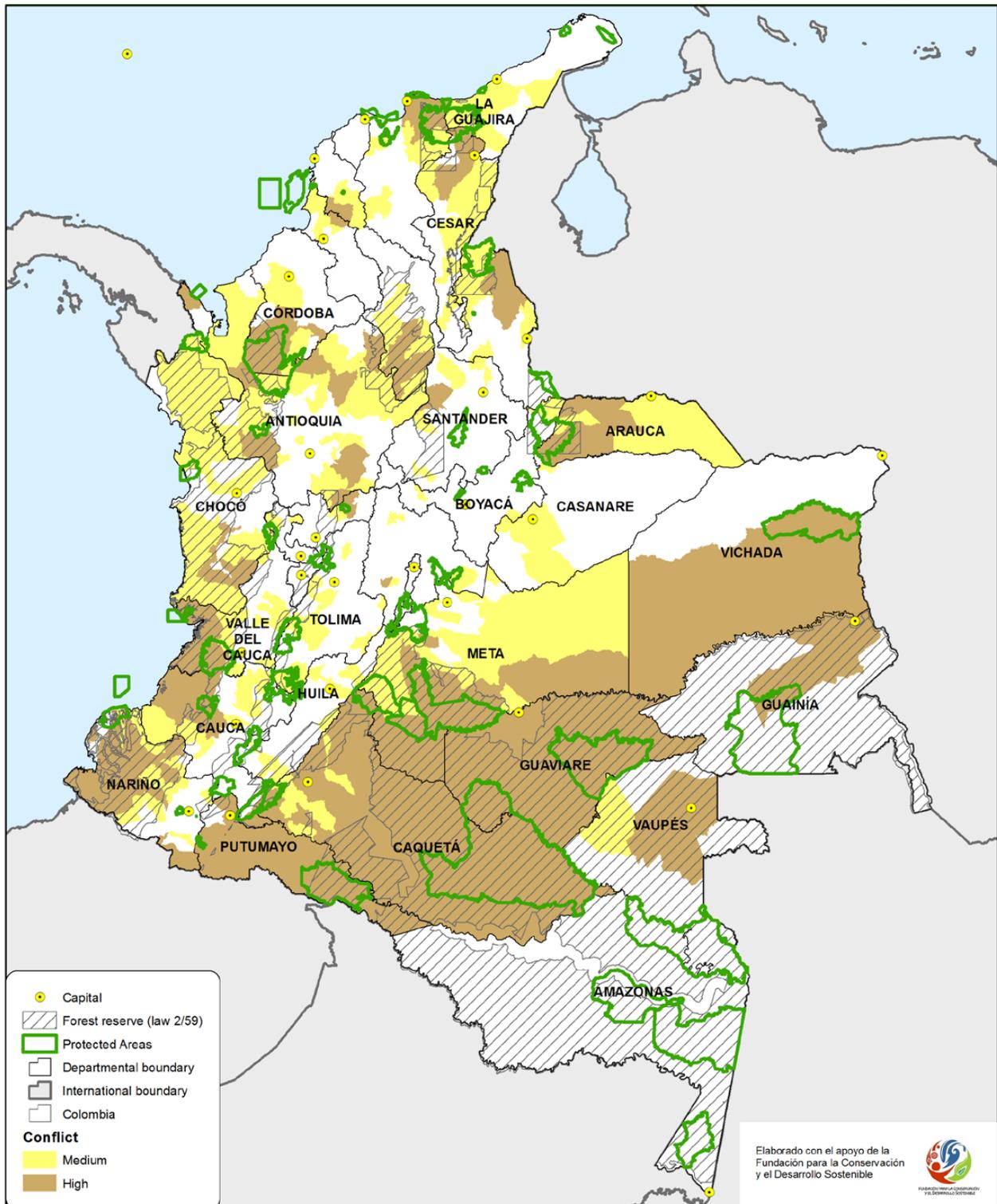
This represents an unprecedented opportunity for sustainable rural development in Colombia. The agreement creates an opening to introduce environmental criteria into the planning and design of new land use policies—which are also political, social, and economic policies.

Despite this opportunity, there is a risk that the end of the armed conflict, though crucial for Colombia’s future, will trigger further plundering of natural resources. The withdrawal of the FARC’s armed authority suggests that

**41 of the 47 municipalities classified as “high priority” for attention because of the conflict’s impact are home to national parks or forest reserves.**

**FIGURE 1: LEVEL OF CONFLICT BY MUNICIPALITY IN COLOMBIA, PROTECTED AREAS, AND FOREST RESERVES, 2015**

Source: Prepared by the Fundación para la Conservación y el Desarrollo Sostenible, Bogotá, D.C., Colombia, with data from the National Planning Department–Special Projects Group 2015, presented in the National Development Plan, 2014–2018.



some of the drivers of environmental degradation will be removed. At the same time, however, the constraint that kept many areas inaccessible will be lifted, opening the way for new populations to settle former conflict zones and for infrastructure and legal industries such as agriculture, cattle ranching, mining, and oil exploration to expand into environmentally sensitive areas. These changes could lead to increased deforestation and water shortages if economic development plans are not carefully crafted.

Implementing effective sustainable development policies is critical to ensure that peace is stable and lasting. The environment often provides an important source of livelihood and well-being for the population and its degradation could threaten social and economic stability. For example, soil degradation caused by logging could undermine food security, while water pollution from mercury and other toxins used in illegal mining could spur social conflicts and new migrant flows. At the same time, economic development and the revenues derived from expanding economic activity are essential to sustaining social programs and meeting the spending needs that arise in the post-conflict context.

The government will thus have to strike a balance between sometimes opposing interests and decide how to prioritize competing demands for land resources for land restitution, economic activities, and environmentally protected areas. It must provide land to rural landless populations and restore land to those from whom it was taken, give titles to people informally occupying land that can show their possession of it is legitimate, and protect the private property of legal landholders. Meanwhile, the government will have to protect areas of great environmental value and the ancestral territories of indigenous and Afro-descendent peoples. Its challenge lies in harmonizing conservation policies with those on rural reform, reintegration of former combatants, and land restitution.

Environmental conservation in Colombia is also important at an international level. The country's ecosystems, such as the coral reefs of the Caribbean, the tropical forests of Darién and the Amazon, and the moorland system in the Andes, play a crucial role in mitigating the effects of climate change. With the world's eighth most extensive forest coverage, Colombia is an important carbon sink. The country committed to reducing greenhouse gas emissions by 20 percent by 2030 under the Paris Accord, signed in December 2015 at the global conference on

climate change (COP21), and must tackle deforestation and emissions from land use in order to achieve this target. Indeed, close to half of the 178.3 million tons of CO<sub>2</sub> equivalent Colombia emitted in 2012 were related to agriculture and land use, especially the conversion of woodland into pasture (see Figure 2).<sup>7</sup>

To achieve its goals for post-conflict development and environmental protection, the government must confront various institutional and financial challenges. It will have to formally recognize and make use of the environmental institutions already active on the ground (sometimes informally but effectively) and prioritize areas where the environmental risks associated with post-conflict conditions are most severe. "Land use plans," a legal requirement of local planning in Colombia, are a potentially valuable tool. However, at present, few municipalities actually prepare land use plans, and even fewer design them with a rural or environmental component. The government will have to foster more widespread citizen participation in designing these plans, so that they have greater legitimacy, are more likely to be complied with, and serve to strengthen local governance, especially in indigenous and Afro-descendent territories. The government must also invest resources in protecting environmental and social leaders, who often come under threat, and provide security guarantees that allow them to remain in their communities. The FARC's imminent withdrawal from many areas, moreover, means these actions must be swift and timely.

On the economic side, challenges include securing more resources to finance new government policies amid a

**Close to half of the 178.3 million tons of CO<sub>2</sub> equivalent Colombia emitted in 2012 were related to agriculture and land use, especially the conversion of woodland into pasture.**

domestic fiscal deficit and dwindling donor resources. As a result, the government will have to prioritize spending, reallocate resources more efficiently (for example, reallocate the state's subsidy system), and find new sources of financing (through the tax exemptions regime, for instance). Colombia could also further develop "green" taxes or other financial instruments along the lines of the "payments for environmental services" model. Moreover, the government will have to attract resources from international donor funds for climate change mitigation and adaptation and link them to post-conflict development needs, especially those with an environmental component.

