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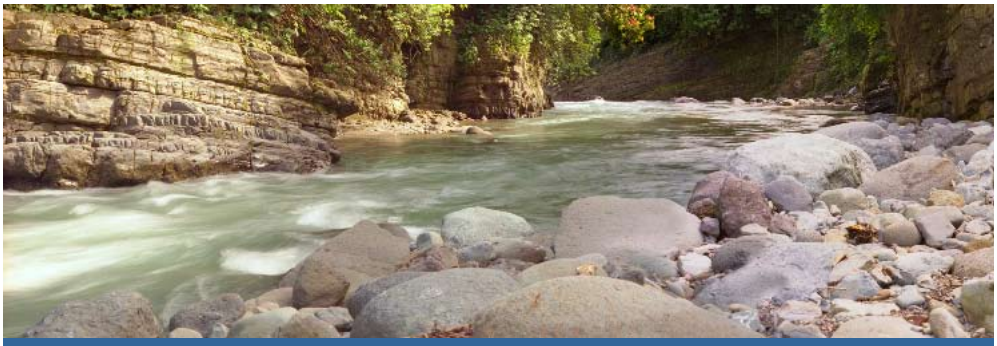

Conservation Policy in Brief

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Economic Analysis can Distinguish Profit from Progress

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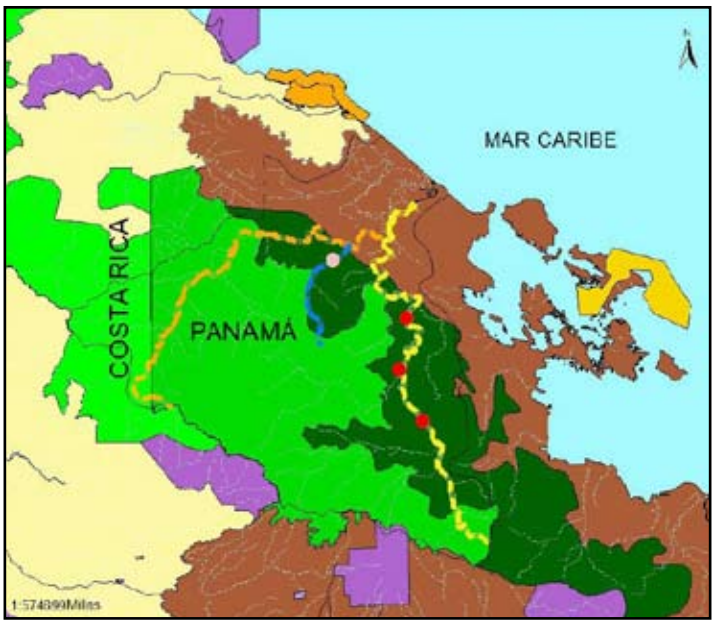
Done well, economic analysis is a tool that can tell us whether or not a project will make people better off. Done poorly, such an analysis will tell us merely whether the project generates more cash than it consumes. A quality project analysis should ask three questions. First, is the project economically efficient? To put it simply, are benefits greater than costs? In the case of a hydro dam, is the value of the energy produced greater than the value of all the materials, equipment, labor and environmental damage required for its generation? Second, is the project fair? Definitions vary, but, at a minimum, fairness requires that the people enjoying the dam's benefits also pay the costs. A more expansive definition would demand that poor people reap a disproportionate share of the benefits. Third, what are the uncounted costs and benefits? Impacts on the environment are not usually counted in project analyses, but they clearly make people worse off.



Dams Protected Areas

We asked these questions about four hydroelectric projects in Panama's Bocas del Toro Province. All four projects would be located in the Changuinola-Teribe watershed, within the limits of the Palo Seco Protected Forest (known by the Spanish acronym BPPS). Three of these projects would be built on the Changuinola River, with the fourth on the Bonyic River. Both rivers have their headwaters within the Amistad International Park, a UN-recognized World Heritage Site shared with Costa Rica. The dams' combined installed capacity would be 446 megawatts, equivalent to 30 percent of Panama's total capacity at the end of 2004. The projects raised concerns among Panamanian environmental and human rights organizations due to their potential to harm Amistad and indigenous Naso and Ngöbe people who live in the area.

