

Investment opportunities in renewable energy Burundi

Minister for Energy and Mines THE REPUBLIC OF BURUNDI



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October 2012



The Ministry of Energy and Mining

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Message from the Minister for Energy and Mines

Since the mid- 2000, Burundi has entered a phase of political stability, national reconciliation and economic reform. Our country is therefore in a good position to improve the economic and social conditions of the population. Burundi is in the process of withdrawing the state from a number of economic areas and is opening up the private sector. Specific opportunities for foreign direct investment are developing, bolstered by the country's entry into the East African Community.

Access to electricity for the Burundian population is very low (10 per cent) compared with other countries in the East African Community. However, Burundi's hydroelectric potential is 1,700 MW, of which 300 MW are sites of more than 1 MW. Currently, only 32 MW are developed.

Private sector development is now a cornerstone of the country's economic recovery and the government recognizes its role as engine of growth. Structural reforms have been implemented such as the state's disengagement in productive sectors, opening up to private enterprises and the liberalization of the economy.

In addition to this document on investment opportunities in Burundi's renewable energy sector, the Government of Burundi has also engaged itself in the development of a policy and an action plan for the energy sector. The policy aims to, in a sustainable way, facilitate supply and demand for energy by the Burundian population.

Three main components constitute the bedrock of a indispensable transformation of the energy sector:

- Increased capacity for production
- Modern energy to be accessible to the vast majority of the population
- The energy sector to be efficient, transparent and equitable in order to optimize the use of financial and human resources

Burundi is currently experiencing a prosperous period, favourable for ensuring efficient and sustainable electricity production and supply and access to modern energy services. These activities require the implementation of the action plan of the energy sector. This is a document of reference for the Burundi's development partners and investors who wish to participate in Burundi's reconstruction and development.

The document you are now holding, developed with the support of the United Nations Development Programme in Burundi, is an invitation from the Burundian people and their government to all national and foreign investors who wish to explore the opportunities in Burundi's renewable energy sector.



MINISTER FOR ENERGY AND MINES

Hon Côme MANIRAKIZA



Executive summary

An equatorial and mountainous country, located in the Great African Rift Valley, and bordered by one of the largest lakes in the world, Burundi has many unique advantages for renewable energy development. Burundi has a major hydropower potential and extended periods of sunshine. Furthermore, Burundi has an interesting wind power potential that should be evaluated. The geothermal resources should also be assessed. The country has very significant resources and also other possibilities within biomass (waste and sugar cane residue, bagasse).

Burundi is a country facing considerable challenges in terms of energy. An insufficient electricity supply cannot keep up with the growing demand – a situation that has resulted in the use of diesel driven generators and importation of electricity. It is necessary to eliminate the deficit as soon as possible, but also to go beyond just solving the deficit and make long term investments in energy installations to ensure continuous economic growth.

All economic sectors require investment in their energy supplies: industry, households, commerce, health, education, tourism, agriculture, fisheries and transport. The technological answers are varied and relate to the totality of renewable solutions available.

The government of Burundi has responded to the energy crisis by opening up the electricity sector to private investment. The sector has been liberalized. Production and distribution of new zones to be connected to the grid are open for private investors. Furthermore, the legal, and administrative and financial framework has been simplified in order to encourage foreign countries to invest in Burundi, where a business can now be set up in 24 hours.

As a result, all conditions are in place for the energy sector, an engine of growth, to meet the challenges facing Burundi today.



10% Projections show that <u>GDP per</u>

capita will grow to around 10% in coming years

Printer.



Burundi, a country of a thousand and one hills

BUJUMBURA is the largest city on the borders of Lake Tanganyika. It is the only city in the sub-region that has a port, an international airport where the runways can be enlarged without difficulty and land is available for development.