To overcome these challenges, this report recommends a series of steps, covering five broad policy areas:

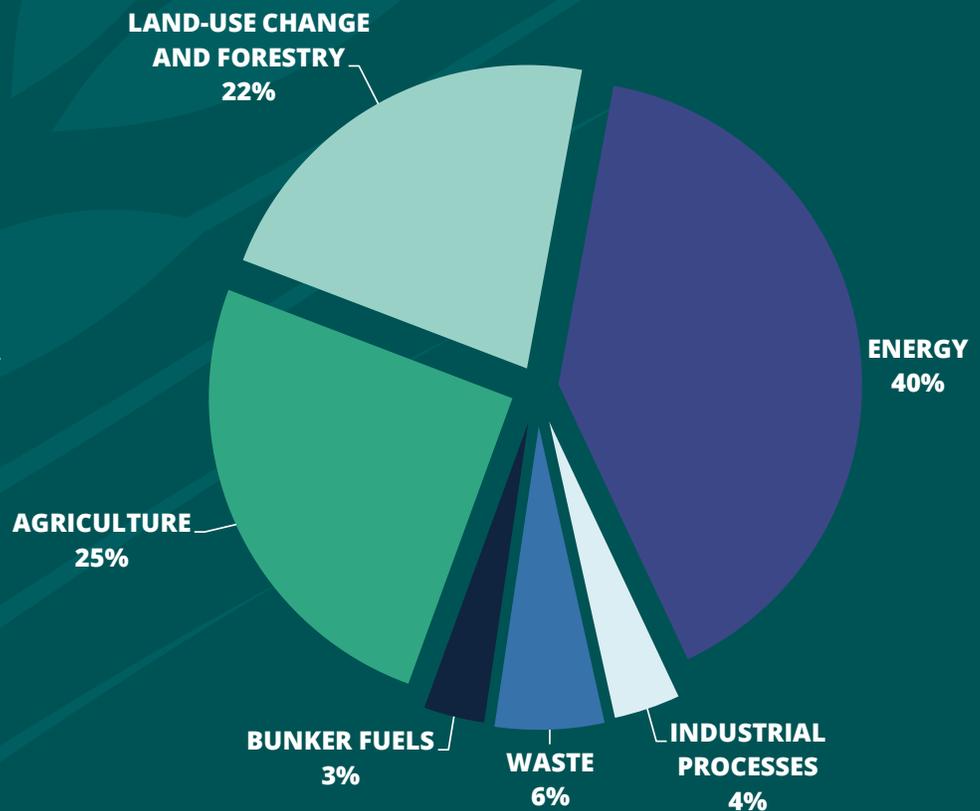
- Improve the quality of information available for decision-making, especially with regards to land use planning, and incorporate environmental considerations into planning instruments.
- Redirect resources, both financial and human, to ensure environmental protection during the post-conflict period; simplify decision-making structures

at the central government level and improve their links with municipal level entities.

- Strengthen local authorities and foster local participation in environmental management, especially for indigenous and Afro-Colombian communities that inhabit much of the country's forested areas.
- Define geographic boundaries for priority areas and preserve them under a conservation category such as national parks or forest reserves to safeguard them against certain economic activities. Limit agricultural expansion and promote land use reconversion so that land is employed for its most productive use and is exploited more efficiently.
- Promote sustainable economic development initiatives, such as green markets linked to forest conservation, as an income source for remote communities and former combatants.

**FIGURE 2: GREENHOUSE GAS EMISSIONS (MTCO<sub>2</sub>E) BY SECTOR IN COLOMBIA, 2012**

Source: World Resources Institute (2016). CAIT Climate Data Explorer.



## The environmental costs of the armed conflict

One of the main environmental consequences of the conflict has been deforestation, the first link in a chain of negative effects that includes loss of biodiversity, soil degradation, and an increase in greenhouse gas emissions. Various factors contribute to deforestation, including displacement, coca cultivation, and criminal mining; the latter two have also served as a source of financing for insurgent groups. These illicit economies, in turn, have caused toxic spills that have contaminated soil and water sources. Turning coca leaves into cocaine requires the intensive use of chemicals, while gold miners use mercury and cyanide. Moreover, attacks on oil infrastructure, especially pipelines, caused the spillage of thousands of barrels of crude oil. The National Planning Department has calculated that under an optimistic scenario, the country will save 7.1 trillion pesos (US\$2.4 billion) in conflict-related environmental degradation costs for every year of peace.<sup>8</sup>

### DEFORESTATION

About 124,000 hectares were deforested in Colombia in 2015. According to the government, the main causes were illegal mining, illicit crops, illegal logging, and forest fires. In many cases illegal logging is linked to the conversion of forest into pasture for livestock.<sup>9</sup>

Almost half of this deforested area was concentrated in the Amazon region, followed by the Andean region with 24 percent. The Amazonian Department of Caquetá suffered the most extensive deforestation, accounting for 19 percent of the national total. In Caquetá, the leading drivers of deforestation are land conversion for livestock farming and illegal logging.<sup>10</sup> Deforestation in Colombia's National Park System totaled 5,694 hectares in 2015, 4.6 percent of the national total and an increase compared to the previous year.<sup>11</sup>

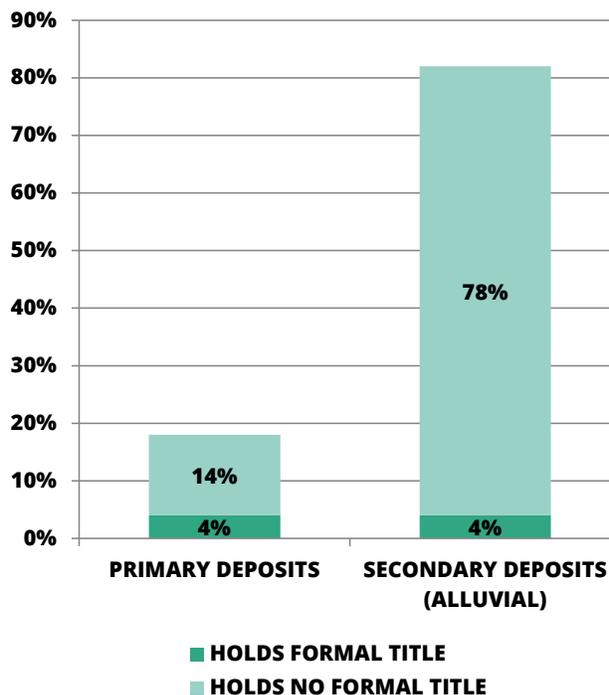
The war has been one of the drivers of deforestation in Colombia. Some 85 percent of the early deforestation warnings<sup>12</sup> reported in the second half of 2015 were in conflict zones.<sup>13</sup> The armed activity of illegal groups usually leads to population displacement, land seizures, and the establishment of illegal economies such as illicit crops and informal mining, as well as legal activities such as livestock farming, large-scale monoculture, and formal mining.<sup>14</sup>

The effects of illegal mining and coca cultivation vary by region. By 2014, some 78,939 hectares of Colombian territory showed signs of alluvial gold extraction—which leaves a footprint on the vegetation cover—across 17 of the country's 32 departments. Almost half of the territory affected by this type of mining is in the Chocó Department, one of the world's most biodiverse areas, where the 36,000 hectares impacted include 24,000 hectares of high-value ecosystems, especially tropical forest.<sup>15</sup> This kind of gold mining has been recorded in five national parks, and in nine others it is taking place in nearby areas or buffer zones.<sup>16</sup>

A substantial share of informal gold mining takes place in special territories such as indigenous reserves and community councils, a category of communal property for the Afro-descendent population. The community councils have been the most affected, with 46 percent of alluvial gold extraction taking place in those areas, according to government estimates. These estimates do not include another kind of gold extraction involving dredging riverbeds, which is almost impossible to measure. Extraction through dredging is the most

