Natural Capital Accounting and Policy Colombia

WAVES
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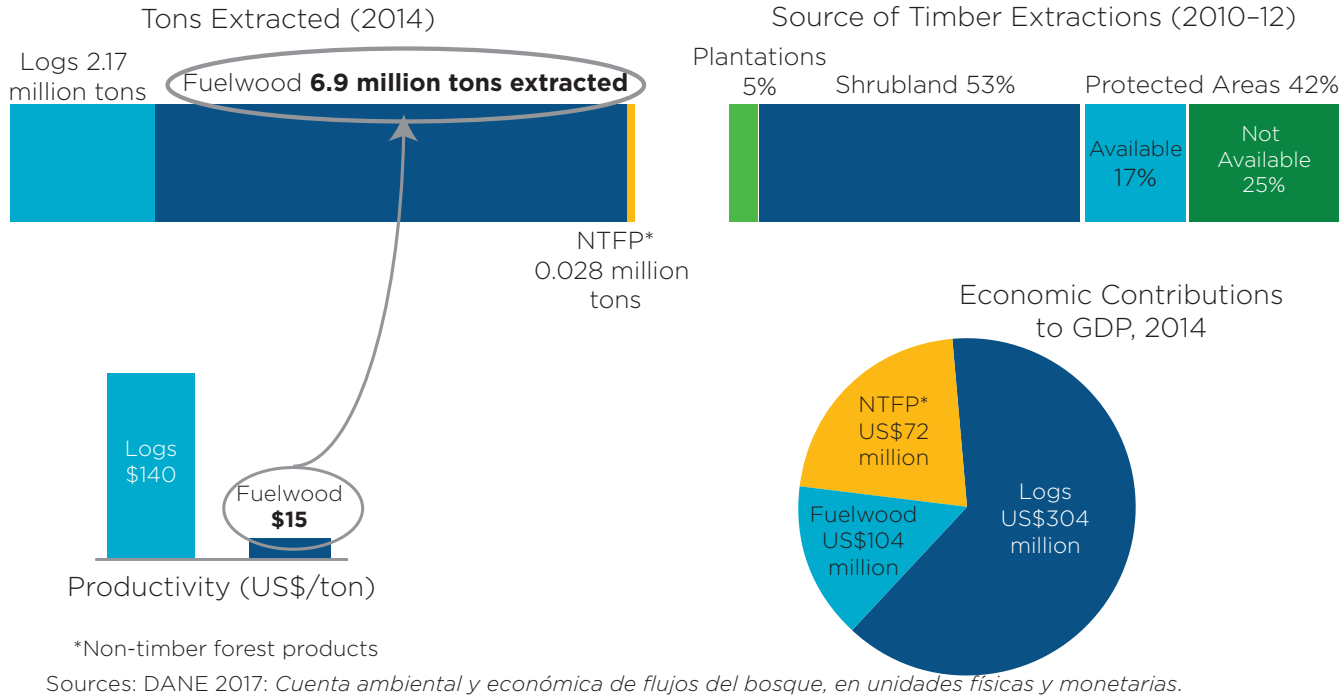
Why Is Natural Capital Important?

With WAVES support, Colombia has produced water, land, and timber/forest accounts at the national level; ecosystem accounts at the regional level; and land, water, and expenditure accounts at the watershed level. These accounts make it possible to better assess the real value of natural capital to the economy.

- Natural capital represents 13 percent of national wealth and income in Colombia.
- The economy grew at an average rate of 4.3 percent per year between 2000 and 2013, increasing national income and helping to alleviate poverty.
- Colombia is rich in natural resources and is ranked among the highest in the world for water availability. But using resources without reinvesting in them comes at a price: environmental degradation represents losses equivalent to 3.7 percent of the gross domestic product (GDP).[1]
- Adapting to climate change is central to the country's new National Development Plan, which proposes more sustainable, low-carbon growth and sustainable use of natural capital. It seeks to achieve resilience and reduce vulnerability to natural disasters.

Figure 1. Forest Use and Contribution to the Economy



*Non-timber forest products

Sources: DANE 2017: *Cuenta ambiental y económica de flujos del bosque, en unidades físicas y monetarias.* National Administrative Department of Statistics; DANE, IDEAM, MADS 2016: *Avance metodológico de la cuenta ambiental y económica del bosque. Documento de trabajo.*

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Wealth Accounting and the Valuation of Ecosystem Services

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What Do the Accounts Show?

Natural capital accounting provides detailed, sector-by-sector information about specific resources—such as how much forest area the country has and how it changes over time. Forest accounts can also show the type of timber commodities extracted from forests and their added value, as well as the evolution of commercial non-timber forest products (Table 1). For example, cork extraction decreased and latex extraction increased from 2005 to 2014, reflecting different policies and incentives.[2]

The accounts indicate who is using these resources. From 2005 to 2014, total fuelwood consumption grew, but per capita amounts fell (146 to 135 cubic meters). There is a notable difference in consumption patterns between rural and urban households. Fuelwood per household decreased by 19 percent in urban areas during the period but by only 5 percent in rural areas, where people rely heavily on wood as a source of energy. Using fuelwood has direct impacts on health and carbon emissions. This information is useful in designing policies, directing investments into emerging markets or away from those that are slowing down, and monitoring the impact of these investments.