Diagram 1: The economic hub of Bujumbura – Lake Tanganyika region Source : Google Earth

A favourable geographical location

Burundi is a landlocked country of **27, 834 km2**, located on a plateau **in the heart of Africa's Great Lakes region**. Burundi's neighbouring countries are Rwanda to the north, the Democratic Republic of the Congo to the west and Tanzania to the south and the east. Burundi's capital is the city of Bujumbura. The country has an interesting landscape with an altitude that ranges from 772 metres (Bujumbura) to 2,670 metres (Mont Heha). The average altitude of the country is 1,700 metres.

The main rivers of Burundi are the **Malagarasi** (475 km), which originates in Burundi, stretches for 160km along the Burundi-Tanzania border and then flows into Lake Tanganyika, and the **Ruzizi**, a river of 117km that connects Lake Kivu and Lake Tanganyika, located between the Democratic Republic of the Congo and Rwanda, and that downstream constitutes a border between Burundi and the Congo.

A stable climate

The climate of Burundi is moderately equatorial. The average annual temperature ranges from 17 to 23 °C and varies with the altitude. In Bujumbura, the temperature varies from between 21 °C and 28 °C. Burundi has two dry seasons (June-August and December to January) and two rainy seasons (February to May and September to November).

BURUNDI IS STRATEGICALLY LOCATED between the French-speaking Africa of the Economic Community of Central African States and the English-speaking Africa of the East African Community. Cooperation on energy issues between Burundi and the Congo is already advanced, especially within the tripartite cooperation of the Ruzizi I and Ruzizi II dams.

29° 30' 300'00' RWANDA and the designations map do not imply officia 2º 30 irundo KIRUNDO UNITED REPUBLIC OF CIBITOKE TANZANIA MUYINGA NGOZI Muyinga Cibitoke Kavanza Rusiba - 3º 00 sada KAYANZA Buhiga Bubar Karuzi DEMOCRATIC CANKUZO REPUBLIC BUBANZA OF THE (ARUZI Cankuzo CONGO Muramvya Gatumba Buiumbura Kanvosha Gitega MWARO BUJUMBURA Mwaro Ruyiga - 3º 30 OMutambu 3º 30' RUYIGI GITEGA Bukirasazi Matana -BURURI RUTANA Mutangaro^O BURUNDI Bururi Rumong 4º 00 rovincial boundary National capital Makamba Provincial canita Town, village MAKAMBA Road Mabanda Airpor 10 20 30 km 20 mi 4º 30 29° 00 29° 30 30° 00' 30°_30'

Map 1: Geography of Burundi

A stable administrative and political system

Burundi is divided into 17 provinces, 129 communes and 2,638 hills (map 1).

After the 2000 Arusha Peace and National Reconciliation Agreements, Burundi developed successfully into a pluralist governance system. General elections were held in June 2005 and legislative elections in August the same year. The latest legislative and general elections took place in 2010.

A economy in growth

Burundi's economy is currently in growth. It wasn't until 2010 that the country returned to its pre-war level of GDP per capita (179 USD) and the GDP is growing regularly thanks to an economic growth rate close to 4 per cent in the last few years (table 1). Projections show a growth of about 10 per cent over the next years (diagram 2).

Source: the United Nations Office in Burundi

THE EAC CONSIDERS improved access to energy to be one of the key success factors of economic growth in the region. A regional plan for infrastructure has been approved, and proposes opportunities for investment at the regional level. The plan is supported by the development partners.



Diagram 2: Forecast GDP per capita



Source: Vision Burundi 2025

Table 1: Figures relating to the economy

	2007	2008	2009	2010	2011	2012*
Population (million inhabitants)	7.7	7.9	8.2	8,4	8,6	8,8
GDP growth rate (%)	4%	5%	3%	4%	4%	4%
GDP (MUS\$)	1	1,2	1,3	1,5	1,6	1,8
GDP/Per capita	130	152	159	179	186	189
GDP (MUS\$) GDP/Per capita	1 130	1,2 152	1,3 159	1,5 179	1,6 186	1,8 189

* forecasts

Since 2000, the Burundian government has implemented a programme of structural and financial reforms that aims at stabilizing the economy and increasing activity. The opportunities for sub-regional collaboration and access to the regional market are extremely interesting for Burundi, which is member of the East African Community since 2007. The members of the EAC are Burundi, Kenya, Rwanda, Tanzania and Uganda. The EAC is a common market for goods, labour and capital in the region, and the community also facilitates the creation of regional projects.



