

Programmatic Approach to Land Degradation in Burundi

Burundi is a small, landlocked country. Its economy is dominated by subsistence agriculture, which employs 90 percent of the population, though cultivable land is extremely scarce. The country is endowed with valuable natural assets. In particular, abundant rainfall, a dense river network, fertile arable land, productive marshlands, and freshwater lakes generate a range of ecosystem services, as well as directly supporting the lives and livelihoods of the population.

Over the past decades, Burundi's economic growth has relied on steady depletion of its natural capital and, as a result, the country's natural environment has substantially degraded. The main driver of the environmental degradation has been the rapid population growth. In particular, in order to feed the growing population, substantial areas of forest have been cleared for agriculture, and poor agricultural practices have harmed soil fertility and integrity. Water resources have also been degraded, affecting several sectors and public health, while the population has also been exposed to severe indoor air pollution due to biofuel burning. In some cases, climate change is amplifying these consequences, in particular the frequency and severity of natural disasters. Without proper institutional arrangements in place, the environment has not been safeguarded from the expansive forces. Furthermore, conflicts that plagued the country on and off over the decades have prevented effective implementation of environmental and natural resource management policies.

Landscape degradation directly affects 1.5 billion people, including 42% of the world's very poor and 32% of the moderately poor. 52% of the land used for agriculture is moderately or severely affected by soil degradation. Besides, about 30% of global forest cover has been completely cleared and a further 20 percent has been degraded compared to the last several centuries. It is also noteworthy that the South is much more impacted by net forest loss than the North. Breaking this spiral of loss and degradation and restoring these lands would therefore bring many benefits. Restored landscapes benefit livelihoods and biodiversity by reducing erosion, supplying clean water, providing wildlife habitat, biofuel, and other forest products. Forests and trees also help mitigate climate change and enhance soil fertility, conserve soil moisture, and boost food production

Land degradation is the most serious environmental problem faced by Burundi today. Over one-third of Burundi's land is considered very highly or highly degraded. Agriculture is practiced on the slopes of hills and mountains across the country, and this, coupled with deforestation, has caused extensive land degradation and soil erosion. Soil erosion has compromised ecosystem integrity, eroded riverbanks, and led to nutrient loading of water bodies. It has also led to reduced soil fertility in the hilly and mountainous areas, resulting in lowered agricultural yields. The impact of reduced productivity of arable land through

the constant loss of topsoil and nutrients is already evident at all levels in Burundi. Overall, the country is estimated to be losing 150-200 t/year/ha million tons of soil per year. Most of the soil lost through erosion ends up in the stream network and marshlands. This is evident in the siltation of the various rivers and associated wetlands. Soil erosion is also the principal contributor to the flash floods and landslides that occurred in 2014 and 2015 causing loss of lives and damage to infrastructure. The annual cost of environmental degradation in Burundi (due to deforestation, land degradation, water pollution, air pollution, and natural disasters.) is estimated by the CEA at about US\$ 376 Million or 12.1 percent of the country's 2014 GDP. For the land degradation portion, the calculation was based on soil erosion that is associated with economic losses at a midpoint of US\$ 120 Mn or 3.9% of GDP in 2014. This is a conservative estimate obtained using productivity reduction for three major crops in Burundi. In comparison with other countries where the World Bank has conducted similar studies, Burundi ranks first in terms of environmental degradation.

While highly exposed to environment degradation and extreme weather events and climate shocks, Burundi has extremely low capacity to respond. Based on data from the past 60 years, Burundi has experienced alternating cycles of excess and deficit rainfall nearly every decade, as well as overall increased mean temperature, with the dry season is getting longer. These shocks have in turn increased the vulnerability of the landscapes. For instance, since September 2015, Burundi has been severely affected by the El Niño climate phenomenon, resulting in a heavier and longer rainy season, and dangerous floods in Burundi's most vulnerable zones. Burundi ranks 174 out of 180 countries in the Notre Dame Global Adaptation Index that summarizes a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience. Burundi is the 4th most vulnerable country and the 20th least ready country.

It has become clear that Burundi needs to halt the unsustainable expansion path based on the depletion of natural capital and find a new and sustainable development trajectory. Consequently, it was determined that the Government of Burundi (GoB) would benefit from a Country Environmental Analysis (CEA). Together with the Government of Burundi, the World Bank has undertaken this Country Environmental Analysis (CEA) as a first step in support of the country to transition toward inclusive and sustainable development. Furthermore, in order to reverse land degradation and deforestation, the World Bank is co-leading a series of projects: (i) The landscape restoration project, (ii) The Sustainable Land Management of Coffee Areas (PAZDOC) Project; and (iii) The Coffee Sector Competitiveness Project.

