

EXECUTIVE SUMMARY

The global initiative TEEB (The Economics of Ecosystem and Biodiversity) seeks to make the value of nature visible, by recognizing the benefits of Ecosystem Services (ES) in the political decision making for the resources management.

Considering Ecuador is boosting a new economic and energy policy, TEEB in coordination with the Ministry of Environment (MAE) promoted the signing of a Small Scale Financing Agreement (SSFA) between PNUMA and Escuela Politécnica Nacional (EPN) to execute a pilot study named "The Economics of Ecosystems and Biodiversity of Coca River Watershed (Ecuadorian Amazon)". In this watershed, the Coca Coda Sinclair Hydroelectric Power Plant (CHCCS) is located, it is currently the most ambitious hydroelectric generation project in the country (1,500 MW) and since January 2017 it has supplied 30% of the national energy consumption.

The purpose of this pilot study is to inform and advise policy makers about the benefits that nature provides through ecosystem services for the new energy matrix that the country is implementing. In this context, it was considered appropriate to prioritize the services corresponding to water and sediment regulation.

In order to achieve objectives, four possible scenarios were proposed regarding the 2030 study horizon: 1) Business as Usual (BAU) that presents current conditions, 2) Strengthening of the Socio Bosque Program (FSB) applying conservation, 3) National Plan of Incentives (PNI) applying conservation, restoration and silvopastoral systems; and 4) Degradation (DEG) eliminating sustainable approaches. Hydrological behavior was modeled to obtain liquid and solid flows, and finally these were transformed to hydroelectric generation and sediment accumulation in the compensating reservoir.

Biophysical results indicate that the application of measures to control the change of coverage and land use are necessary to ensure the current average base flow and therefore the energy yield; as well as minimum concentrations of sediment drag, an aspect that affects the reduction of operating expenses. Particularly, it is observed that conservation in zones of water importance is effective to regulate flows and sediments. However, conservation in conjunction with restoration measures and silvopastoral systems has positive synergistic effects on the behavior of the basin for hydroelectric generation purposes.

The economic valuation consolidates the biophysical results, showing that incremental gross income by hydroelectric generation would be USD 16.7 million for PNI scenario and USD 2.1 million for FSB scenario, while DEG scenario presents losses of USD 6.3 million. These results guide on the prioritization of investment of control measures, being conservation the one that would generate most of the benefits with less investment (NPV is USD 6.2 million). Regarding the transition to silvopastoral systems and restoration, the NPV to 2030 would be negative, so it is recommended to deepen the analysis of its economic viability.

Finally, the policy recommendations are oriented to territorial ordering by each of the municipalities that are within the watershed, an aspect that would make possible the application of incentives in identified areas of water interest. There is a need to specify what is established in the Law on Water Resources, Use and Exploitation (SENAGUA-2015), and formalize the respective Watershed Organization, an agency that would administer, articulate and manage actions in favor of the Coca river watershed; as well as what corresponds to the ecosystem approach, since this study identified that there are no adequate mechanisms for its execution.