Developing the potential for renewable energy in Burundi

1700

Burundi's hydropower resources have been evaluated at around 1700 MW



A considerable potential for hydropower

An equatorial and mountainous country, Burundi benefits from an extremely interesting hydropower potential, coupled with favourable rain conditions and many waterfalls. Burundi's hydropower potential was evaluated in 1983 to be of 1,700 MW of which approximately 300 MW were economically exploitable. The potential could be even greater today as the recent evaluation of certain sites has demonstrated a capacity higher than the one initially calculated in 1983.

According to a recent bibliography, there are **156 potential hydropower sites and 29 existing sites** (map 2) about to be equipped. Currently, fewer than 30 sites have been explored (table 2).

Detailed engineering and design studies of existing plants could allow for rehabilitation and improvement of capacity. New technologies allow for optimal use of components, pipelines, turbines, and transformers, thus reducing friction and losses and improving the transfer of energy.



AN INTERACTIVE WEB ATLAS is being developed with funding from the Belgian Cooperation. The atlas should be available in the second half of 2013 and will present all of Burundi's possible hydropower sites and the known information about them. The atlas will be updated continuously as new feasibility and pre-feasibility studies are available.

Table 2: Burundian hydropower plants currently operative

Name	Location	Capacity installed or imported (MW)	Energy produced (GWh/year)	Estimated cost of production (US\$/kWh)	Operator	Implementation date		
		Imports	i					
Ruzizi I	International Burundi - DRC	3	34	0.029	SNEL	1958		
Ruzizi II	International (Burundi– DRC-Rwanda)	13.3 (part of Burundi)	73	0.043	SINELAC	1989		
Sub-total		16.3	107					
National production								
Rwegura	Kayanza	18	55	0.04	REGIDESO	1986		
Mugere	Bujumbura	8	40	0.04	REGIDESO	1982		
Nyemanga	Bururi	2.88	24.4	0.04	REGIDESO	1987		
Ruvyironza	Gitega	1.5	11	0.04	REGIDESO	1980		
Gikonge	Muramvya	1	6.8	0.04	REGIDESO	1982		
Kayenzi	Muyinga	0.85	1.3	0.04	REGIDESO	1984		
Marangara	Kirundo	0.25	2	0.04	REGIDESO	1986		
Buhiga	Karuzi	0.24			REGIDESO			
6 stand-alone hydropower plants	Various	0.47			ABER			
12 private hydropower plants	Various	0.65			Private (The Burundi Tea Office and religious missions)			
Sub-total		33.84						
TOTAL		50.14						

Source: World Bank - CTB (SHER) – 2012

156

The last evaluation indicates at least 156 potential hydropower sites

Map 2 Burundi's hydropower potential



Source: Ministry of Energy and Mining, —the Belgian Technical Cooperation (2012)-bibliographical study and pre-diagnostic analysis of Burundi's hydropower potential-SHER







The average annual sunshine fraction in Burundi is close to 2000 kWh/m2.year

A potential for solar energy

Burundi has a very interesting solar potential. The average annual sunshine fraction in Burundi is close to **2000 kWh/m2.year** (map 3), equivalent to the sunniest European regions around the Mediterranean. In the interest of developing national programmes, it would be desirable to carry out a more precise capacity study, taking topography and seasonal characteristics into account.

Despite significant cloudy weather and rainy seasons due to Burundi's equatorial location, the development of solar energy in Burundi is a very interesting option.

