1. Key development issues and rationale for Bank involvement

Development in Burundi has been set back by several years of recurring internal conflict. Burundi is a small, landlocked country that straddles Central and East Africa, with a total land area of 27,834 km², and approximately 8.5 million inhabitants, about 10.6 percent of whom live in urban areas. Burundi has emerged from a cycle of political-ethnic conflicts that lasted more than 13 years and claimed the lives of about 300,000 people while displacing about 16 percent of the population. These years of recurring conflict have had a devastating effect on Burundi’s economy. Burundi’s per capita income fell by about 40 percent between 1993 and 2007, from US$180 to US$110. In 2009 Burundi’s Gross Domestic Product (GDP) per capita was at US$111, making Burundi one of the poorest countries in the world. A simple estimate of the cost of the war indicates that without the conflict Burundi’s GDP per capita would be about double its current level.¹ Burundi is not likely to meet many of the Millennium Development Goals (MDGs) by 2015. Nearly all social indicators have sharply deteriorated as a result of the civil war. By most measures of health and human capital, Burundi lags behind the world and other countries in the region. An estimated 67 percent of the population lives below the national poverty line and the country ranked towards the bottom of the Human Development Index in 2010.

¹ Burundi Country Economic Memorandum, World Bank, December 2009. The Country Economic Memorandum (CEM) draws on a large number of country-specific background studies prepared by the Government of Burundi, the World Bank, other donors and academics. The CEM provides a synthesis of various recommendations, including the prioritization and sequencing of key actions for Burundi to raise its growth path in the next few years.
After about 25 years of protracted decline in GDP per capita, Burundi’s economy is beginning to experience positive growth. Consolidation of the peace process has helped start reconstruction and created positive prospects, but the country has not experienced the typical post-conflict bounce in GDP growth, in large part due to periodic internal instability and a generally poor investment climate linked to heavily dilapidated infrastructure. The agriculture sector currently dominates Burundi’s economy, representing 46 percent of GDP and providing 90 percent of the population with income and employment. Recent growth in the service sector, which accounts for 37 percent of GDP, is largely due to a rise in public services. Burundi’s industrial sector only contributes to 17 percent of GDP, however the construction industry has shown considerable dynamism since 2001. The rate of growth of Burundi’s GDP is projected to increase from an estimated 3.5 percent in 2009 to 4.8 percent in 2012.

Burundi’s second democratic elections in 2010 constituted a milestone in the country’s political transition. The second democratic elections under the new constitution since 2005 took place from May 24th to September 8th, 2010. These elections were seen as a test of the strength of the country’s institutions and the stability of democracy. Voter registration began in late January 2010 and more than 3.55 million voters were registered. The electoral period began with local council elections in May 2010, followed successively by presidential elections in late June 2010, parliamentary and senatorial elections in late July 2010, and ending with hillside (local) elections in September 2010. The National Independent Electoral Commission (CENI) and the European Union (EU) observers concluded that despite a few irregularities during the local council elections, the presidential election was conducted consistent with international standards. However, thirteen of 42 opposition parties, alleging fraud and vote-rigging, formed a coalition to boycott the presidential elections, leaving President Nkurunziza to stand virtually unopposed. As a result, President Nkurunziza, who claimed about 92 percent of the presidential votes cast, was re-elected and started his second, 5-year term as Burundi’s President on August 26, 2010. The ruling party is holding a majority in both the parliament and the senate. Efforts of the ruling party to reach out to other opposition parties include appointments of opposition party members in government and convening meetings for political dialogue.

The Government of Burundi requested support from the World Bank to protect core development spending to the infrastructure sector and to strengthen the country’s economic recovery. Burundi suffers from extreme infrastructure gaps in road access, power generation, communications infrastructure, and access to water and sanitation. The poor state and coverage of infrastructure implies high costs and delays that lower the expected rate of return on capital, discourage domestic and foreign investment and constrain economic growth. To reduce the dependence on increasingly volatile commodity prices and external aid, Burundi would need to rapidly improve the reliability of its infrastructure and conditions for private sector investment, starting in the Bujumbura capital area. A widening electricity supply deficit has negatively impacted the country's macro economic recovery. The government’s strategy to strengthen and reform the energy sector aims to immediately reduce the severe energy supply deficit and to enable a sustainable, long term electricity access expansion. Among the priorities are: (i) increase in emergency thermal generation capacity; (ii) development of hydro power (and other renewable energy) resources; (iii) rehabilitation of energy transmission and distribution systems; and (iv) strengthening the performance of the energy and water utility REGIDESO (e.g.
by introducing cost reflective tariffs, debt restructuring, performance based management and technical assistance). Two ongoing IDA-financed infrastructure operations are assisting the Government of Burundi in this regard: (i) the US$50 million Multi-Sectoral Water and Electricity Infrastructure Project (MSWEIP)\(^2\), approved in May 2008, which is providing co-financing for the proposed GEF energy efficiency project, and (ii) the US$15.4 million Emergency Energy Project (EEP)\(^3\), approved in September 2010. Additional US$2 million are being requested from GEF to ensure a more widespread understanding and use of energy efficient technologies and appliances in Burundi.

