



WAVES
Forest
accounts
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Natural capital accounting: forests

Counting beyond the trees

Forest accounts provide a more complete way to measure the forest assets and flows of forest-related services in a country, and how they change through time. They show physical and monetary information (hectares, m³ of wood, US\$) linked to traditional indicators such as GDP. They can be extended to include other forest products such as fuelwood and ecosystem services. The information produced can help design and monitor strategies for implementing SDG 15 (sustainable forest management), SDG 7 (sustainable energy from fuelwood) and reduction of climate change threats.

Potential benefits

- Forest accounts provide an 'umbrella' framework to collect information about forests — canopy cover, timber extraction and species diversity, for example
- They help to reveal how forests are a direct source of wealth in a country, allowing for better policymaking
- They can be used to estimate other ecosystem services such as carbon capture
- Showing a higher value of forest contribution to GDP may enable the forest sector to negotiate a larger share of the government budget.

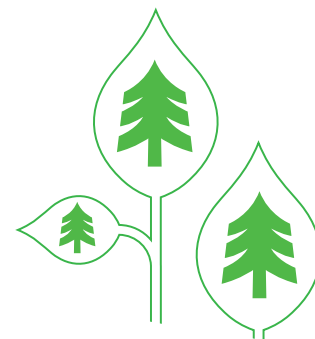


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Wealth Accounting and the
Valuation of Ecosystem Services



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“It is important to highlight the extent of uncontrolled timber extraction that the accounts reveal. There is no institutional control, and evidently an important part of it is illegal.”



Guillermo Alejandro Gándara, Universidad Rafael Landívar, Guatemala

Forests provide many benefits to people. Some of them, such as timber, fodder and fuelwood, have direct uses. Forests are also spaces for recreation and appreciating cultural values. They support ecosystem functions: sequestering carbon, helping to stabilize soils and providing habitats for biodiversity. Despite this, forests are destroyed. The reasons are many, but an underlying problem is a lack of data to understand the drivers and impacts of the destruction. For example, what are the economic gains and losses from this action? What is the overall change in forest cover over time, and what effect can this have on the economy and the environment?

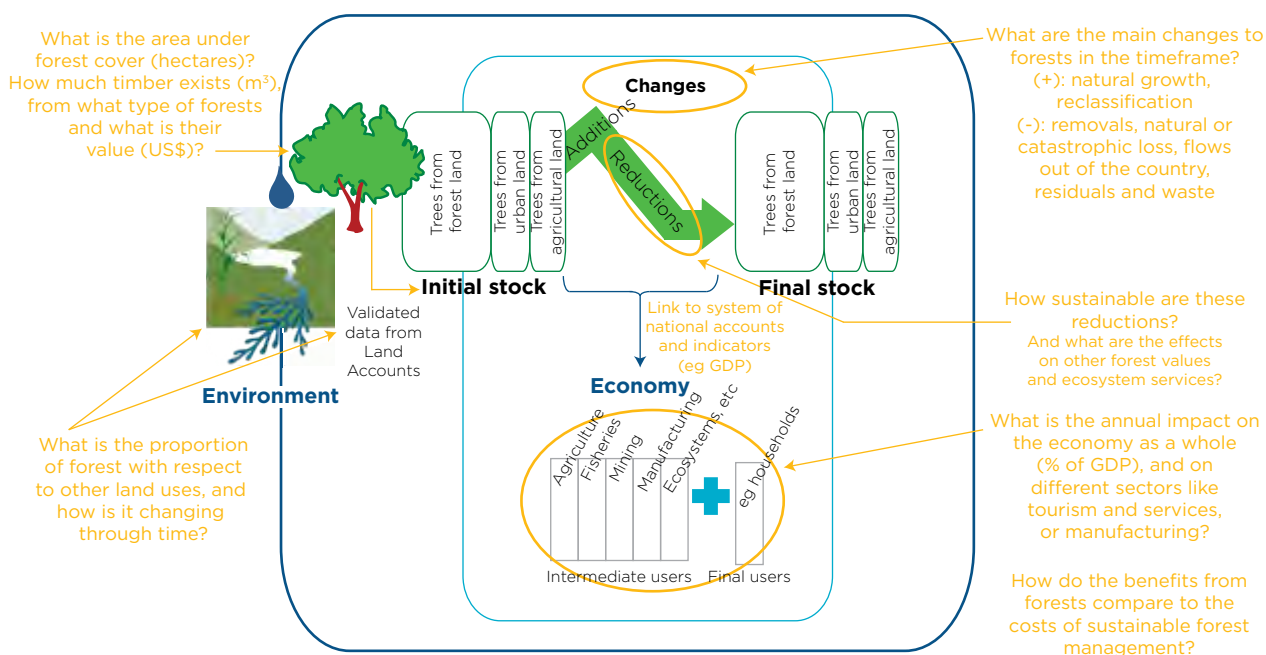
Nations to ensure these data are comparable and replicable. Importantly, they are linked to the System of National Accounts and its traditional indicators of economic performance, such as GDP. This means that results from forest accounts can be used by economic groups beyond the forestry sector, including agriculture, manufacturing and trade.

