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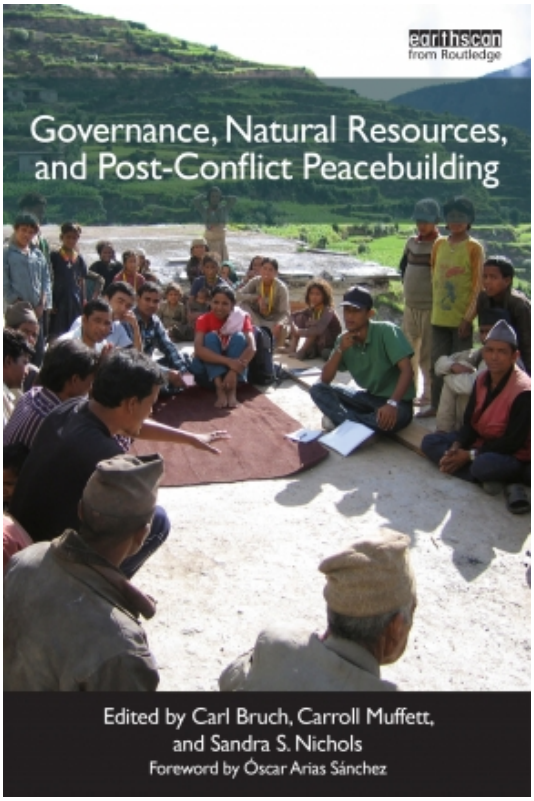

The Power of Economic Data: A Case Study from Rwanda

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The power of economic data: A case study from Rwanda

Louise Wrist Sorensen

The Rwandan civil war (1990–1994) and the genocide of 1994 devastated the country's human and physical capital. The genocide led to the deaths of close to 1 million people and the displacement of one-third of the population. In 1994 alone, gross domestic product (GDP) declined by approximately 50 percent (World Bank 1998).

But Rwanda's post-conflict poverty was not caused only by the civil war and genocide. In fact, strong evidence indicates that the poverty level began to increase decades before the civil war, in tandem with growing population pressures and the resulting unsustainable use of land and other natural resources (NPRP 2002). Thus, since the conflict ended, Rwanda's ability to rebuild has been linked to its success in addressing population growth and unsustainable land use. Only recently, however, has the connection between natural resource management and the economy been supported by sufficient data to allow policy makers to address the link.

With an average of 464 people per square kilometer, Rwanda is the most densely populated country in Africa and one of the most densely populated in the world (World Bank 2014). Unlike many of its neighbors, Rwanda has limited land, minerals, and other natural resources to rely on for development. Approximately 80 percent of Rwandans live in the countryside, and as much as 90 percent of this rural population depends on agriculture for livelihoods (UNdata 2014; UNDP, REMA, and UNEP 2007a). Given the level of dependence on land and other natural resources, degradation—especially of soil and water—imposes significant economic costs and creates new environmental problems.

Before the civil war, there was little recognition in Rwanda of the importance of the environment, and the events of 1994 diverted what little attention had been given to sustainable natural resource management toward emergency needs

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such as resettlement, shelter, and food security. During the post-conflict recovery period, however, the government of Rwanda (GOR) became more aware of how crucial natural resources were to rural livelihoods and national economic growth.

In 1999 and 2000, the GOR prepared *Vision 2020*, a document that was intended to form the foundation of Rwanda's development planning through 2020 (ROR 2000). Shortly after the publication of *Vision 2020*, the government finalized its first interim poverty reduction strategy paper (PRSP), the very first sentence of which emphasizes the relationship between poverty and land, demographics, and environmental degradation (NPRP 2002). The first PRSP, published in 2002, also gave special attention to the environment, treating it as an issue that cut across a number of sectors.

Unfortunately, this new recognition of the importance of the environment was not accompanied by sufficient empirical data on the economic costs of degradation to inform effective policy decisions.[1] Without such data, policy makers were unable to integrate environmental considerations into national policy or budgeting. In 2005, to address the absence of environmental data, the Poverty-Environment Initiative (PEI)—a joint program of the United Nations Development Programme and the United Nations Environment Programme[2]—launched a study, in collaboration with several ministries of the GOR, to investigate the effects of environmental destruction in Rwanda.

By assessing the contributions of ecosystem services to both the national and local economies, the study provided data on the importance of natural resources and the environment to poverty reduction and economic growth. As a corollary to its empirical investigation, PEI engaged national stakeholders and international development partners in the development of a work plan that would determine how the data would inform the second PRSP.