Electrical production by solar energy can be carried out by photovoltaic technology or by thermal solutions. In the case of Burundi, only the photovoltaic option appears to be suitable.

The following five types of solar deployment could address Burundi's specific needs:

- Rural electrification by solar home systems
- Solar pumps
- Stand-alone photovoltaic generators
- Hybrid photovoltaic plants for remote areas
- Grid connected photovoltaic plants

Map 3 Solar map Burundi



A PV POWER PLANT has been constructed at the University Hospital of Kamenge in Bujumbura. The plant has a capacity of 403 kWp and is connected to the national grid. The project is financed by the Japanese cooperation (JICA), and the plant is operational from September 2012.



The latest significant solar projects in Burundi include:

- The 2009 installation of solar systems in 26 administrative centres of rural communities by the UNDP.
- The installation of solar systems in 30 health centres and 20 community colleges by the Directorate General for energy between 2006 and 2011.
- The 2012 installation of a number of solar street lights on main roads in Bujumbura.
- "The Energizing Development" programme launched a project for distributing solar home systems that could generate revenue among small-scale rural businesses.
- The European Union is planning electrification of 25 rural health centres by 2013.



A wind power potential ready for assessment

Wind power is either used to pump water (wind pumps) or to produce electricity (wind turbines). Wind pumps have changed little over the last decades (multi-blade wind machines) and are technically quite simple, however the wind turbines have, on the other hand, made significant progress over the last twenty years, and have improved in size and capacity.

Wind power is more or less completely unexploited in Burundi. In fact, only two mechanic wind machines have been installed in the last few decades, on the Imbo plain.

It seems that no feasibility studies on wind power have been carried out in Burundi. According to the SWERA atlas¹, the wind power potential of Burundi is less than 4.8 m/s (map 4). Consequently, it seems hard to develop industrial wind turbines. However, Burundi's varying altitudes, the existence of a lake of substantial size and the topography of the country, could prove to be favourable conditions at certain sites. More studies are necessary to verify Burundi's wind potential.

To develop wind power parks, challenges relating to improvement and adaptation of roads and availability of cranes should be addressed. If such measures are not taken, only smallscale wind power could be developed.

to pump water (wind pumps) or to produce electricity (wind



Map 4 : Wind map Burundi

Wind power

Varying altitudes, the presence of a major lake and an interesting topography could provide favourable condions for wind power generation in Burundi.



A geothermal potential to be evaluated

Geothermal electricity production consists of converting directly the heat of high-temperature aquifers (from 150 to 350 °C) by a turbo generator. For lower temperatures (100 to 150 °C), binary cycle technologies are available (use of an exchanger), however they are considerably more costly and the technology is complex.

Burundi is located in the Great African Rift Valley. This geological area is a region that has geothermal potential on an international scale.

While there are approximately 15 hot springs in Burundi, the temperatures measured are at a maximum of approximately 70 °C and there do not appear to be any sources with established fumaroles with higher temperatures.







A substantial biomass potential to be evaluated

i) Urban waste The use of bioenergy to generate electricity consists mainly of burning a source or a residue and producing electricity via a conventional steam turbine.

- In Burundi, the following biomass activities could be interesting;
- Electricity production based on waste by direct burning or by methanisation
- Peat-based electricity production
- The use of sugar cane residues (bagasse) to produce electricity

The use of household and/or industrial waste for incineration and methanisation requires the existence of a waste management system. A project is currently under discussion to evaluate the waste potential in Bujumbura. The project owner would, within a public-private partnership framework, invest in the collection, methanisation and production of the electricity.

ii) Peat Burundi possesses a **peat potential** estimated at 600 million tons (map 7). The exploitable potential would be around 47 to 58 million tons. The management of the peat is the responsibility of the National Peat Office (ONATOUR). The use of peat for electrical production is possible. It is advisable to carry out feasibility studies to better analyse the technology, its impact on the economy, environmental and land issues related to the technology, the eventual risk of emptying the reserves and the consequences of substituting peat with firewood.