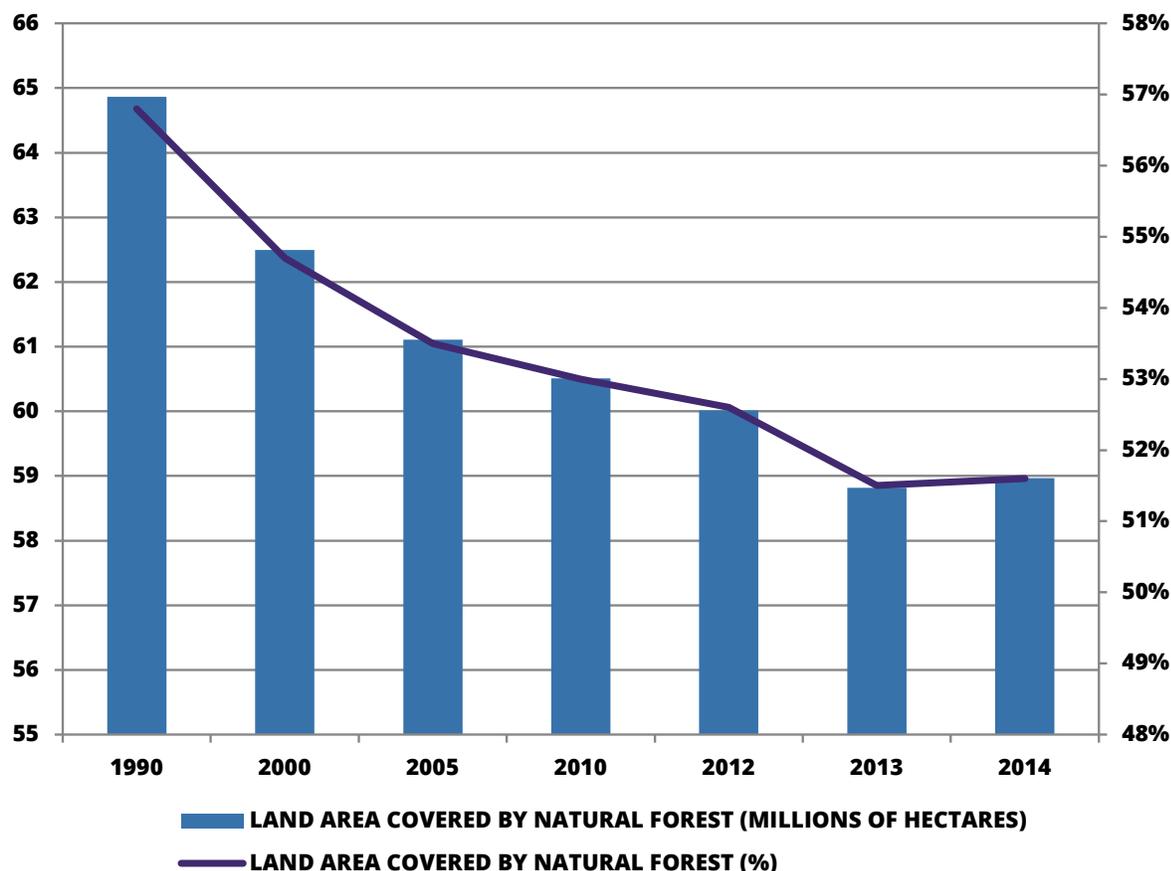
**FIGURE 3: DISTRIBUTION OF TITLES ACCORDING TO COLOMBIA'S GOLD MINING SURVEY**

Source: Oficina de las Naciones Unidas contra la Droga y el Delito and Sistema de Información Minero Colombiano (2016). The mining survey was conducted in 2010 and 2011 by Colombia's Ministry of Mines and Energy.



**FIGURE 4: SURFACE AREA COVERED BY NATURAL FOREST IN COLOMBIA, 1990–2014**

Source: Instituto de Hidrología, Meteorología y Estudios Ambientales (2015). Ecosystems and Environmental Studies Department. Forests Working Group 2015. Forest Carbon Monitoring Project. Bogotá, D.C., Colombia.



widespread form of extraction in Amazonian indigenous reserves, particularly in the Medio Caquetá area<sup>17</sup> and the Putumayo and Inírida rivers.<sup>18</sup>

Coca cultivation is another driver of deforestation. Coca plantings grew from 69,000 hectares in 2014 to 96,000 in 2015, a 39 percent increase, according to UN data obtained from satellite monitoring (see Figure 5).<sup>19</sup> Most of the increase was recorded in areas already under coca cultivation in 2014. The satellite analysis also shows an increase in plantings in areas such as the Yarí savanna, between the Meta and Caquetá departments, in the north of the Cauca Department, on the border with Panama, in Catatumbo, and to the south of the El Tuparro National Park in the Vichada Department. In the Serranía de Chiribiquete National Park in Caquetá, along the Tacunema river, the distance between coca crops and the park border shrunk from 13 km to 10 km from 2012 to 2015.

Using a different methodology, the Ministry of National Defense found that 20 percent of the total illicit plantings detected as of October 2015 are in forest reserves, 8 percent in national parks, 11 percent in indigenous reserves, 15 percent in collective properties of Afro-descendent communities, and 12 percent in border areas.<sup>20</sup>

### POLLUTION FROM TOXIC SPILLS

The war has also been a driver of soil and water pollution. Some of the illegal economies linked to armed groups require intensive use of dangerous chemicals that are disposed of irresponsibly, impacting ecosystems and populations.

The clearest case is the transformation of coca leaf into cocaine, an industry in which Colombia is the world’s leading producer. Since most of the processing laboratories are close to the coca fields and generally

in forested areas, a large share of these chemical compounds end up polluting soil and water sources.<sup>21</sup> To reduce the area under cultivation, the government sprays coca crops with glyphosate, a powerful herbicide. It is estimated that between 1994 and 2014, more than 1.75 million hectares were sprayed with glyphosate, sparking a heated dispute about the health effects on people living in these areas and the residual effects on water sources. The government suspended aerial spraying with glyphosate in October 2015, but it is still being used in ground spraying programs.

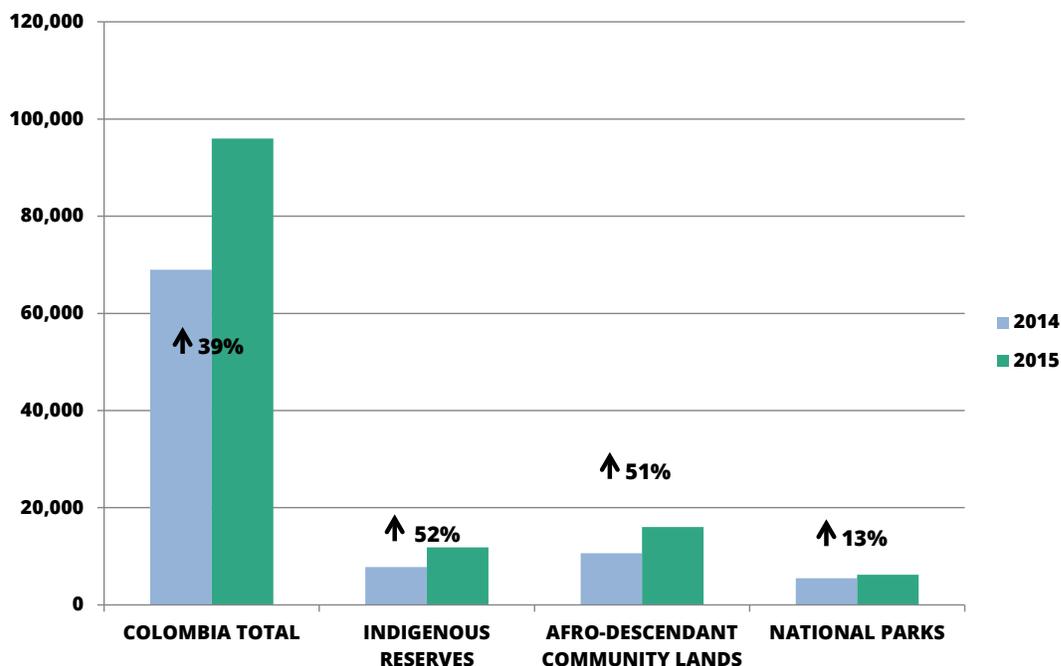
Illegal and informal gold mining is the primary source of water pollution because of mercury dumping. The industry has experienced sprawling growth in conflict zones, especially in Chocó and Antioquia. According to a survey conducted by the Ministry of Mines and Energy in 2011, 63 percent of gold mining operations have no legal concession or title.<sup>22</sup> Many armed groups, including guerrillas and criminal gangs, use mining as a source of income.<sup>23</sup> In 2015, the government launched an operation against 63 illegal FARC-controlled mines in four departments in the east of the country, including parts of Amazonas. Despite these efforts, illegal mining continues to be a widespread practice.

Colombia, which each year releases some 205 metric tons of the 590 metric tons of mercury that it imports, ranks third in the world for mercury pollution according to a report from the United Nations Industrial Development Organization (UNIDO), which reveals alarming levels of water, ground, and air pollution.<sup>24</sup> In 2014, Colombia's Office of Environmental Oversight sent a warning message to the environment ministry after detecting mercury pollution related to illegal gold mining affecting at least 80 municipalities in 17 departments. Antioquia, the most affected area, has one of the world's highest per capita rates of mercury pollution.<sup>25</sup>

Attacks on infrastructure have been adopted as a tactic of war by armed groups, especially the National Liberation Army (ELN) and the FARC, with dire environmental consequences. Colombia estimates that between 1985 and 2016, conflict-related attacks on oil infrastructure led to the spillage of 4.1 million barrels of crude into soil and rivers.<sup>26</sup> This is 16 times the amount of crude spilled in the Exxon Valdez accident in Alaska in 1989. In June 2015, in one of their final armed actions, FARC guerrillas bombed the trans-Andean oil pipeline in the Department of Nariño, causing a 10,000 barrel oil spill and leaving 160,000 people without access to water.<sup>27</sup> The government described the attack and its environmental consequences as the worst in a decade.

**FIGURE 5: COCA CULTIVATION IN COLOMBIA, 2014-2015 (HECTARES)**

Source: Oficina de las Naciones Unidas contra la Droga y el Delito y Ministerio de Justicia y del Derecho (2016). "Colombia: monitoreo de territorios afectados por cultivos ilícitos en 2015". Bogotá.



## Environmental risk factors related to the post-conflict period

While the war had negative environmental impacts, it also allowed for the conservation of vast areas that were blocked not only from state intervention but also from industry activity, infrastructure development, and human settlements. Such conservation was sometimes accidental, resulting from restricted access to areas under guerrilla control, as in the case of the Sumapaz moorland on the outskirts of Bogotá. In other cases it was a deliberate act, whereby armed groups sought political legitimacy by regulating social life and economic cycles. In some areas, especially where the economy is based on the exploitation of natural resources, armed groups imposed restrictions on hunting or fishing, or even penalized logging, the diversion of water sources, and trading in wildlife. This type of environmental regulation by armed groups occurred in the Amazon regions bordering Peru and Brazil, and there are reports of similar restrictions in the Guaviare and Duda river areas in Meta.