**Power sector infrastructure:** Burundi’s recurring conflict has largely destroyed the country’s infrastructure assets, including its energy generation, transmission and distribution systems. The country’s installed generation capacity is therefore very limited at about 50 MW. Most of the country’s electricity supply is generated by REGIDESO through seven hydroelectric plants, which have a combined installed power capacity of 30.6 MW.\(^4\) Two of these hydro power plants deliver 85 percent of the domestic power supply: Rwegura (18 MW) and Mugere (8 MW). Burundi’s energy supply therefore depends to about 95 percent on hydro power. This makes the country highly vulnerable to droughts which frequently decrease the electricity production by depleting the limited water storage capacity in the associated hydro power reservoirs. REGIDESO also owns a 5.5 MW thermal power plant in Bujumbura, which has been mostly idle since its acquisition in 1995. Low electricity tariff levels and high diesel prices did not allow REGIDESO to finance fuel payments, and the plant has long been kept as an emergency back-up in case of hydro power production failure. The Bujumbura thermal power plant started regular operations in September 2009, following a complete technical overhaul; operation and maintenance training of REGIDESO staff; and the provision of diesel fuel subsidies through the IDA-financed energy operations under implementation.

**Utility structure:** As explained above, REGIDESO is the main organization involved in the supply and distribution of electricity and water in Burundi\(^5\). REGIDESO is a state-owned, vertically integrated power and water utility under the supervision of the Ministry of Water, Energy and Mines (MWEM) and is the implementing agency of two IDA-financed energy and water infrastructure projects under implementation in Burundi. REGIDESO is serving electricity to about 53000 clients. About 300 large electricity customers, mainly industrial, commercial and public service clients, account for about 40% of the electricity consumption in Bujumbura city. The household sector equally accounts for about 40% of the electricity consumption in Bujumbura city. Household demand is primarily driven by lighting equipment.\(^6\) A World Bank

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\(^2\) The MSWEIP was approved on May 13, 2008, with an original IDA grant of SDR 30.4 million (US$50 million equivalent). The closing date of the MSWEIP is June 30, 2013. Component 1 of the MSWEIP is co-financing the proposed GEF Energy Efficiency Project with an amount of US$21.6 million.

\(^3\) The EEP was approved on September 30, 2010, with an original IDA grant of SDR 30.4 million (US$15.4 million equivalent) from the IDA Crisis Response Window. The closing date of the EEP is January 31, 2014.

\(^4\) In addition DGHER operates eight small and micro hydro plants in rural areas while non-governmental organizations (NGOs) and some non-profit organizations operate another twelve micro hydro plants.

\(^5\) In rural areas of Burundi, the General Directorate of Water Supply and Energy (DGHER - *Direction Générale de l’Hydraulique et des Énergies Rurales*), also an autonomous entity operating under MWEM’s supervision, is responsible for the provision of electricity and water.

\(^6\) A survey of 489 households in Bujumbura city showed that 51% of electricity used in households accounts for lighting.
supported financial restructuring and recapitalization of REGIDESO was completed in 2008, followed by the signing of a five year performance contract between REGIDESO management and the Government of Burundi. This performance management contract includes detailed obligations of both parties to ensure the financial sustainability of REGIDESO. Independent audits of the performance contract are carried out annually to analyze the technical and financial status of REGIDESO. The April 2010 audit showed first progress of REGIDESO towards achieving the annual performance contract targets\(^7\). Recommendations of this audit are currently being implemented, such as the establishment of an accounting system separated by activity and service; the establishment of 5-year investment plans; and measures to strengthen data collection and data quality.