Our analysis suggests that the projects would most likely pass the first test. The company that develops them would earn approximately $87 million in present value terms, even after paying over $90 million in Panamanian taxes. This "net present value" (NPV) figure is the sum of all future profits, adjusted into today's dollars with an appropriate interest rate. If a project's net present value is positive it is generally considered feasible.

Just because a project is "financially" efficient from the company's perspective, does not mean that it will be beneficial to the country's economy as a whole. To convert this financial NPV into an economic NPV we removed taxes and subsidies from the calculation, since these are considered transfer payments set by the government and not linked to the underlying supply and demand for the goods used and produced by the project. Also, we used "shadow prices," which correct for any market-based distortions (like monopolies). Finally, we included externalities, which are costs and benefits not paid for nor received by, the company, but clearly caused by its project. These adjustments give us an economic NPV of $92 million. The Changuinola-Teribe projects apparently pass both the financial and economic efficiency tests, though more data are needed to estimate the share of profits that would go to foreign shareholders of AES, the US company awarded the right to develop three of the dams.

This aggregate result conceals a concentration of the projects' negative economic impacts on a group of around

Ngöbe boy

7,700 traditionally disadvantaged Naso and Ngöbe people in the project area. We did not undertake a detailed study of these complex indigenous cultures, but, during field expeditions, did observe that both have highly self-sufficient subsistence economies and a level of autonomy that has come with their relative geographic isolation. The dam projects will change all that. Subsistence economies will become more tenuous as outside competition for resources increases. And while it's impossible to reduce culture and shared history to a monetary figure, we were able to measure the potential losses associated with compromised access to resources, as well as the added costs of day-to-day living in new, urban circumstances. These losses could reach as high as $56 million in present value terms.

The fact that the benefits go mostly to a private energy company and government and that losses are heaped on the indigenous people doesn't mean the project will necessarily fail the fairness test. It just makes that outcome very likely. One could argue that tax revenues will be broadly distributed in the form of social investments, with some funds set aside specifically for the dam-affected people. Furthermore, in theory, some of the company profits could be transferred to poor electricity consumers in the form of lower rates. But there is no official plan to adequately compensate locals or ensure their land and resource rights. An October 2006 presentation by AES indicated the company is making modest gifts to indigenous people, but certainly nothing on the scale of their potential losses, nor a significant share of the company's potential gains. Still, the company is reworking the project design now, so the final measures to protect the Naso and Ngöbe are as yet unknown.

The project's uncounted costs are primarily the harm likely to be caused to Amistad International Park, a global center of biological diversity and endemism, to the Palo Seco Forest, and to the aquatic ecosystems both upstream and downstream of the dam sites. The Amistad park would be more exposed to deforestation and hunting due to new access roads. If the Amistad ecosystem is affected, the impacts would most likely stretch beyond its boundaries, because it serves as a biological corridor between North and South America.

Aquatic biodiversity would be affected in over 704 kilometers of rivers, with migratory fish and shrimp species likely to be wiped out as the dams impede their habitual routes. These species predominate in the aquatic ecosystems of the region and are a major protein source for both indigenous and non-indigenous people throughout the watershed. Added to the obstruction presented by the dams would be inevitable changes in water quality that would further alter downstream fishery resources.

These costs remain uncounted in our study because full valuation of environmental impacts is a lengthy and expensive undertaking. Instead, we limit ourselves to an estimate of the gross value of greenhouse gas emissions from a best-case scenario of deforestation related to the four dams, and prices on the Chicago Climate Exchange. That figure came to $25 million. We stress that this number is based on a very low estimate of deforestation and that it is a gross figure, meaning that we haven't subtracted emissions that would be avoided by making some other power plant unnecessary.

In summary, the Changuinla-Teribe hydro complex would likely achieve economic efficiency, but sacrifice fairness and the environment, unless parallel investments in environmental and social protection are made on a scale similar to the dams' profits. A sound, though by no means exhaustive economic analysis can reveal these tradeoffs and enable open debate that, hopefully, leads to equitable, sustainable development projects.

For a copy of the complete study, please visit: http://conservation-strategy.org/files/Changuinola%20FINAL.pdf

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Photos by Daniel Piaggio Strandlund

Ngöbe family in Bajo Colubre