Forest accounts also introduce a better recording framework, to understand stocks (eg total forests available in a country) and flows or changes during a period of time (see Figure 1). Understanding this change in stock is very important to the country's wealth. Traditional accounts focus on flows, reflecting additions to the economy each time forests are harvested: through jobs created along value chains, timber sold, and revenues to governments through permits, licenses and VAT. But traditional accounts are more limited in terms of accounting reductions. For example,

What are forest accounts?

Forest accounts are a systematic framework for collating data on forest assets and activities, using methodologies approved by the United

 **Figure 1. Basic framework for forest assets account**



Note: SEEA provides guidance to understand forests from two inter-related perspectives: focusing on assets (resource-based accounts) or ecosystems (ecosystem-based accounts). This note discusses the first perspective. Source: adapted from WAVES (2016) and United Nations (2015).



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they do not reflect how much natural forest cover is lost during harvest. A country can be depleting its natural forest wealth while experiencing rapid economic growth and higher GDP.

Forest accounts fill in this gap by monitoring the sustainability of forest activities and making the impacts on forest stocks evident. Additional steps can be taken after this to provide physical information for other forest products — cork, fuelwood and some ecosystem services like carbon sequestration, for example.

How are forest accounts constructed?

Forests accounts follow the approved System of Environmental-Economic Accounting (SEEA), expanding on information from the land accounts. The first step is usually accounting for timber resources and forest land, following a 'resource-based' approach (Figure 1). These accounts show biophysical data for cover (hectares) and volume (m^3 of timber) for existing stock at the beginning of a period, the changes during the period (natural growth, harvest, losses) and how much is available at the end of the period. Once that 'basic block' is ready — and if information exists — countries may decide to account for other forest benefits, such as non-timber forest products (eg fuelwood) and some forest ecosystems services such as carbon sequestration. Furthermore, the forest

accounts framework considers production and consumption, which allows for disaggregation of use by household type and income levels, and intermediate consumption by other industries — for example, the furniture industry.

How is monetary value estimated?

Monetary value is estimated in relation to the value of forestry land, timber assets or ecosystem services. The SEEA framework underpinning the accounts provides specific rules on how to estimate these values. For example, for timber assets the process disaggregates by type of timber and how it will be used (construction, furniture, fuelwood). There is information on calculation of stumpage value (paid to the owner of the timber, or as the right to harvest trees), net present value and how to account for different values of land once timber is removed. It is important to clarify that monetary values of timber are linked to potential harvest where extraction is allowed. The technical timber value of trees in national parks for example is zero, because they cannot be harvested.

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Case study: forest accounts in Guatemala



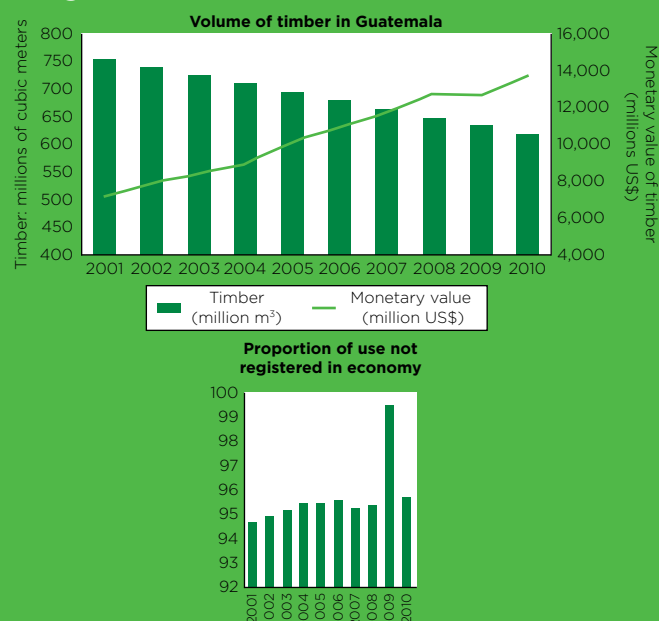
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Forest accounts in Guatemala show that the country is rapidly losing a valuable asset and that little of the value from forests is properly reflected in the economy (see Figure 2). This leads to a cycle where forestry institutions are underfunded and unable to prevent further losses.

The country has lost nearly half of its forest cover in 60 years. Between 2006 and 2010 the deforestation rate was 1.4 per cent — significantly higher than the 0.4 per cent average for all of South America. The accounts show that forestry activities contribute

Figure 2. Forest accounts in Guatemala



2.5 per cent of GDP, higher than the 1 per cent currently recorded by the (traditional) national accounts. But the massive disparity between reported activities and actual forest change shows that as much as 96 per cent of forest use is illegal. The accounts also show that 64 per cent of households depend on firewood as their main energy source and much of the forest clearing comes from private sector wood brokers. The accounts are helping the government design the National Forest Policy of Guatemala, with a special focus on instruments to deal with illegal logging.

References:

- United Nations (2015) System of Environmental-Economic Accounting 2012. Central Framework. United Nations, New York.
- Waves Partnership (2015) Guatemala country report 2015.
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Wealth Accounting and the Valuation of Ecosystem Services

Wealth Accounting and the Valuation of Ecosystem Services (WAVES) is a global partnership led by the World Bank that aims to promote sustainable development by ensuring that natural resources are mainstreamed in development planning and national economic accounts.



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