**Growing power supply-demand gap:** During the 2004-2006 regional droughts, REGIDESO’s hydro power production decreased to 137 GWh per year, representing a 35 percent decline compared to the 2009 supply level. The total annual supply of electricity increased slightly from 188.8 GWh in 2007 to 208 GWh in 2009 due to the rehabilitation of some smaller hydro plants and increased generation from the Bujumbura thermal power plant. Supply reliability is further hampered by a severely dilapidated electricity grid in urgent need of repair. The absence of key system protection and control functions make outages more frequent and difficult to monitor and address in time. The steadily growing power supply-demand gap is due to a combination of several factors including: (i) lack of investments in the country's hydro power generation capacity during the last 13 years of civil war; (ii) rapidly increasing power demand in the Bujumbura capital area (further increased by the REGIDESO’s electricity access program for new connections); (iii) over-reliance of hydro power, immediately affecting power supply during droughts; (iv) degradation of the catchment area upstream of main hydro power plants due to deforestation and increased land usage during the years of conflict; (v) high technical and commercial losses in the electricity distribution network and (vi) failure to operate the existing (yet limited) thermal capacity due to lack of funds for fuel purchase, poor maintenance and lack of available spare parts. A major energy supply crisis affected Burundi during the 2009 dry-season. From June-September 2009 the country’s electricity supply was reduced by 40%, resulting in severe electricity shortages for all basic services (e.g. water supply, hospitals) and households in Bujumbura. A similar energy supply crisis occurred in the 2010 dry-season, resulting in large scale and systematic load-shedding (reaching approximately 40-50% of existing demand during peak hours) with severe effects on the country’s macro economic recovery.

**Energy Efficiency.** No consistent and coordinated government energy efficiency programs had been launched since the end of Burundi’s long term conflict. As a result, energy efficiency is facing barriers at all levels in Burundi. Surveys conducted in Burundi have identified the following main barriers\(^8\):

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\(^7\) Audit technique du contrat-plan intervenu entre la REGIDESO et le Gouvernement Burundais le 22 Septembre 2008: April 2010

\(^8\) REGIDESO: Etude de la mise en œuvre d’un programme de Maitrise de la Demande d’Electricité au Burundi (2007)
(i) **Low awareness for energy efficient products and appliances:** Currently, there is a lack of awareness among decision-makers, consumers, and equipment suppliers on energy efficiency technologies, and lack of an effective political engagement to promote energy efficiency both on the supply and demand side. Policy instruments to promote energy efficient products still need to be developed, such as an energy efficiency building code.

(ii) **Unregulated markets for energy efficiency products and appliances:** The residential sector is the main responsible for the peak load during evening hours and household equipment in Burundi is generally of low quality and limited energy efficiency standards, including air-conditioning, refrigeration, water heating and lighting equipment. The lighting market is not structured and products and brands are imported from various countries. Households in Burundi use an average of 10 light bulbs, about 70% of incandescent type and with rated power of 40 W, 60 W and 100 W, with some fluorescent tube lights of 40 W and 60 W being used mainly for security and room lighting. Efficient light bulbs, when available, are of low quality, and cannot withstand the high voltage fluctuations to which the Burundi grid is subject. Air-conditioners are not subject to any regulation and the procurement of equipment is guided by low cost aspects not considering quality features. Conventional electric water heaters are widely used in households and small industries (e.g. hotels). Suppliers and customers are not familiar with energy efficient water heating strategies and equipment (including solar water heaters).

(iii) **Lack of quality technical and service standards for energy efficient equipment:** Energy efficiency standards and labels for appliances, equipment, and lighting products are particularly cost-effective instruments for conserving energy and can force a shift to energy efficient technology and dramatically improve national energy efficiency.\(^9\) For the whole range of energy efficiency technologies, there are currently no quality technical and service standards adopted to the post conflict country context in Burundi.

(iv) **Low capacity and management experience:** Burundi’s long term civil conflict has had a devastating effect on its human resource capacity. Government agencies and private market players generally have very limited experience in designing, executing and monitoring investment programs. There is need to build capacity and establish frameworks both within and outside the government to facilitate the use and adoption of energy efficiency technologies and products.

(v) **Lack of access to investment finance:** At this stage the market being targeted for energy efficiency technologies includes government ministries and agencies, other large commercial, industrial and institutional customers, and individual households particularly in urban and peri-urban areas. For all these groups there is limited access to investment finance.

