

Natural capital accounting (NCA) and payments for ecosystem services – frequently asked questions

What are ecosystem services?

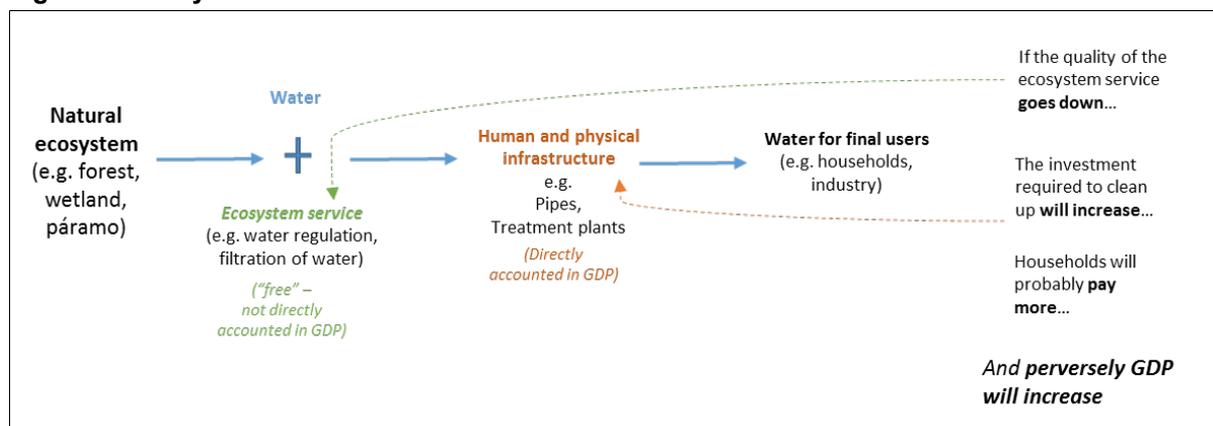
Ecosystem services are the benefits people obtain from ecosystems (ME 2005). Some of these benefits are 'tangible' products like timber from forests for construction and drinking water for our homes for which we pay and are directly counted in gross domestic product (GDP).

Apart from human and physical infrastructure, like pipes to transport water, these benefits rely on other services provided –usually for 'free'- by healthy ecosystems. For example, forests filter water and regulate its flow as well as sequestering and storing carbon that would cause climate change if released into the atmosphere.

Without these 'free' ecosystem services our quality of life would be reduced and many costs of economic production would be increased – for example by having to spend more to filter water tanks or to deal with the consequences of climate change. But sustainable management of natural ecosystems can be costly for those who own and manage them.

Many ecosystem services are accounted for in GDP but not attributed to ecosystems. For example, the value of pollination is reflected in crop production, but not recognized as a benefit of ecosystems. Perversely, GDP increases when some ecosystem services decline and must be artificially replaced (eg using a treatment plant to replace the filtration services that had been provided by a wetland).

Figure 1. Ecosystem services and GDP



What are payments for ecosystem services?

Payments for Ecosystem Services (PES) are a mechanism that pays landholders for managing ecosystems in ways that benefit others. This provides landholders with an incentive to maintain the natural capital that provides the ecosystem services. Besides compensating landholders, the mechanism often also engages those who benefit –the users of the services, such as water user–into sharing the costs of their protection.

How are these payments set?

A PES scheme is the product of a negotiation process between those who own or manage natural resources, the users of these services (who may be in the public and private sectors), and supporting stakeholders such as government agencies, NGOs, and academia. Because these ecosystem services have traditionally been 'free', reaching an understanding on their value is difficult. Information on how people benefit from them, and by how much, as well as the costs associated with protecting them, are important inputs to these negotiations.

What information is needed to begin negotiations?

It depends on the ecosystem services, and the nature of the problem to be solved (eg increased turbidity in the water used by town x), but at least three types of information are needed:

- Biophysical indicators for quantity of service flows and how they would change under alternative management options
- Economic information on the value of services and on the opportunity costs of alternative uses of the asset and, ideally
- Social information on the distribution of income and levels of wealth to reach equitable solutions.

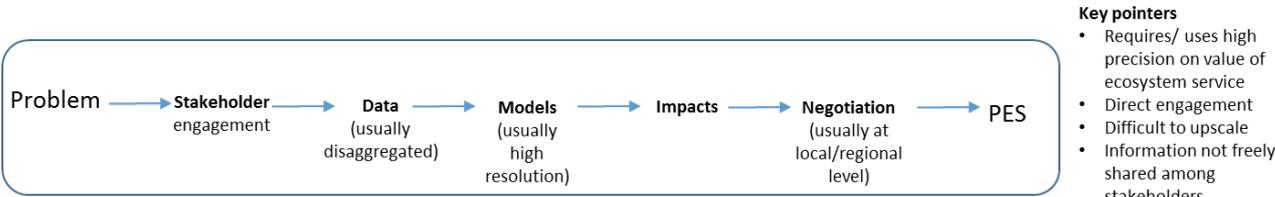
In the case of carbon sequestration from forests the information required may include forest cover and age of the trees (eg growing trees capture more carbon than mature ones), as well as changes of cover through time to estimate potential carbon losses.