In some areas armed groups also protected forests and other ecosystems to the extent that they were useful in establishing corridors for mobility, clandestine outposts, and a general military advantage in guerrilla warfare. This defensive attitude partly explains the massive use of antipersonnel mines in these territories.<sup>28</sup>

In the coming months and years, the integration of conflict zones into the formal economy will require developing new economic sectors in areas made inaccessible by the war. The government will have to build national and local institutional capacity to plan and

establish rules of the game that foster economic growth and employment but also protect fragile ecosystems. The main sources of potential environmental risks in the post-conflict era will be conflicts over land use and occupation, the expansion of economic activity, and the reintegration of former combatants, as outlined in the following sections.

### CONFLICT OVER LAND USE AND OCCUPATION

Any post-conflict scenario in Colombia must consider the issue of land distribution as an element of social stability and an opportunity to develop the countryside, which has historically lagged behind urban areas. This was one of the guerrillas' top demands and is among the core aspects of the peace negotiations with the FARC.

Colombia's countryside has very high rates of poverty and unequal land ownership, which many researchers consider both a cause and a consequence of the conflict. Some 44.7 percent of people in the countryside live in poverty.<sup>29</sup> Colombia has one of the world's highest rates of inequality in land ownership, with a Gini coefficient of 0.85 (a coefficient of 1 would mean that all land belonged to one person). Some 77 percent of land is in the hands of 13 percent of landowners.<sup>30</sup>

Land concentration is often due to the lack of economic opportunities in rural areas or forced displacement by armed groups. The conflict has displaced more than 6 million people,<sup>31</sup> many of whom have migrated to the shantytowns of large cities or settled new land, extending the agricultural frontier, sometimes in protected areas. Many have joined illicit economies, such as informal mining, coca cultivation, and logging. Displacement has also had a negative environmental impact, since it leads to spontaneous settlements that hinder land use planning.

More than half of displaced rural dwellers have access to land, but only a third have formal land titles. Many indigenous and Afro-Colombian communities also lack formal titles, or their property boundaries are not clearly defined. This uncertainty is one reason why many displaced people do not want to return.<sup>32</sup> The lack of titles has also facilitated land seizures by non-owners. Though it is impossible to provide a precise figure for the number of hectares abandoned or lost to seizures because of displacement, some estimates put it at about 5.5 million.<sup>33</sup>

**The government will have to foster economic growth and employment while also protecting fragile ecosystems.**

**FIGURE 6: USES OF COLOMBIAN LAND, CURRENT USE COMPARED TO MOST PRODUCTIVE USE, 2012**

Source: Unidad de Planificación Rural Agropecuaria et al., 2012.

| LAND USE    | MOST PRODUCTIVE USE<br>(MILLIONS OF HECTARES) | CURRENT USE<br>(MILLIONS OF HECTARES) |
|-------------|---|---------------------------------------|
| Agriculture | 15  | 6                                     |
| Forestry    | 4   | 0.45                                  |
| Livestock   | 8   | 38                                    |

Efforts to legalize ownership and provide titles, coupled with the return of displaced people and others in connection with the Land Restitution Law of 2011, suggest that there will be greater pressure on certain territories and environmental assets.<sup>34</sup> This could result in an increase in deforestation in new settlement areas, especially those that overlap with rural road building programs. In already deforested areas, pressure will arise from the possible degradation of poor or overexploited soil.

One of the main challenges in the post-conflict period is to reorganize territories in a way that provides more equitable access to land while ensuring secure property rights. This requires clearly defining land ownership while also establishing acceptable uses for various lands and priority areas for conservation. During this process, the government will have to satisfy the sometimes conflicting interests of different sectors. The state must provide land to rural landless populations, restore land to those from whom it was taken, and give formal titles to groups occupying land if they can demonstrate that their possession is legitimate. It must also protect the property of legal landholders, some of which are large owners. At the same time, the government will have to protect areas of great environmental value and the ancestral lands of indigenous and Afro-descendent communities. The latter areas are extensive and often sparsely populated. If they are not clearly demarcated they could be vulnerable to illegal occupations that spur new conflicts.

Colombia has an abundance of land with productive potential. According to data from the agriculture ministry's Rural Agricultural Planning Unit, Colombia has 12 million hectares that can be used for agriculture, of which half are under cultivation.<sup>35</sup> Putting this land to productive use will help alleviate pressure to settle new areas or encroach on forest reserves. However, there is a risk that these unexploited lands will be used improperly, imposing a huge environmental cost. For example, about 38 million hectares in Colombia are used for livestock, even though only 8 million hectares are suitable for pasture (see Figure 6). Extensive livestock farming is a significant cause of soil degradation, deforestation, and greenhouse gas emissions.

The government must resolve disparities between the current land use and most productive land use. Tackling this issue will enable the area devoted to agricultural crops and forestry production to flourish without having to extend the current agricultural frontier. Effectively resolving these disparities will also contribute to the government's goal to curb deforestation in order to meet its domestic policy targets and comply with its international commitments, especially the 20 percent reduction in CO2 emissions by 2020 agreed to under COP21.

To reconcile these two demands—conserving valuable ecosystems and distributing fertile land—the government urgently needs access to basic decision-making tools. One important tool is an updated land survey that shows a catalogue of all land, who owns the land, and its current versus most productive use, whether for production

or conservation. In 2015 the government began a “multipurpose land survey” that will provide an inventory of the country’s uncultivated lands. The government estimates that it will take until 2023 to implement the use of this new survey throughout the national territory.<sup>36</sup>

The greatest scarcity of information on land concerns precisely those areas hardest hit by the war. Eighty percent of the 187 most affected municipalities identified in the government’s Armed Conflict Impact Index<sup>3738</sup> lack basic information needed to determine land ownership, land use, and potential pathways to environmentally sustainable development.<sup>39</sup>

The creation of a land bank to meet the conflict victims’ land restitution expectations will be a crucial component of the post-conflict rural reform plans that the government is considering, especially for victims whose lands were dispossessed. How much land will be needed for this land bank has not yet been determined. There are already some territories available for the land bank, including uncultivated public land, land where ownership is being terminated, or unproductive land that can be expropriated. However, acquiring territory for the land bank will likely lead to conflicts, as some of these lands are illegally occupied or subject to environmental restrictions.

Lands that were declared forest reserves under a 1959 land law, many of which are today illegally occupied, will also likely be a source of conflict. The government must choose between removing these inhabitants from the protected areas, giving them a land title, and finding other alternatives, since it is not feasible to expel all of them. For now, the environment ministry is considering

titling some land in reserve areas and setting limits on its use and occupation so that it can be used for low-impact agricultural activities.<sup>40</sup>

Another challenge is the occupation of areas in national parks. At the moment, there are disputes over land tenure in 37 of 59 of Colombia’s parks. An internal national park service document recorded 1,447 families and 4,476 individuals who live in and engage in economic activities in protected areas.<sup>41</sup> This situation presents many challenges for the national park system: the boundaries of these areas are not well demarcated; there is a lack of resources for authorities to protect them; and the overlap of protected areas with indigenous reserves or community council lands sometimes gives rise to inconsistencies or uncertainty about their occupation.

### ARRIVAL OF NEW ECONOMIC ACTORS

The end to the armed conflict opens the way for the development of new industrial and infrastructure projects across the country. However, a successful transition from conflict to development will require the state to strengthen relevant institutions, employ well-coordinated public policy, and consider the long-term implications of policy options.

At present, the state’s weakness in regulating economic activity—both legal and illegal—poses several risks. There is the danger, for example, that some actors—criminal gangs, dissident factions of the FARC, or groups such as the ELN—will dominate areas where illegal coca cultivation, mining, or logging are prominent. There is also the risk that legitimate economic activities might be undertaken in conflict-affected areas in a disorganized way, and at the expense of ecosystems and environmental services. The private sector is often more nimble than the state in exploiting new on-the-ground realities, impeding the government’s ability to regulate activity, and ensuring sustainable development.

The Orinoquia is one region in which government and corporate interests have converged in recent years. Development planning for the resource-rich region has been underway for nearly a decade, following the demobilization of paramilitary groups there and the strategic withdrawal of the guerrillas as a result of then-President Álvaro Uribe’s “Patriot Plan.” The vast region of floodplain savanna between the Amazon and the Andean region is often presented as the country’s last agricultural frontier, with the potential to serve as a source of food not only for Colombia but for the whole of Latin America.

**An internal national park service document recorded 1,447 families and 4,476 individuals who live in and engage in economic activities in protected areas.**

# 80 percent of the 187 most affected municipalities identified in the government's Armed Conflict Impact Index lack basic information needed to determine land ownership, land use, and potential pathways to environmentally sustainable development.