iii) Bagasse The Moso Sugar Company (SOSUMO) has a biomass power plant. The plant is a 2 x 2 MW cogeneration unit that is fuelled with bagasse (sugar cane residues) and it is operational during the entire sugar season. Unfortunately, this turbine is linked only to the SOSUMO factory and its administrative buildings. Eventual surplus production is not injected to the REGIDESO grid. The absence of a steam condenser prevents the factory from being productive outside the sugar season, despite the stocks of bagasse waste. The French cooperation is currently analysing how to help the SOSUMO to connect to the national grid and to resell its surpluses to the REGIDESO.



Burundi – challenges and opportunities in the energy sector

35.8 MW

The REGIDESO has an installed capacity of 35.8 MW, of which 30.8 MW hydropower and 5.5 MW thermal power.

Diagram 3 Distribution of electrical production in MW



Source: The World Bank (Burundi Energy Sector Briefing note) September 2012 and Belgian Technical Cooperation (2012) – Bibliographical study and pre-diagnostic analysis of Burundi's hydroelectric potential-SHER Burundi's energy sector is currently under-developed, which means that there are considerable opportunities to investors. Given the interest of international development partners in the renewable energy sector, and thanks to an improving business climate, actors who are interested in the sector now have a unique opportunity to invest.

The **Energy** Supply

A growing electricity production

The electricity production is mostly handled by the national water and electricity utility REGIDESO, which has an installed capacity of 35.8 MW, of which 30.8MW are hydropower plants and 5.5MW are thermal units, constituting 97 per cent of the national installed capacity. In addition to the hydropower plants managed by the REGIDESO, a number of micro-hydropower plants are managed by ABER² (formerly DGHER), and the private sector such as the Burundi Tea Office and various religious missions.

In 2010 and 2011, due to the substantial energy deficit in Burundi, the REGIDESO had to lease a diesel generator of 10MW. It is thus evident that the need to increase capacity is urgent and massive. Burundian legislation has opened many opportunities for investors, to a great extent through the Law n°1/014 of 20 August 2000 on *The liberalization and Regulation of the Water and Electricity Sector.* The REGIDESO no longer has monopoly on national electricity production. In addition to the capacity mentioned above comes the importation of 3MW from the Ruzizi I hydropower plant, through a purchasing contract between the REGIDESO and the Congolese National Electricity Company (SNEL), and another 13.3 MW based from Ruzizi II, managed by the International Society for Electricity in the Great Lakes Region (SINELAC). The development of Ruzizi III (estimated capacity of 147 MW) and Ruzizi IV (estimated capacity of 287 MW) constitute some of the most interesting hydropower opportunities in the region.

2 The Burundian Rural Electrification Agency



Well-developed electrical transmission lines

Burundi's electrical transmission system is made up of high-voltage lines (70 and 110 kV) and medium-voltage lines (10, 15, 30 and 35 kV) (Map 5). The REGIDESO has exclusive responsibility for the system.

Burundi is a member of the Eastern Africa Power Pool (EAPP). This plan for interconnectivity aims to connect all East African countries, from Tanzania to Egypt. The linking of the countries will allow for more flexible import and export of electricity between the countries in the region. It is an open market for a potential hydropower production at a low price in Burundi, which can then be exported to other countries. The idea is to create in the medium and long term a common market for electricity, as has already been achieved in Europe and elsewhere, and moreover, with a harmonized price system. Most of the countries in the EAC are already interconnected but the Burundi-Rwanda line (high-voltage line 220 KV Kigoma-Butare-Ngozi-Gitega with financing from EU FED 10) and Burundi-Tanzania are still to be built. The interconnection with the large regional hydropower projects and the progressive involvement of the private sector represent a key strategy for the future in terms of energy for the region.