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9 Performance Standards – either mandatory or voluntary - are a set of regulations prescribing minimum energy performance for appliances and equipment in the market, whereas labels are attached to appliances and equipment to indicate the level of energy performance.
The proposed project is consistent with the World Bank Group’s Country Assistance Strategy (CAS), discussed by the Board of Directors in August 2008, which presents a medium-term vision of sustainable development by assisting Burundi’s transition from a post-conflict economy to a developing country. Improved electricity services and energy efficiency will play a crucial role in accelerating industrial and commercial activity and hence contribute to the country's economic growth. The proposed project is aligned with Burundi’s Poverty Reduction Strategy Paper (PRSP) of September 2006, which aims to promote sustainable economic growth and to develop human capital.

2. Proposed objective(s)

The project’s global environmental objective is to selectively improve the energy efficiency of buildings in Bujumbura city and to strengthen the policy frameworks for energy efficiency. The project will result in GHG emission reductions from the energy saved through the use of energy efficient equipment.  

The GEF energy efficiency project will be fully aligned with the demand side management program of the IDA financed MSWEIP under implementation. The project development objective of the MSWEIP is to: (i) increase access to water supply services in peri-urban areas of Bujumbura; (ii) increase reliability and quality of electricity services; (iii) increase water supply quality and reliability in Bujumbura; and (iv) strengthen REGIDESO’s financial sustainability.

3. Preliminary description

GEF financed activities will scale up the scope and effectiveness of REGIDESO’s demand side management program, that represents Burundi’s first consistent and coordinated energy efficiency program since the end of the country’s long term conflict. GEF resources will be targeted to scale up the distribution and promotion of compact fluorescent lights (CFLs) and other energy efficient technologies and appliances, support the implementation of energy efficiency measures identified from a utility energy audit and the promotion of energy efficiency investments to large consumers, and introduce standards, labels and guidelines for energy efficient appliances. Continuous advisory support and technical assistance will be provided to increase technical, managerial and organizational capacities for energy efficient technologies and practices. GEF resources are also allocated to ensure proper project management, monitoring and evaluation.

10 The project objective has been further specified and targeted to GEF financed activities compared to the project objective approved in the GEF Project Identification Form (PIF) on March 17, 2010: The project’s global environmental objective is to remove barriers to Burundi’s low-carbon development by improving the efficiency of the electricity system and promoting small hydro development.
The proposed GEF components include:

- **Component A1: Scaling up distribution and promotion of compact fluorescent lights (CFL)** – the first phase of the distribution and promotion of 200,000 CFLs under the IDA-financed MSWEIP will be scaled up, additional 200,000 CFLs will be procured and distributed.

- **Component A2: Scaling up media and awareness raising campaigns for energy efficiency products** - the first phase participatory media and awareness raising campaign under the MSWEIP (including advertisement tools such as leaflets, radio and television spots, newspaper supplements, and banners in public places, disseminated both in French and translated in the local language Kirundi) supported by the MSWEIP will be scaled up to provide continuous capacity building and consumer advise on the use of a variety of energy efficient products, including environmental, economic, safety, and health aspects.

- **Component A3: Scaling up technical and managerial capacity building** – including workshop series to raise awareness of government agencies (ministries, regulatory and inspection authorities), private sector players, and standardization institutes on energy efficient products and appliances.

- **Component B2: Technical Assistance and small scale energy efficiency investments in buildings to implement energy efficiency measures** - small scale energy efficiency investments identified in an utility energy audit (ongoing under the MSWEIP) might include electronic ballasts, timers to regulate the use of air conditioners, and solar water heaters in public institutions (such as government and institutional buildings).

- **Component C1: Energy efficiency advice to large public institutions, commercial and industrial consumers** – including technical assistance to build capacity of local auditors and REGIDESO staff to provide energy efficiency advice to large public institutions, commercial and industrial consumers.

- **Component C2: Develop standards, labels, and guidelines for energy efficient equipment and an appropriate energy efficiency building code** – including the development of a energy standards and labels program for energy efficient lighting and air-conditioning; guidelines for the use of solar water heaters; and the development of an appropriate energy efficiency building code.

- **Support to project management.**
4. Safeguard policies that might apply

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5. Tentative financing

Source: ($m.)
BORROWER/RECIPIENT 1.3
Global Environment Facility (GEF) 2.0
GLOBAL ENVIRONMENT - Associated IDA Fund 21.6
Total 24.9

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