The Colombian government has envisaged a large-scale rural development model for the region, opening up an opportunity for agro-industrial projects. This involves plans to make the Meta River navigable, open roads for cargo transport, and set up electricity interconnection networks. The region has also received significant investment, including some encouraged by government subsidies, to develop forest plantations and industrial crops of rice and palm oil, which require large areas of land and are water-intensive. The plans underway devote 10 million hectares of the region to agriculture and also assign portions of land for hydrocarbon exploitation.<sup>42</sup>

Yet, several studies have warned that the economic development plans for this region disregard environmental conditions, such as periods of heavy rains followed by long droughts and the presence of ancestral communities and indigenous reserves. There have been reports of disputes over access to water and damage to crucial ecosystems such as moriche groves, which regulate the region's water cycle.<sup>43</sup> Some experts have pointed out that plans for the region do not take into account its interconnectedness with the Amazon ecosystem or its key role in regulating the water cycle and mitigating the effects of climate change.<sup>44</sup>

In some cases development planning also encounters legal challenges. Some companies in the Orinoquia region have attempted to develop large portions of protected lands in recent years, often with government

backing. These plans challenge a 2012 ruling by the Constitutional Court<sup>45</sup> that safeguards the rights of peasants and small landowners to uncultivated land from the interests of large agro-industrial groups such as Cargill, Poligrow, Mónica Semillas, the Riopaila Castilla sugar firm Manuelita,<sup>46</sup> and others that, by means of fraudulent practices, amassed more land than allowed by law.<sup>47</sup>

Similar challenges could arise in other regions where the private sector and the government have an interest in economic development. For example, the National Hydrocarbons Agency has identified 23 sedimentary basins with exploitation potential in the conflict-affected regions of Catatumbo (Norte de Santander Department), Putumayo, Magdalena Medio (Antioquia Department), Pacífico, and Orinoquia.<sup>48</sup> A considerable stretch of land crossing the Casanare, Vichada, Guaviare, Caquetá, and Putumayo departments is available for exploration. However, some of the proposed blocks are adjacent to national parks and others are in indigenous reserve areas.<sup>49</sup>

Many requests for mining titles are also in areas of great environmental value, including in indigenous reserves in the Amazon. Although these applications cannot be issued without environmental permits, they indicate the mining sector's interest in gaining access to these territories.<sup>50</sup>

## REINTEGRATION OF COMBATANTS INTO NEW ECONOMIC SECTORS

Today, the FARC has about 5,800 armed combatants and likely a similar number of non-combatant supporters.<sup>51</sup> The ELN has about 1,500 armed combatants and some 5,000 non-combatant supporters. An end to conflict is only sustainable if the economic and social reintegration of these individuals is guaranteed.

Colombia has considerable experience with demobilization, disarmament, and reintegration, going back to the 1990s when the state embarked on peace negotiations with other insurgent groups. In all, Colombia has implemented programs to reintegrate about 49,000 former fighters emerging from various guerrilla forces and paramilitary groups. According to data from the Colombian Agency for Reintegration, the state has worked to reintegrate about 17,000 FARC fighters and a total of 59,000 demobilized persons since 2003.<sup>52</sup>

Colombia's experiences with reintegration thus far highlight some of the challenges that the government will likely face in the post-conflict period. Of the demobilized combatants managed by the Colombian Agency for

with the end of the conflict, more of these individuals will choose to remain in the countryside. The Colombian Reintegration Agency has noted that while many former combatants migrate to cities, they often express interest in returning to their places of origin, though most hope to avoid working as farmers.

However, providing sufficient legal work opportunities in rural areas is a considerable challenge. The regions hardest hit by the conflict, which require priority attention in the post-conflict period, have high rates of poverty.<sup>54</sup> Demobilized individuals in these areas who find no real prospect of economic reintegration are far more likely to participate in illicit economies such as illegal mining, wildlife trafficking, or logging. These businesses do not require skilled labor and they provide an income almost immediately. According to estimates by the Colombian Mining Association, small informal mining creates about 320,000 informal jobs (almost 2 percent of the national total) while large-scale mining provides about 35,000.<sup>55</sup>

One promising option is to generate work in rural areas that will also support environmental protection. Demobilized individuals are required by law to perform 80 hours of service in their communities. In the

## IN MANY CONFLICT-AFFECTED AREAS, ARMED GROUPS RATHER THAN THE GOVERNMENT HAVE REGULATED SOCIAL AND ECONOMIC ACTIVITIES, INCLUDING THE MANAGEMENT OF NATURAL RESOURCES.

Reintegration, almost half were recruited as minors and almost all are functionally illiterate. This makes finding legal employment opportunities for this population extremely challenging. It also limits the prospects for workforce integration in many sectors of the economy, especially in large cities.

Although the majority of demobilized combatants come from rural areas, 80 percent have historically chosen to migrate to cities.<sup>53</sup> This is due in part to a common belief that cities offer better economic prospects. Demobilized individuals also migrate for reasons of personal security. Many believe that they can start a new life and integrate more easily in cities than in the areas where they had operated as combatants. It is possible, however, that

Colombian Reintegration Agency's experience, such activities strengthen the fabric of the community, lessen the stigmatization of the demobilized, and provide reparations to victims and communities that suffered during the war. What is more, the agency claims that there is considerable interest in conservation work among former combatants—the second-most requested type of community service generally involves environmental recovery. The cultivation of industries such as tourism, forestry, growth of exotic plants and nurseries, or seed banks for reforestation projects can generate more jobs in rural areas. Brazil, for example, has created a significant seed market for reforestation in the Amazon which today supports many families previously employed as woodcutters.<sup>56</sup>

### TEXTBOX 1: DEMOBILIZED COMBATANTS DECONTAMINATING THE PAMPLONITA RIVER

In 2013, some 251 demobilized combatants worked to clean up and conserve the Pamplonita River, the main source of water for several municipalities in the Department of Norte de Santander, and of all the water consumed in Cúcuta, the department capital. The work lasted for five months and focused on 4.2 kilometers of the river across an area of Cúcuta marking the border between slum districts and a waterside avenue of established neighborhoods. The activities included collecting 7,500 sacks of garbage and debris, and planting 1,000 trees, including bamboo, urapo, and limonarios. Workers also discussed environmental awareness with public school children in the area and with people living along the river banks.

## Challenges for the government

To manage the post-conflict period effectively, the government must not only create new policies and institutions, but also implement many of the policies and regulations that already exist. To do so, it will need to reassign roles and ensure that institutions comply with their missions and management targets. In some cases, authority and resources are best transferred to local agencies, with coordination largely taking place at the central government level. The government must also ensure that any plans made and actions undertaken receive adequate financing. In the midst of a fiscal deficit and a likely decline in donor cooperation, this will require innovative tools and novel approaches.

### INSTITUTIONAL AND PUBLIC POLICY CHALLENGES

The primary institutional challenge for Colombia in the coming years will be the effective insertion of the state in areas where it has maintained only a limited presence or has been absent altogether. The post-conflict agenda presents immediate challenges and short implementation timeframes, and delay could imperil its success. It will therefore be critical to prioritize work in the most vulnerable parts of the country.

In many of these areas, armed groups rather than the government have regulated social and economic activities, including the management of natural resources. Armed authorities were sometimes responsible for expanding environmentally damaging economic activities, such as informal and criminal mining, extensive livestock

farming, logging, and illicit crops, especially coca. But in other cases, armed groups favored conservation by issuing handbooks on coexistence with nature or employing informal rules on land use that sometimes encouraged environmental protection. In some areas of the country the FARC published guides on conservation of the environment, borrowing from traditional agricultural management techniques. These included, for example, the establishment of environmental committees in rural settlements, partial preservation of forests, required permissions for clearance of woodlands on riverbanks, regulations for dead animal disposal, and fines for non-compliance with these rules.<sup>57</sup>

In other cases, institutional vacuums left space for communities themselves to engage in environmental rule-making. This was sometimes done in cooperation with environmental organizations that have worked in conflict zones for decades. For example, in 2010 the Council of Black Afro-Colombian Communities of the Tolo River Basin and Southern Coastal Zone in Acandí, Chocó worked with Colombian non-governmental organization Fondo Acción on a REDD+ project involving almost 14,000 hectares of tropical forest. In addition, the Nariño Mollusk Farmers Association in Tumaco received support from Colombia's Ministry of National Education and the World Wildlife Fund to adopt sustainable techniques for farming mollusks in the Pacific mangroves (see Textbox 3: Managing piangua farming in the Pacific). In its effort to address the needs of vulnerable regions, the state will have to assess the extent to which it can make use of existing formal and informal institutions and the conservation-minded policies already in place in some communities.

## TEXTBOX 2: PRIOR CONSULTATION: SUCCESSES AND CHALLENGES

The process of prior consultation was made obligatory in Colombia in an effort to mitigate land disputes and give indigenous and Afro-Colombian communities a means of participating in decision-making on infrastructure and extractive projects. Although the process has been a success in many cases, in others it has not protected the interests of local communities and has hindered investment projects. This is primarily due to the weakness or incapacity of local governments, competing interests among communities and businesses, or because intermediaries take advantage of the process for personal gain. In 2015, for example, the Constitutional Court ruled that the Canadian mining company Cosigo Frontier Mining Corporation be stripped of the title it held to 2,000 hectares of the Yaigojé Apaporis National Park in Amazonas. The court found evidence that company advocates had pressured the indigenous community during the consultation process in order to prevent the creation of the natural park on minable lands. The justices of the court ruled in favor of the park's establishment.<sup>63</sup>

Land use plans are among the most critical instruments for ensuring effective land management and environmental regulation at the local level. However these plans are lacking in many municipalities, or are simply not implemented. They are also out of date in 86 percent of the national territory, and only three percent of them address rural areas. "Basin organization and management plans," a lesser known instrument that applies specifically to river basins, are similarly limited. By 2015, only one percent of the country's hydrographic sub-areas had approved them.<sup>58</sup>

To improve public policy implementation in specific areas, the government has worked to encourage cooperation between regional representatives.<sup>59</sup> Examples include partnerships among several municipalities for the management of a shared watershed or for an ecotourism plan that involves an ecological subregion or a national park. These cooperative arrangements could make conservation and environmental management policies more coherent in the Amazon, in particular, which is administratively divided but environmentally integrated.