Distribution opportunities for private investors

Electricity distribution is currently the exclusive responsibility of the REGIDESO. However, the law n°1/014 of the 20th August opens for the state to entrust the provision of public services to private or public businesses within new territories. A substantial territory still needs to be covered, and there are considerable opportunities within the management of Burundi's local electrical infrastructures.



0.04

The average production cost of the majority of Burundi's hydropower plants was in 2012 estimated at 0.04 USD/kWh.



Lower electricity costs, prices under control

Thanks to Burundi's use of hydropower, its electrical production costs are among the lowest in the region. According to the World Bank, the average estimated production cost for most of the hydropower plants was approximately 0.04 USD/kWh in 2012, while the production costs for thermal power amounted to 0.3 USD/kWh for the plant in Bujumbura and 0.48 USD/kWh for diesel generators. The average production costs for the energy mix are consequently estimated at 0.062 USD/kWh for 2012.

REGIDESO made two important price increases, at the end of 2011 and in March 2012. The households that constituted the greatest consumers (> 300 kWh/month) saw their energy bills multiply by 3, increasing from 0.06 USD/kWh to 0.18 USD/kWh³. These increases were the first results of the government's efforts, with support from World Bank, to correct the REGIDESO's economic situation and to **increase its credibility towards future investors**.

With support from the World Bank, Burundi's payment system has been transformed into a system of prepayment. In 2011, 52 per cent of the subscribers paid their bills in advance through prepayement meters. The goal of the REGIDESO is to make all consumers use the prepayment system. A prepayment system on such a scale is exceptional. It will enable the REGIDESO to secure its earnings, to have an advance-based treasury, to more easily plan its resource allocations and practically eradicate commercial losses. Most importantly, this system will contribute to the improvement of the REGIDESO's financial situation. The system of prepayment will diminish the financial risk associated with contractual agreements between investors and the REGIDESO.

3 In other words, 85 and 260 BIF/KWh. The exchange rate applied is from September 2012 at 1,460 BIF/US\$

"Burundi Mining and Metallurgy has made some very promising discoveries in Burundi's mining sector. Our production will require considerable quantities of energy that Burundi does not currently have. We are ready to engage in cooperation with private investors that wish to develop renewable energy in Burundi."

Kreso RAGUZ, Director of Burundi Mining Metallurgy



A sharp increase in demand

REGIDESO's number of clients is low but nonetheless in constant growth (diagram 4). Taking into account the fact that the rate of electrification is around 10 per cent and that the objective of the government is to reach at least 20 per cent by 2020, based on the current growth rate of about 11 per cent, the number of new subscribers will become increasingly interesting and could exceed 150,000 by 2020. The potential for increased electrical consumption is substantial: the average household consumption is quite low, around 23 kWh/year per household, relative to the African average of 150kWh/year. It is a national and regional objective to close this gap as soon as possible.

Figures for 2011 shows a level of consumption at approximately 200 GWh, of which 70 GWh is used for productive industrial and commercial activities, 84 GWh for households and 46 GWh for other consumers⁴ (diagram 5).

All things considered, Burundi's need for electricity in the run-up to 2020 ranges from 280 to 1000 MW, depending on the needs of the mining industry.

Diagram 4 Development in the number and type of clients



Source: - REGIDESO reports (2005-2011)

Diagram 5 Distribution of REGIDESO clients in 2011



Diagram 6 Production sources REGIDESO (2003-2011)



Brarudi, Member of the HEINEKEN Group, will expand its production in the coming years, and thus our demand for energy will also increase. HEINEKEN has vouched to become the World's Greenest Brewer and thus favours the development of clean, renewable energy. We welcome all investors that wish to engage in the development of renewable energy in Burundi, and we are open to discuss proposals for how more of Brarudi's energy consumption can come from renewables.



Maarten Schuurman, Managing Director Brarudi.