The results of the study demonstrated that environmental degradation had led directly to increased poverty and stress on ecosystem services (UNDP, REMA, and UNEP 2007a). Armed with this data, and guided by the work plan, PEI partners and environmental stakeholders engaged in the policy-making process and secured a government development strategy that gave appropriate weight to the environment. The strength of the data helped to ensure that the second PRSP, adopted by Rwanda's parliament in 2007 and titled the *Economic Development and Poverty Reduction Strategy* (EDPRS), gave thorough consideration to the interaction between environmental and economic issues, and to the ways in which strategic planning should be informed by this interaction (ROR 2007b). Exemplifying this new perspective, the EDPRS designated the environment both

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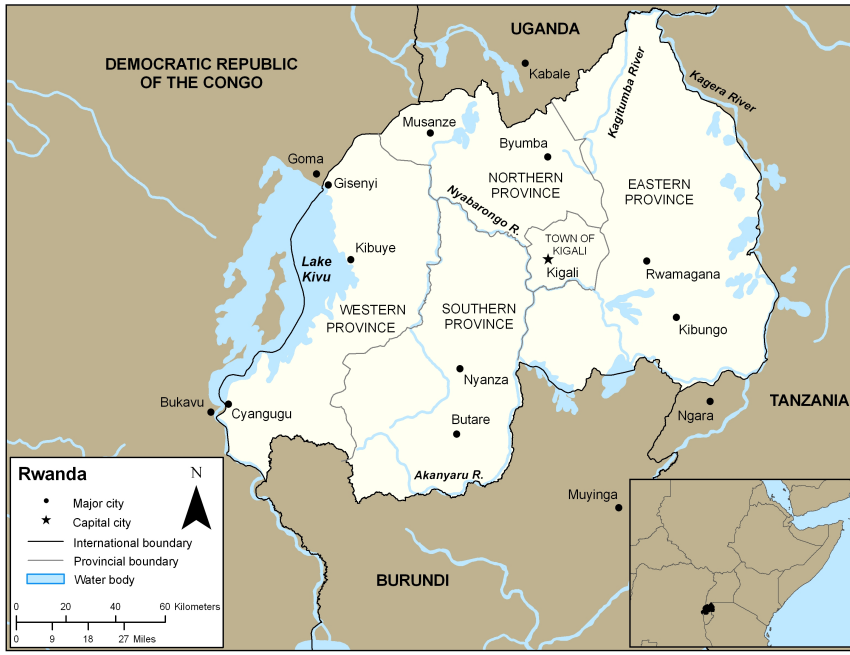
[1] The 2006 Economic Household Living Condition Survey was one of the first attempts by the GOR to gather environmental information for policy making (ROR 2007a; UNDP and UNEP 2006). However, the information was insufficient, and there was little data on the value of natural resources to rural households, or on how natural resource use and value might vary by household type.

[2] For more details on PEI, see www.unpei.org.



as a separate planning sector (known as the Sector Working Group on Land and Environment), and as one of four crosscutting issues to be considered for their impacts on all sectors.[3]

The EDPRS offers a successful example of the ways in which concrete and reliable data on the human and economic costs of activities that threaten sustainable development can inform and influence the incorporation of environmental concerns into national policy. The purpose of this chapter is to describe how such data were used in Rwanda. The chapter is divided into three sections: (1) a summary of the findings of the PEI study; (2) a description of the policy process into which those findings were incorporated; and (3) a brief conclusion.

KEY FINDINGS OF THE PEI STUDY

To ensure that environmental concerns were integrated into the country's second PRSP, participants in the PEI study developed empirical evidence connecting environmental scarcity to poverty, and presented the findings to government ministries and other stakeholders. The study focused on two cases: the Rugezi Wetlands and the Gishwati Forest (UNDP, REMA, and UNEP 2007b). In each case,

[3] PEI supported both the Sector Working Group on Land and Environment and the environment team within the Cross-Cutting Issues Working Group (Duwyn and Wrist Sorensen 2010).

researchers collected and analyzed local and national data on income and general economic status over time. These data were then used to describe and quantify the relationship between the environment and the economy in the two regions.

Rugezi Wetlands

Located in the northern, most densely populated part of Rwanda, the two valleys that make up Rugezi Wetlands are home to an estimated 120,000 people, 90 percent of whom make their living from agriculture. Despite being an important source of biodiversity and potential local revenue, the local environment is at risk from population pressures and the land degradation that accompanies it.

The PEI study found that the genocide had substantially impacted natural resource–based livelihoods in the region: when the periods before and after the genocide were compared, income from livestock had decreased by approximately 30 percent, and income from other sources (such as fishing, grasses, and transport)[4] had declined by almost 50 percent (UNDP, REMA, and UNEP 2007a). Income from crafts and small enterprises, however, had increased, suggesting a shift in livelihood sources. However, the net negative effect of the ecological losses—many of which were brought about by coping strategies adopted during and immediately after the genocide—far surpassed the modest gains in other areas.