Enhanced cooperation between state and local authorities and among local organizations will require the recognition and further development of indigenous governments and traditional authorities, which are potential allies in environmental management in the post-conflict period. These communities reside in many of Colombia's most environmentally valuable areas. For example, in the Amazon's eastern departments—Amazonas, Vichada, and Guainía—

indigenous communities occupy 53 percent of the land and 60 percent of the forests.<sup>60</sup> The creation of indigenous territorial agencies was established in the 1991 constitution in an effort to recognize indigenous authority, but to date any law that would give shape to this kind of political-administrative body has not been enacted. At present, the country's Associations of Indigenous Traditional Authorities are the only bodies that engage in a considerable degree of self-governance. In general, the only state government figures controlling the budget in indigenous territories are the departmental governors. In these cases, the lack of counterweights creates incentives for administrative non-compliance and corruption.

The frequent overlap between national parks and indigenous reserves has forced the government to create a special management system that grants a certain degree of environmental authority to indigenous governors. In the Amazon, seven parks overlap with 25 indigenous reserves covering some 3.2 million hectares. The government has been reluctant to cede greater environmental control to indigenous authorities, however, despite the fact that in many cases these communities have proven effective guardians of the country's forests and rivers.<sup>61</sup> This mistrust is possibly the result of Colombia's historically centralized government or persistent cultural divides, but is also likely reflective of government concerns that these communities might be vulnerable to pressure from the private sector.

There are indeed several examples of indigenous authorities opening the way for illegal mining on their lands. This has been reported in some communities on the Caquetá, Apaporis, and Inírida rivers, as well as in Urabá. Resulting disputes have in some cases undermined leaders and eroded elders' authority over younger members.<sup>62</sup> These cases arise most often in neglected or marginalized communities, which are more vulnerable to illicit economies.

Development of a strong environmental institutional apparatus would likely ensure more effective regulation of Colombia's autonomous areas and better relations with indigenous and other traditional authorities. However, the National Environmental System, created in 1993, has been deteriorating. Among its core elements are the Regional Autonomous Corporations (CARs), which are intended to act as environmental authorities at the regional level. These CARs were created based on the locations of distinct ecosystems and not according to administrative borders. But press reports and warnings from official oversight organizations indicate the CARs are incapable of effective management, have lost their scientific and technical capacity, and have been co-opted by political clientelism.<sup>64</sup>

The weakness of environmental authorities is only one component of institutional fragility in conflict zones. The 187 municipalities hardest hit by the conflict, identified by the National Planning Department as priorities for post-conflict attention, also have the least local institutional capacity.<sup>65</sup> Of the municipalities in which the impact of the conflict was high or very high, 6.1 percent are performing especially poorly from an administrative standpoint.<sup>66</sup> According to the report, they have very limited administrative capacity, poor fiscal outcomes, and only rarely meet development targets. Moreover, 43 percent are rural municipalities that are detached from national markets, have a small share of national GDP, and feature non-specialized economies.<sup>67</sup>

The government aims to encourage greater citizen participation as a strategy to improve institutional capacity and make environmental policies more effective in these areas. This will depend, of course, on strong local leadership and safe spaces for community participation. In many conflict zones, however, social and environmental leaders have been murdered, intimidated, or displaced.<sup>68</sup> Greater social mobilization in the post-conflict period is expected to revitalize local governance and leadership. Colombia will nonetheless be tasked with protecting

environmental and other leaders and guaranteeing their right to affect local decision-making. In the 18 days following the end of the Havana negotiations on August 24, 2016, the Ombudsman's Office reported the murder of at least 13 local leaders in the Cesar, Antioquia, Nariño, and Cauca departments.<sup>69</sup> Most were environmentalists and opposed to activities such as illegal mining and the planting of illicit crops. Five were indigenous (Awá and Nasa) and one was Afro-Colombian. Between January and September 2016, the human rights organization Somos Defensores recorded the murder of 51 leaders throughout the country.<sup>70</sup>

The creation of new agencies and bureaucracies also presents a series of challenges for Colombia, which already maintains a complex bureaucratic system. Of particular concern is the lack of clearly defined responsibilities for newly generated agencies. For example, the government created the High Presidential Council for the Post-Conflict Period, which is expected to connect with the many other state agencies taking part in the process. However, it is still unclear whether the council will play a role in policy implementation, or how it will work with the Office of the High Commission for Peace, with which it shares responsibilities.

In addition to the council, since 2011 Colombia has also established the Land Restitution and Rural Agricultural Planning units, the National Land Agency, the Territorial Renewal Agency, and the Rural Development Agency, all of which report to the agriculture ministry. The government also established the Administrative Unit for Territorial Consolidation, which is responsible for the eradication of illicit crops among other tasks, and the Victim Assistance and Reparations Unit, both of which report to the president. Clear delineation of responsibility among these organizations will undoubtedly be an ongoing challenge for the government during the post-conflict period. Considerable overlap could prompt disputes not only among agencies, but also within communities targeted for support.

Yet another challenge will be to secure reliable information needed for decision-making. The war created informational black holes, partly because of the challenge of gathering data in war-torn areas, but also because conflict severed communication channels between the central and local levels. In other cases, the information exists, but has not been sufficiently gathered or systematized. This is often true of environmental information, which is only available through accounts of communities living in specific territories.

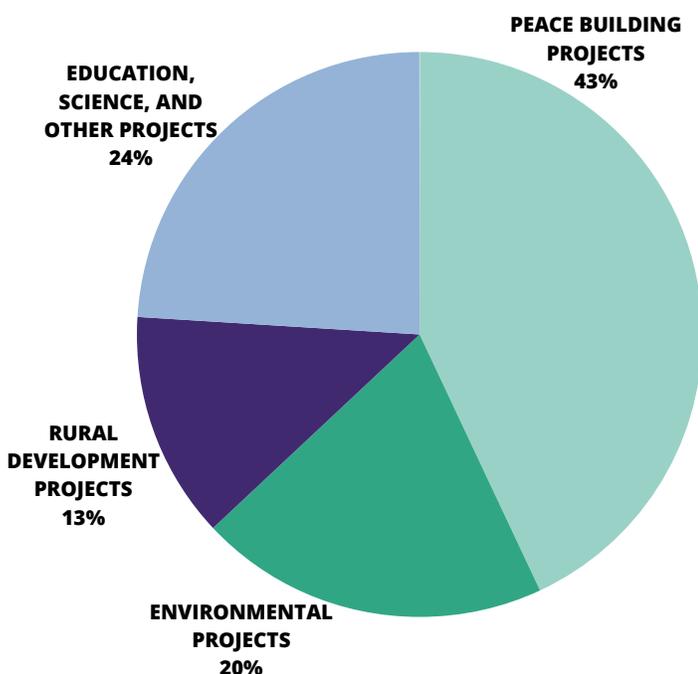
The government is therefore operating with deficient information in some cases, or may be entirely unaware of existing problems and making decisions on the basis of assumptions or intuition. Until the Third National Agricultural Survey in 2014, the state had been working with information that was 45 years old.<sup>71</sup> Until recently, Colombia also lacked a map indicating the precise boundaries of the country's 36 moorland systems, which are the main water sources for millions of people. Many industries, including gold and coal mining, as well as livestock and agriculture, are expanding into these areas. Sometimes, too, there is little clarity regarding the boundaries of national parks, forest reserves, and floodplain and wetland areas protected by the international Ramsar Agreement.<sup>72</sup> In addition, political-administrative problems arise such as collective titling in peasant settlements, indigenous reserves, or community councils.

### ECONOMIC AND FINANCIAL CHALLENGES

Colombia will have to deal with post-conflict conditions in the context of a domestic fiscal deficit and related spending cuts. This is largely due to the fall in the price of oil, the main source of revenue for the government.<sup>73</sup>

**FIGURE 7: INTERNATIONAL DONOR RESOURCES IN COLOMBIA, 2015**

Source: Presentation by the General Director of Colombia's Presidential Agency for International Cooperation, Alejandro Gamboa, at the roundtable meeting, "Environmental challenges of the post-conflict period in Colombia," organized by the Inter-American Dialogue in Bogotá. August 18, 2016. Figures from the Sistema de Información de la Ayuda Oficial al Desarrollo de Colombia.