Water quality and regulation will require hydrological information such as precipitation, type of cover (which affects evaporation but also provide different levels of water infiltration capacities); slopes and soils (to measure sediments).

Economic information is critical to understanding who benefits: for example which ecosystems (and which processes within an ecosystem) are causing the problems that affect a given set of actors/sectors of the economy? How much is their consumption (eg demand of water flows, timber licences)? What is the impact on their reported income? (eg productivity in \$/m³ of water). This economic information can be linked back to the providers of ecosystem services: how much does it cost to ensure protection of a resource (eg existing forests or páramo), or reverse degrading activities?

This information can be used to feed into different types of models to map or predict impacts on users from changes in the ecosystems, which would then feed into negotiations (see figure 2).

Figure 2: A “typical” PES process

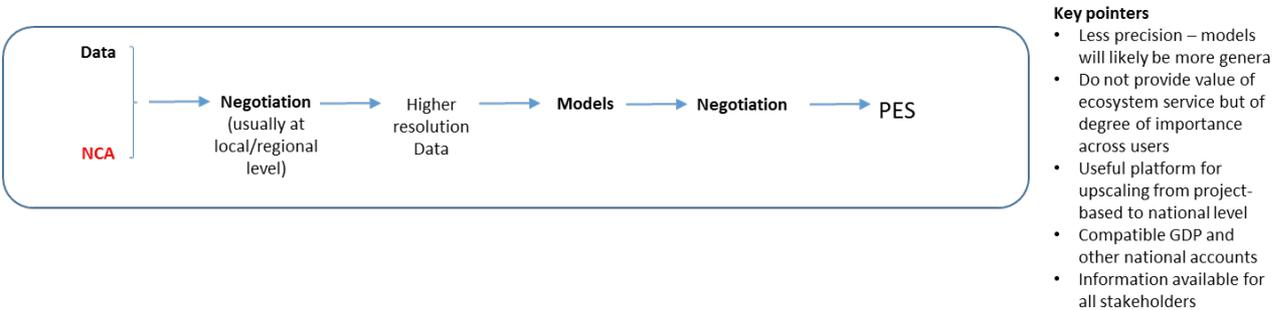


How can natural capital accounts help in this process?

A key difference using NCA is that data will be in aggregate form and ensuing models will tend to be more general. Using the NCA as a filter the information is formatted in a way that directly links the natural capital (e.g. forest) to different sectors of the economy represented in traditional accounts (e.g. households, agriculture, industry, export).

NCA can provide information on how much of the resource is used by a given sector (e.g. hectares, cubic meters), and how it is linked to the revenues reported by the sector (e.g. \$/m3 of water). This information is not the value of the ecosystem service, because it includes other costs -for example the infrastructure required to deliver the water to the user. However, it can provide an initial reference point, or feasibility check, on the dependence of the sector on the resource and whether there could be ability to pay associated to productivity. It will also flag that there may be a problem which will require more specific data with higher resolution (Figure 3).

Figure 3. PES process using natural capital accounting (NCA)



For example, accounts in Lake Tota in Colombia (<https://www.wavespartnership.org/en/colombia>) showed that while the cost of water extraction is very low, onion producers extract an approximate value of over US\$1000 per cubic meter of water. In other places, Botswana, for example, NCA accounts showed high consumption of water but very little productivity from subsistence agriculture (*Sustainable, equitable and productive use of water through water accounting, WAVES policy briefing. www.wavespartnership.org*). While water is equally important for both groups, the associated ability to pay is very different.

Is there a link to national accounts?

Using the NCA filter ensures that the data is compatible with other indicators used in ‘regular’ national accounting, like GDP, education, health and social development indexes. This facilitates the use of wealth and poverty indicators to help design more equitable and targeted PES schemes.

How can NCA help upscaling?

Natural capital accounting follows a protocol approved by the United Nations to ensure trust, consistency, and comparison across time and across countries. Rather than being project-based, using NCA will help with comparable baselines to assess change across watersheds, regions of the country, and across countries. The protocols followed lead to more confidence in the data and the processes involved in obtaining results. Furthermore, the information produced will be freely available, providing an equitable platform of knowledge for all parties involved in PES negotiation.

Great! So where are we in Colombia?

Colombia has been consolidating natural capital accounts for forests and water. Important efforts have been made with IDEAM (Institute of Hydrology, Meteorology and Environmental Studies) and DANE (National Administrative Department of Statistics) to ensure consistency of data across time and to map out data responsibilities, and with government sectors such as MADS (Ministry of the Environment and Sustainable Development), DNP (National Planning Department) and the Comptroller General of the Republic (CGR) to understand how NCA can help in policy design. These policies include the National Development Plan 2014-18. Work is also ongoing with local stakeholders to test water accounts at the watershed level (for example, Tota Lake with CorpoBoyaca, the regional environmental authority). The process has highlighted the need to invest in securing reliable, comparable and constant data to feed into national policies.

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