In addition to affecting livelihoods, land degradation and unsustainable use of the wetlands had decreased energy production. Lakes Bulera and Ruhondo, which draw water from Rugezi Wetlands, are the power sources for the Ntakuka and Mukungwa hydropower stations. The combined effects of wetland degradation (which had lowered the water levels in the lakes) and siltation have resulted in fewer productive hours for the hydropower generators. As a result, the GOR has had to supplement the hydroelectricity supply with diesel generators, at a cost of more than US$65,000 per day (EIU 2006).

Finally, rampant deforestation—and the resulting conservation measures—led to a doubling in the price of charcoal between 2004 and 2006. The combined reduction in hydropower capacity and increase in charcoal prices triggered an energy crisis that appeared to have damaged several productive sectors and the region's economy. High energy costs have also undermined Rwanda's attempts to attract foreign investors, impacting the country's overall economic and social growth.

The loss of water volume has had other costs as well. Several rivers have dried up, forcing people to travel longer distances and to spend an increasing proportion of their time obtaining water for domestic use (UNDP and UNEP 2006). And, because women and children have the primary responsibility for

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[4] The loss of grasses had the greatest effect on the poorest members of the Batwa community, who had traditionally depended on the sale of grasses as building material. Goods and people used to travel by boat, but lower water levels had made boat travel less viable, leaving boatmen out of work.

fetching water, the time they spend collecting water deprives them of the opportunity to engage in more productive activities—which, in turn, has repercussions on development goals such as universal primary education, gender equality, and women's empowerment.[5]

Gishwati Forest

Like Rugezi Wetlands, Gishwati Forest, located in the western part of the country, is important both for biodiversity and potential revenue generation for local communities. But forest conversion for livestock grazing, military operations, and the resettlement of displaced persons has decreased the size of Gishwati Forest from 280 to 7 square kilometers, and environmental degradation—specifically, soil erosion and depletion—has led to declines in local development.

Soil erosion is moderate to severe on 50 percent of Rwanda's land surface, and it has been conservatively estimated that the nationwide economic cost of erosion is equivalent to almost 2 percent of the GDP. Nationally, farmers have observed a decline in the productivity of nearly half their holdings as a result of erosion (UNDP and UNEP 2006). In Gishwati Forest, as degradation has accelerated soil erosion, landslides and flooding have increased. Along with soil erosion, soil depletion has damaged agricultural production: local farmers estimated a 25 percent drop in production between 1998 and 2005 (UNDP, REMA, and UNEP 2007a).

The PEI study found that deforestation in Gishwati Forest has undermined many of the natural sources of goods on which households rely. For example, between the period before the genocide and afterward, timber availability declined by more than 98 percent (UNDP, REMA, and UNEP 2007a). Similarly, most wild food supplies—including both vegetables and animals (bushmeat)—had either been completely eradicated or were on the verge of collapse. The case was the same for grass used in thatching and woven goods, and for leaf litter.

POLICY PROCESS

Through the Rugezi Wetlands and Gishwati Forest case studies, PEI researchers demonstrated that environmental degradation had substantially harmed all levels of the Rwandan economy. But, given the reliance of the Rwandan population on local natural resources, conservation could not be the sole answer: sustainable management of natural resources was called for. Although the GOR recognized the importance of protecting the environment—as evidenced by the first PRSP—it remained to be seen how that commitment was to be integrated into national economic policies, and how those policies were to be implemented.

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[5] For an analysis of the gender-related impacts of water collection in conflict-affected countries, see Njeri Karuru and Louise H. Yeung, "Integrating Gender into Post-Conflict Natural Resource Management," in this book.

The drafting of the EDPRS provided an opportunity to incorporate environmental concerns into planning for other sectors. Unlike the first PRSP, the EDPRS was shaped by the PEI study and its supporters, who had begun working in 2005 to ensure that environmental concerns would be given thorough and practical consideration. The EDPRS was drafted by sector-specific working groups and by an additional working group that dealt with the four crosscutting issues (CCIs). As noted earlier, as a result of heightened awareness of the critical links between the environment and development, environmental concerns were addressed not only by the Sector Working Group on Land and Environment, but also by the CCI Working Group. All working groups followed a generic drafting methodology, adding detail as needed. Although the sector working groups were originally intended to follow the same process, differences in the level of organization between sectors ultimately led to diverse interpretations of the process to be followed.

To assist in establishing objectives and progress metrics for each of the four issues it was tasked with addressing—gender, social protection, HIV/AIDS, and the environment—the CCI Working Group prepared a logical framework. In addition to providing continuous assistance to the other sector teams, the CCI environment team engaged in the following tasks (UNDP, REMA, and UNEP 2007b):

- Prepared checklists to guide the mainstreaming of environmental considerations into specific sectors.
- Created a document highlighting the links between the environment sector and each of the other sectors.
- Led training for EDPRS facilitators.
- Provided data to place environmental concerns in the context of sector policies and legal frameworks.
- Provided calculations regarding environment-related activities in each of the other three sectors.
- Developed and presented short, targeted briefs on selected topics, such as energy, to decision makers.[6]
- Presented findings from the PEI study, along with alternative policy options, during a training session for selected parliamentarians.