The statistics go beyond each sector. Linking to broader data from the National Administrative Department of Statistics (DANE) provides a fuller picture of the economic impacts of forest activities. Linked together, land and forest accounts help identify the causes of change in vegetation cover. Figures show that forest cover decreased from 57 percent in 1990 to 53 percent in 2012. This is tied to mining, logging, forest fires, and agriculture and livestock expansion. Land-use capacity cannot sustain the process: livestock covers 40 percent of the country while only 19 percent of the territory is suitable for grazing. This leads to degradation, has an impact on soil stability, and affects soil protection and control of water flow.

Timber extraction represented slightly more than 3 percent of GDP in 2012 (8.5 million tons extracted). One quarter of this was from "not available" protected areas such as national parks; in other words, it was illegal. Timber from plantations is slow-growing and extractions from shrubland are decreasing, which puts more pressure on protected areas (Figure 1).

Colombia's forest accounts highlight benefits and trade-offs. Forests cover a significant part of the territory and are important sources of jobs and income. They protect biodiversity and store about 7.8 billion tons of carbon dioxide equivalent. Decreasing forest stocks and the resulting overuse of converted land affect other ecosystem functions and the benefits they provide to people. The data generated by

Table 1. Forestry Sector (2014)

		Tons	US$ millions	Productivity (US$/ton)
Timber	Logs	2,172,951	304	140
	Fuelwood	6,871,821	104	15
Non-Timber Forest Products	Cork (primary form)	11,775	38	3,199
	Latex	11,870	26	2,217
	Resins	4,466	7	1,527
	Other	225	1	4,520
Total		9,073,108	480	53
Derived Products (along supply chain, for example, furniture)		666,457	420	630

Environmental Dividends of Peace in Colombia

Environmental Impacts of the Conflict (1990-2013 unless otherwise noted)

3 million **hectares of forest were lost** in municipalities under conflict, equivalent to the area of Belgium

58% **of deforestation** took place in municipalities under conflict

1.3 billion
CO_2 tons were emitted, equivalent to 13% of China's emissions

780,000
hectares of forests were converted to unsuitable uses (for example, pastures in steep slopes, illicit crops)

1.5 million
hectares of soil were degraded and will take at least 20 years to recover

87% **of illicit crops** were located in municipalities under conflict (2016)

60% **of water supplies were at risk** from illegal mining extractions and oil spills (2009-15)

Source: DNP. 2016. *Dividendos Ambientales de la Paz. Oportunidades para Construir una Paz Sostenible.* National Planning Department.

land accounts are linked to water and forest accounts to help shape the development of Watershed Use and Management Plans.

In an example of the cost of climate change, the timber account (timber available by type of forest) served as a basis for analyzing forest fire costs triggered by the El Niño phenomenon. The National Planning Department released an alert and a detailed analysis by region, reporting that the cost of forests fires in 2015 amounted to around US$170 million.

Peace is expected to bring dividends to Colombia's forests. As the peace process gains traction, the country is able to prevent further degradation of its resources. The accounts have been used, along with other sources, to help calculate the annual savings of peace in terms of avoided environmental degradation caused by conflict. This savings has been estimated conservatively at around $900 million (Figure 2).

The water accounts reveal opportunities and challenges. Large amounts of water are available nationally but are unevenly distributed, with areas like the Magdalena-Cauca valley already in heavy competition for resources. The ecosystem accounts prepared for the Orinoquía region, for example, show that changes in vegetation cover, especially as forests are converted, are affecting control of water flow. (The data have informed the National Development Plan and the Strategic Plan for the Orinoco River macro basin.) This is a trend throughout the country, where deforestation is still high. The main water users in 2012 were agriculture (58 percent), gas and electricity, industries, and water supply companies.

By linking environmental and economic components, the water accounts provide information to support the Integrated Water Resource Management Policy. The information feeds into models to

help regulate the efficient and proper use of water.

Agricultural, household, and industrial sectors in the Magdalena-Cauca valley generate large amounts of organic material, dumped untreated into rivers. There are also shortages of water in different geographic areas—linked to natural patterns but also to inadequate infrastructure. Most of the water comes from rivers and streams, which are highly susceptible to pollution.

Local water and emissions accounts in Lake Tota—the source of drinking water for 160,000 households—show that agriculture is the main water user, followed by water utilities. The highest economic productivity relates to hotels (about US$40 per cubic meter), livestock (US$30), and agriculture (US$16). The lake is under increasing pressure from pollution, with annual discharges of 147 tons of nitrogen and 25 tons of phosphorus. Spring onion crops are the main polluters. There is no regulation regarding discharges, despite agriculture deriving high economic returns from the water used.

The Chinchina water accounts show that the glaciers above the watershed decreased by 73 percent from 1990 to 2014. This rate suggests that they could disappear in the next 25 years, reducing river flows by some 15 percent – 20 percent. It is imperative to start planning how to manage the upstream paramo land in a sustainable way and introduce water efficiencies downstream.

Natural capital accounts have produced integration of data and improved dialogue between institutions. There has been good cross-institutional collaboration on consolidating methodologies for collecting, sharing, and using the data from natural capital accounts.

The accounts provide information to support Colombia's Green Growth National Strategy. The focus is on three areas: reducing deforestation, cutting greenhouse gas emissions, and strengthening climate change adaptation. Natural capital accounting has also been included as a tool for the National Development Plan 2014–2018.

Notes

[1] World Bank. 2006. *Colombia – Mitigating environmental degradation to foster growth and reduce inequality.* Washington, DC: World Bank.
[2] Accounts prepared using *WAVES Country Report 2016,* and accessing online statistics at www.dane.gov.co.

Wealth Accounting and the Valuation of Ecosystem Services

WAVES is a World Bank-led global partnership that aims to promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts.

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