Beyond the three Country based projects mentioned, Burundi is also part of multiple regional projects. In the regional context Burundi has access to knowledge resources developed in neighboring countries as well as the ability to build networks beyond country borders. A key example, the ongoing Lake Victoria

Environmental Management Project II (LVEMP – which aims to improve the health of the Lake Victoria basin), the Regional Great Lakes Integrated Agriculture Development Project.

This report begins by discussing the fundamental context and conditions of environmental problems that must be taken into consideration when addressing specific environmental problems. Then the report describes the main forms of environmental degradation observed in Burundi. An attempt to measure the extent of degradation in monetary terms has been made to demonstrate the economic cost of environmental degradation. The report finds geographical overlap of concentration of poverty and degraded environment. Climate change will only exacerbate the situation, leaving the poor population more vulnerable to shocks.

The report then offers sets of recommendations relative to the diagnosis made in the first part of the paper. As overall recommendations, the CEA stresses the importance of a holistic approach at landscape level to address the problems and build resilience of the environment and the communities. Favoring practical and simpler options, the report presents recommended actions to address deforestation, land degradation, indoor air pollution, water pollution, and natural disaster management in the face of global climate change. These actionable policies may be implemented through a combination of state-led initiatives and community-based, bottom-up framework. These recommendations also serve the country's preparation for implementation of Nationally Determined Contribution (NDC) toward climate change mitigation and adaptation.

In parallel to the conception of a CEA for Burundi, multiple complementary projects at various stages of implementation are underway in the country. This complementary suite of projects is already responding to cross-cutting issues raised in the CEA. This Landscape approach was designed with the aim of addressing the multi-sectoral issues uncovered in the analysis of Burundi. To date there are at least four mutually reinforcing ranging in a variety of interventions. True to the desired holistic approach, these projects are share both resources and information to increase their efficiency and effectiveness.

Starting with one of the most recent projects in preparation, a US\$50 million IDA project in preparation, the Burundi Sustainable Landscape Management, activities will complement and build on other related World Bank Group (WBG) analytical work in the country especially those involving natural resource management, conservation, and promotion of the agriculture sector, including the Poverty Assessment and the Country Environmental Analysis (CEA) . The newest project will also complement existent operations such as: the ongoing Lake Victoria Environmental Management Project II (LVEMP – which aims to improve the health of the Lake Victoria basin),

the Agricultural Productivity and Access to Markets (PRODEMA – which promotes increased productivity and commercialization of rice, coffee, milk and banana commodities).

To further address the country wide issues of productivity, the Sustainable Coffee Landscape Project (PADZ the Coffee Sector Competitiveness Project aims to increase both the productivity and quality of Burundi coffee. The final piece of the holistic approach is the Program for Integrated Agriculture Growth in the Great Lakes (US\$ 75 million) currently also at Preparation stage, which aims to increase production and marketing of selected agriculture commodities for the benefit of local communities located in the Rusizi plain and along the shores of Lake Tanganyika. The proposed project will also draw from studies and lessons learned by the WB Social Safety Net public work Program to inform its “cash for work” mechanism.

Both commonalities among and distinctions between these projects are worth examining. Later projects learn from their predecessors. As a result, successful interventions are replicated and scaled up while continuous improvements can be made to work out design flaws. It should be understood that each distinct variety of land (soil, slope, humidity, population density, etc) addressed within Burundi requires special attention. The unique and varied topography (and biophysical characteristics) of the country lends itself to a myriad of activity types each aimed at achieving sustainable growth. Though the land is not homogenous in nature, there are commonalities that create efficiencies across the program.

In addition to leveraging country systems already in place, these projects will all coordinate efforts with multiple donors working in the country, including FAO, IFAD, GEF and GIZ, among others. OC – which promotes environmentally friendly technologies for sustainable coffee production. True to the spirit of a programmatic approach this suite of projects aims to reinforce efforts to curb land degradation in Burundi by addressing multiple drivers of deforestation alongside strengthening efforts to support sustainable improvements in land management that would ideally lead to improved growth in the country while engaging multiple practice leaders (Environment and Natural Resources, Agriculture, Social Development, etc) within the implementing institution.