The key messages of the PEI study were disseminated widely across sectors through the efforts of the CCI environment team, by planning departments and EDPRS facilitators, and through television and the press. The messages were tailored to the occasion, the audience, and the sector, and were repeated often and in different formats. In each case, the message was accompanied by field data and emphasized the national implications of the analysis.

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[6] Some briefs were presented directly by PEI staff, while others were prepared by PEI staff but given to the environment team or EDPRS facilitator for the relevant sector to present.

Two examples illustrate how these tailored messages helped communicate the practical and crosscutting nature of environmental issues.[7] The first concerns the natural resource dimensions of national economic development. Rwanda's national economy depends heavily on the agricultural sector, and most Rwandans rely on agriculture for their livelihoods. Forty-one percent of the nation's GDP comes from the agricultural sector, which also accounts for 72 percent of all exports (UNDP, REMA, and UNEP 2007a).

The loss of soil to erosion translates into the loss of capacity to feed 40,000 people annually—and, as noted earlier, to economic losses of as much as 2 percent of GDP. Overcultivation of agricultural land is the primary cause of the drop in productivity, and no attempts to control the damage from excessive use have been effective to date (UNDP and UNEP 2006). This empirical evidence made possible the communication of a convincing message: namely, that investments in the more sustainable use of agricultural land would reduce the number of people who live in absolute poverty, and could increase production.

A second example relates to the environmental dimensions of public health. In Rwanda, all three of the most common illnesses are waterborne, and are directly related to the lack of access to clean water. Without investment in improving such access, the incidence of illnesses such as amebiasis will continue to increase, as will the productivity losses associated with illness. Armed with this key message, PEI partners were able to articulate the economic benefits of investing in improved access to clean water.

In addition to engaging in outreach efforts, the CCI environment team was invited to comment on the two drafts of the EDPRS—a level of involvement that reflected the stature that the GOR had assigned to environmental issues, as well as the power of economic data to facilitate the mainstreaming of environmental concerns into poverty reduction planning. For the CCI environment team, reviewing the EDPRS drafts was a valuable opportunity to ensure that environmental considerations had been effectively incorporated into the sector strategies, to confirm the quality of the data, and to comment on budget allocations.

CONCLUSION

Rwanda has come a remarkably long way since its civil war. In 2005, after having successfully completed the Highly Indebted Poor Countries process, the GOR declared that the country was moving out of the post-conflict era and into the development phase (UNDP 2007). In 2007, Rwanda received more foreign aid per capita (US$55) than most other African countries, and for a number of years it has achieved one of the highest economic growth rates in Africa (UNDP 2007).[8]

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[7] The examples reflect the status as of 2006, when the study was prepared, and do not account for the measures taken since then.

[8] The National Bank of Rwanda reported a growth rate of 11.2 percent in 2008 (NBR 2009), and of 9.1 and 6.8 percent for 2012 and 2013, respectively (NBR 2013).

However, Rwanda remains one of the poorest and most vulnerable countries in the world. In 2006, an estimated 56.9 percent of the population lived below the poverty line, although that figure was down by 3.5 percentage points from the 2001 figure of 60.4 percent (ROR 2007a). Moreover, Rwanda's dependence on agriculture for livelihoods, GDP, and exports makes it vulnerable to drought, disease, and land degradation.

Because it mainstreamed environmental concerns into all sectors, the EDPRS development process marked a transition for Rwanda. The dissemination of the results of the PEI study, along with substantial advocacy on the part of PEI partners and others, led to general acknowledgment that environmental degradation would affect long-term growth. Moreover, concerted efforts on the part of the GOR, Rwandan environmental advocates, and the international community helped ensure that environmental concerns were incorporated into development policies. For example, between 2005 and 2006, the budget for the environment sector increased by 40 percent (Duwyn and Wrist Sorensen 2010). These funding increases supported the development of policies, laws, and institutions that will more effectively and sustainably manage natural resources. Such a shift was remarkable in a country that had emerged from a devastating civil war less than fifteen years earlier—particularly given the fact that the environment had become a recognized government sector only as of 2003–2004.

Achieving high-level recognition for the key role of the environment in everything from livelihoods to rural employment, public health, the national economy, and social development was a huge step forward. The key to this step was building widespread understanding of the importance of the environment in the post-conflict setting; this understanding, in turn, depended on generating the necessary data, effectively communicating information about specific issues, and facilitating an open process for the formulation of the EDPRS.

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