Even compared with other Latin American countries at a similar level of development, Colombia's public spending on the environmental sector is very low. Public spending on environmental protection stood at 0.5 percent of total expenditure, while private spending for the same purpose amounted to one percent. In comparison, among the Organization for Economic Cooperation and Development member countries, public spending on the environment fluctuates between one percent and two percent of the total on average.<sup>74</sup> Additionally, Colombia has consistently cut its environmental budget in recent years. In 2012, the budget of the National Environmental System was a third of what it had been in 1998.<sup>75</sup>

There is also substantial disparity between public spending on environmental protection and spending geared to fostering the private sector. This disparity limits the prospect of attaining sustainable development, according to the Office of the Comptroller General.<sup>76</sup> The livestock sector is the second highest recipient of government subsidies after the coffee sector. Between 2010 and 2013, some 3.3 trillion pesos—400 billion pesos in direct support and 2.9 trillion in credits—supported livestock and dairy.<sup>77</sup> Tax exemptions are also available for agrochemical usage, despite their clear environmental cost. Colombia also has one of Latin America's highest rates of fertilizer use, which results in considerable nitrogen waste.<sup>78</sup> Low access costs and the use of irrigation districts limit incentives to use this resource efficiently.<sup>79</sup>

Although the signing of the peace agreement opens a window of opportunity for new sources of financing from international donors, this will likely be short-lived and targeted. The government estimates that donor cooperation could increase by 30 percent in the post-conflict period but could be maintained only through about 2020. The Presidential Agency for International Cooperation aims to secure US\$3.3 billion between 2016 and 2021.<sup>80</sup> But this level of fundraising will be challenging considering the likelihood of a global economic contraction in the coming years. An economic slowdown is especially likely in the European Union, which has been a steadfast ally for Colombia in conflict resolution, environmental management, and peace building.

International commitments to meet the targets for reducing CO2 emissions as part of COP21 could be another means of securing much-needed resources. Colombia, a country in which almost half the national

### TEXTBOX 3: COMMUNITY MANAGEMENT OF PIANGUA FARMING IN THE PACIFIC<sup>88</sup>

The piangua, a mollusk present in Colombia's Pacific region, is an important source of income for many coastal communities. It is estimated that more than 11,300 rural families in Colombia currently make a living from this resource. However, the piangua shows signs of depletion and is included on the Red List of Threatened Species in the "vulnerable" category. The collaborative work of some community councils and pianguera associations, such as the Nariño Mollusk Farmers Association in Tumaco, have made it possible to devise strategies for sustainable mollusk exploitation. For example, rules have been set on minimum size for collection, no-fishing areas, enclosures for natural restocking, and protection of mangroves—the coastal swamplands in which the mollusk grows and reproduces. These measures, which are based on decisions made by the very people who depend on the resource, are more effective than those imposed by fishery authorities who are unable to enforce them because of a lack of financial and human resources to visit and oversee remote and dispersed fishing areas.

territory is covered by forest, could link some of its plans for the conservation of biodiversity, tackling soil degradation, or combating deforestation with its post-conflict action plans. The Sustainable Colombia Fund, announced by the government at COP21, could potentially support this strategy. This 15-year fund, dubbed an "umbrella fund" by the government and supported by the Inter-American Development Bank, seeks to secure more than US\$600 million of a total of US\$1.9 billion during a first stage of fundraising, as well as to link some post-conflict policies to the United Nations Sustainable Development Goals.<sup>81</sup> The governments of Norway, the United Kingdom, and Ireland, for instance, will provide about US\$300 million to limit deforestation to 90,000 hectares a year by 2018 and reduce it to zero in the Colombian Amazon by 2020.<sup>82</sup>

The strategic combination of environmental and peace building initiatives would also make it possible to optimize international resources. In 2015, almost half of international funds (43 percent) were devoted to peace building projects, followed by environmental initiatives, which received 20 percent (see Figure 7). Of those funds devoted to the environment, most were focused on Amazon-based projects related to conservation and climate change mitigation.

At the local level, the National Federation of Departments estimates that in 2017 its budget will be cut by 1.2 trillion pesos despite an increase in responsibilities associated with the post-conflict period. Given current domestic

fiscal constraints, the government will have to tackle this situation by ensuring that municipalities manage their resources more responsibly and coherently, and by helping them to do so.

Despite the challenging economic situation, national and local governments have various instruments at their disposal to improve financing for the environment. For example, relative to other countries, Colombia makes very limited use of "green" taxes. Government revenues from environment-related taxes totaled only 0.7 percent of GDP and 3.7 percent of tax revenue in 2011.<sup>83</sup> The country could also broaden the use of payments for environmental services.<sup>84</sup> In some cases, Colombia employs instruments such as water tariffs, electricity sector transfers that account for the impact of hydroelectric and thermoelectric plants, and forest use fees<sup>85</sup> that confer little benefit. Not enough is collected from these instruments, and what is collected is not put to proper use.<sup>86</sup> The environment ministry has noted that almost half of the CARs do not actually impose forest use fees. According to the Office of the Comptroller General, the CARs Codechocó, Corpoamazonía, Corponariño, and Cormacarena collected 26.8 billion pesos in fees, but the resources were not always used for reforestation programs.<sup>87</sup> In terms of forest conservation payments, the lack of clarity regarding precisely who charges and pays forest use fees is a recurring constraint. The newest land survey will help resolve this issue.

# RECOMMENDATIONS

The peace agreement signed between the Colombian government and the FARC poses tremendous challenges but also offers a unique opportunity to make deep and lasting changes that allow Colombia to implement a variety of innovative and sustainable development models. The following recommendations aim to facilitate effective environmental and economic development policy-making in the post-conflict period.

## 1 Improve access to information and include environmental considerations in long-term planning

### IMPROVE AND ENSURE THE QUALITY OF LAND USE INFORMATION

In the coming years, it will be crucial to accelerate implementation of the new land survey and approve the statute that reforms the corresponding institutional framework. To do this, the government should consider centralizing all methodological oversight within the Agustín Codazzi Geographical Institute, which is responsible for the country's cartographic information. But data gathering should be decentralized through agreements with universities or other scientific centers, or with municipalities that demonstrate sufficient technical capacity. The Office of Registry and Public Instruments, a source of information on property ownership in Colombia, must be protected so that information is not removed or altered. One way of safeguarding this information is to use technologies that enable mirror backups, impose restrictions and privileges on users, and leave an electronic fingerprint enabling user identification. The fraudulent alteration of these documents should be regarded as a serious crime.

### LINK PLANS TO MITIGATE CLIMATE CHANGE WITH POST-CONFLICT PLANNING

Colombia should link some of its plans to mitigate climate change, conserve biodiversity, tackle soil degradation, and combat deforestation to its post-conflict action plans. This could optimize current investments and might also prove attractive to international donors.

## 2 Delineate protected areas

### **LIMIT AGRICULTURAL EXPANSION**

The relocation of displaced persons and land restitution activities during the post-conflict period must adhere to environmental restrictions. The Land Restitution Unit should avoid relocating vulnerable populations on unproductive and environmentally fragile land, lands that lack access to infrastructure or basic services, and those that are highly vulnerable to climate change, such as areas prone to landslides and flooding. Technical support should also be provided to returned populations to avoid increases in deforestation or other negative environmental impacts. The government should draw on successful projects such as the Middle Magdalena Peace and Development Program in which the development of farming management plans helped to conserve the forest and reverse deforestation. This support is even more effective if it encourages social and territorial organization among returnees. “Peasant Farmer Reserve Areas” are an option, as are for-profit associations that promote agricultural production while employing a joint ownership model. These schemes, used in palm oil projects in the Middle Magdalena region, could be extended to other crops, including agroforestry products.

### **CLEARLY DEMARCATÉ STRATEGIC ENVIRONMENTAL AREAS**

The government should establish authorized agricultural development areas using information from research centers such as the Humboldt Institute, the Sinchi Institute, and other private or academic institutions. It should clearly define habitable areas and those that must be protected because of their ecological value, as in the case of moorlands and wetlands. To that end it is crucial that the government demand that municipalities comply with land use plans, which include environmental and social safeguards. These plans should cover rural areas, which should be subject to sustainable development principles that include both environmental and economic factors.

## 3 Reallocate state resources

### **APPLY TAX INCENTIVES AND REASSIGN SUBSIDIES TO SUPPORT ENVIRONMENTAL POLICY**

The Finance and Public Credit Ministry should take advantage of the findings of the multipurpose rural-urban land survey to improve the collection of taxes on landownership. The ministry estimates that the new survey will produce additional revenues of 4.1 trillion pesos.

Part of that could be devoted to improving basic infrastructure for water, health care, education, and conservation in the countryside. The government should expand the range of green taxes on economic activities that have an environmental impact. In 2011, such taxes were equivalent to just 0.7 percent of GDP and accounted for only 3.7 percent of the country's tax revenues.<sup>89</sup> Similarly, it should encourage the reconversion of land use through taxes that penalize the improper use of land. That approach could be combined with credit incentives for reconversion with favorable rates through agencies such as Finagro, the public credit fund for the agricultural sector.

## **REORIENT THE MISSION OF THE SECURITY FORCES**

The Ministry of the Interior's protection unit should identify at-risk environmental leaders and offer appropriate security arrangements. When possible, these arrangements should avoid removing them from the areas in which they work, which would reduce their influence and capacity for engagement. The Office of the Attorney General and the police must effectively investigate crimes against social leaders and environmentalists, and the justice system must show an interest in solving these cases. The military's new doctrine should include the fight against deforestation and other environmental preservation initiatives. Brazil's success in reducing deforestation in the Amazon through the deployment of armed forces against illegal logging, satellite monitoring, and the creation of a "blacklist" of municipalities affected by deforestation could offer important lessons for Colombia.<sup>90</sup>

## **STRENGTHEN PAYMENT ARRANGEMENTS FOR ENVIRONMENTAL SERVICES**

The environment ministry should extend the use of payments for environmental services and ensure that the resulting resources are better used. Payments for environmental services can be used to provide income for vulnerable communities or victims of the conflict, as well as to stimulate private conservation endeavors. In this context, the national park system could receive additional infrastructure resources that would directly benefit conservation, including hydroelectric projects or tolls on roads within their jurisdiction.

Colombia should examine experiences in countries that have developed payments for environmental services arrangements, especially Costa Rica and Ecuador. The Costa Rican system, introduced in 1996, now protects a little more than one million hectares of forest. The main source of financing is the single tax on fuels, of which 3.5 percent goes to payments for environmental services. In Ecuador, the mechanism has been used since 2013 to protect forest and moorland and is linked to REDD+ projects.<sup>91</sup> Ecuador's program covers 116,000 hectares and is an important part of plans to tackle poverty in peasant and indigenous communities.

## **SIMPLIFY CENTRAL DECISION-MAKING STRUCTURES AND DEFINE AREAS OF AUTHORITY**

Post-conflict conditions have spurred the establishment of institutions that sometimes create friction and inefficiency. The state must not succumb to the temptation to centralize post-conflict related functions, and should see the transition as an opportunity to build local management capacity. A key component in this capacity building will be creating spaces and mechanisms for citizen participation in environmental policy design. Similarly, to plan for an increase in disputes over land management and use, the government should give dispute-settlement authority to the High Council for Rural Land Use, established in 2015.<sup>92</sup> In the case of human settlements already in protected areas, the

environment ministry and the national park service can find flexible mechanisms for land use and develop co-management arrangements with the communities. Some areas are de facto occupied and it will be very hard to empty them completely, but they can be restored with the help of the occupants through projects that combine conservation with income creation, such as ecotourism, forestry, and native-species nurseries.

## **4 Strengthen and empower local authorities**

### **STRENGTHEN INDIGENOUS GOVERNMENTS**

The government should regulate by statute the environmental power and authority of the Associations of Indigenous Traditional Authorities, aiming to establish mechanisms that reconcile their vision of the territory with that of the CARs and other environmental authorities at the central and departmental levels. This could be achieved, for example, by adopting indigenous ecological calendars, which are ecosystem management plans based on ancient skills and experience, and including them in action plans for these areas. These traditional calendars, which cover seasons for fish spawning, animal reproduction, and wild harvesting, among other things, have much more precise information than any other environmental authority. For their part, the indigenous authorities should make an effort to translate their practices into forms and procedures that can be utilized and monitored by central and regional administrative management authorities. Problems in budget design and implementation monitoring among indigenous communities raise levels of mistrust in the central government. The indigenous authorities should consider outsourcing administrative management in order to ensure that reporting is more efficient, transparent, and compatible with government standards. Moreover, community councils of the Afro-descendent population should have a legal and administrative framework similar to that of the indigenous reserves, which would guarantee them government resources and the authority to make decisions about land conservation. A significant share of the forest in the Pacific region is in these territories.

### **STRENGTHEN LOCAL AND INFORMAL ENVIRONMENTAL INSTITUTIONS**

The government should review the CARs' governance structure, especially the management boards, whose members should be elected in the most transparent way possible. Oversight bodies should scrutinize budgetary management more stringently. This would make it possible to raise the CARs' technical profile and determine if a balance has been struck between designated responsibilities and available resources. Some of the more capable CARs could play a key role not only in conservation but also in technical support to design development and land use plans. The CARs themselves should take advantage of institutions and leaders operating in their respective territories and aim to make them partners in management. These institutions, sometimes informal and occasionally imposed by illegal groups, include handbooks on coexistence and resource management that have been in effect for a long time and enjoy social acceptance. This form of cooperation would facilitate a less traumatic transition from regulation by armed groups to government regulation.

The government should also review agricultural subsidy policies and reallocate those subsidies away from activities that have a negative environmental impact, such as extensive livestock farming, and towards environmentally sustainable activities that more directly benefit vulnerable communities (see the recommendation on “developing green markets”). In general, the state should avoid price subsidies and target support towards improving crop-growing techniques, equipment, irrigation systems, and technical assistance. This approach fosters competitiveness and, if it includes environmental variables in the allocation criteria, makes it possible to promote businesses and sectors that are more environmentally responsible. Subsidies can be used to nurture new areas of production, such as exotic fruits for consumption or other uses (dyes, cosmetics, pharmaceuticals) or beekeeping, thereby enabling local communities and recently reintegrated populations to generate income from conservation of the forest. These businesses should have an export-oriented outlook and be supported by the Ministry of Foreign Trade, Industry, and Tourism, given that the domestic market shows little growth.

## 5 Promote sustainable economic development initiatives

### **CONSIDER ALTERNATIVE FORMS OF INTEGRATION AND ACCESS TO LAND**

In remote and environmentally sensitive areas like much of the Amazon and the Chocó Department, the government should consider forms of integration beyond just road building, which inevitably provides pathways for new settlement and deforestation. The Ministry of Information Technologies and Communications can support the political and economic integration of these territories by providing Internet or other forms of connectivity (in Leticia, the capital of Amazonas, even the traditional telephone service is deficient). The building of rural roads in some sensitive areas should require an environmental permit from the corresponding CAR or the National Environmental Permit Authority, albeit with less onerous requirements than those for highways.

### **PROMOTE SUSTAINABLE TECHNOLOGIES IN EXTRACTIVE INDUSTRIES**

For remote areas with oil and gas potential such as sections of the Amazon, the energy and mines ministry and the environment ministry should consider models of exploration and production akin to those used in offshore drilling platforms. Under this approach, the operator avoids building access roads to reduce the environmental impact. There is only one such project in Colombia, developed by Occidental Petroleum at the Chipirón T well in the El Lipa estuary in the Arauca Department. There, the oil company designed and built a three-kilometer elevated railway and a drilling platform from which 15 production wells operate.<sup>93</sup> The project won an environmental prize from the Colombian Association of Oil Engineers.

In the mining sector, informality remains widespread. In the case of gold, the government should combat criminal mining and protect small-scale and subsistence mining through programs geared to promoting formalization. Some 72 percent of all mining operations in Colombia are classified as small-scale and subsistence endeavors.<sup>94</sup> The government should also offer technical assistance to reduce the environmental and social impact of mining projects. Projects such as the Oro Verde Program in the Chocó Department, which has managed to integrate with environmentally responsible markets in Europe and the United States, can be expanded to other communities.<sup>95</sup> The impact of these activities is also reduced by the use of simple technologies for recycling mercury. Promoting international quality labels such as “Fair Mined” and “Fair Trade” can help raise environmental standards in the mining sector.

## **DEVELOP GREEN MARKETS**

The agriculture and environment ministries should draw up legislation on the marketing of native agricultural and forestry seeds, the immense potential of which is currently being underexploited. This could be a significant source of income for communities in areas with environmental constraints and a source of employment for ex-combatants. Seed banks and nurseries provide vital inputs for reforestation projects. New legislation should protect this valuable business, which is often threatened by restrictions imposed by donor agencies that demand the use of certified seeds in the agricultural plans they support. In Brazil, for example, the seeds market is a substantial source of income for families living in forest reserves. The knowledge and experience of ex-combatants who lived in the jungle can also be used to identify species and take advantage of their different uses. Colombia has experience in bio trade programs, especially in the Amazon region where today there are technical assistance projects for trade in fruits and exotic flowers, honey, and alligator-breeding facilities, among others. The market for such products has been estimated at US\$25 million by the Humboldt Institute.

## **COMBINE REINTEGRATION AND TRANSITIONAL JUSTICE PLANS WITH ENVIRONMENTAL CONSERVATION PROJECTS**

The environment should be used as a backdrop for reconciliation. Many demobilized combatants could take part in oversight, environmental monitoring, and decontamination of water sources, and perhaps could be involved in the manual eradication of coca crops.<sup>96</sup> These initiatives, which reduce the negative effects of aerial spraying and motivate ex-combatants to remain in the countryside, can become part of what are regarded as collective reparations. In a framework of transitional justice, thought should also be given to programs that allow alternative penalties involving work to conserve and restore forests.

Another immediate employment opportunity is humanitarian demining and rural road construction. This second option connects well with efforts to modernize the countryside, which involve economically integrating large and remote areas where transport costs make it unviable to engage in any productive endeavor other than coca or mining. The knowledge of many former combatants who participated in such work as guerrillas should also be put to use. These infrastructure projects, though relatively small in scale, must not be undertaken without keeping environmental considerations in mind.

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