A deficit to tackle

Burundi's national production is lower than consumption, hence the increasing need to import energy (diagram 6). This phenomenon is a consequence of under-investment in the energy sector over the last 20 years. Thus, there is clearly a need to increase national electricity production.

A share of Burundi's industries is currently self-generating their energy either by using costly solutions or solutions that poses threats to the environment, such as using firewood for the processing of tea. These industries have an interest in supporting and consuming renewable energy both for environmental purposes but also to reduce costs.

THE LARGEST ELECTRICITY CONSUMER in Burundi, the BRARUDI brewery, produced 2.8 per cent of its own consumption in 2011, and anticipates the self-production to increase by 6.14 per cent in 2012. The BRARUDI brewery currently possesses two generators with a total capacity of 2.6 MW and anticipates the installation of another two generators with an individual capacity of 1.4 MW. The BRARUDI is interested in investment opportunities in alternative solutions such as and renewable self-production.

THE PROCESSING OF NICKEL in Musongati requires a great deal of energy. The processing of a million ton of ore requires about 200 MW of energy, the processing of five million tons of ore requires 800 MW.

An electricity challenge to be faced

According to scenarios for economic growth, the energy needs would be approximately 100 MW in 2020, with industrial consumption at today's low levels. However, a number of industrial activities require additional capacity estimated of at least 100 MW. Consequently, the energy demand would likely be of around 250 MW in 2020, excluding the energy needs of the nickel mines, which would need around 280 MW in peak hours (diagram 7). Furthermore, scenarios project regional integration of grids and substantial reliance on imports.

2012 INTERNATIONAL YEAR OF SUSTAINABLE ENERGY FOR ALL

Diagram 7 Electrical power and consumption



Source: African development Bank (2009) An action plan for infrastructures in Burundi— Accelerating regional integration—APPENDIX VII

SE4ALL (Sustainable Energy For All) is an initiative launched to encourage stakeholders to make sustainable energy for all a reality by 2030. The initiative has three key objectives:

- 1. Ensure universal access to modern energy services
- 2. Double the global rate of improvement in energy efficiency
- 3. Double the share of renewable energy in the global energy mix

SE4ALL funds are available for technical assistance, capacity building, project development and consultations within renewable energy and energy efficiency.

Fishing

Today, the fishermen of lake Tanganyika are unable to conserve their daily catch. Improved access to energy would allow for the installation of storing facilities that would in turn increase the revenues of the sector.



Investment opportunities in Burundi's renewable energy



Important developments in all sectors of the economy

Urbanisation sector

Urban growth implies service provision to the population. Access to electricity is one of the most important public services. Urban electrification of new centres without access could be done through the delegation of public services to private sector investors. Renewable energy production to remote urban centres could be carried out by neighbouring hydropower sites, by hybrid thermal-photovoltaic power plant, or even by the distribution of solar kits in a number of peri-urban areas that are unable to be connected to the grid in the short-term.

Industrial sector

Some of the industrial projects identified include:

- > Hydropower plants to supply the nickel mines IPP
- > The SOSUMO power station fueled by bagasse self-production with resale of surplus
- > Hydropower plant at the Burundi Tea Office self-production with resale of surplus

Finally, there are investment opportunities in the substitution of diesel with on-grid PV.

Transport sector

The proposed railway connection from Burundi and Rwanda to the network of Uganda and Tanzania requires the construction of the Rusomo Falls dam, which will supply electricity for the trains.



Fishing sector

Fisheries in Lake Tanganyika need cooling systems to conserve the fish. Photovoltaic power generation could be a potential solution.

Commercial sector

The commercial and handicraft sector has a considerable need for electricity (welding, preservation of milk etcetera). Urban development demands ever-greater energy provision for small businesses and boutiques. For shopkeepers in remote areas who are affected by power cuts, an option with considerable economic potential could be provision of with small photovoltaic generators. Some installations were done by ENDEV-GIZ in 2012 and seem to have positive results so far.

Agricultural sector

The processing and conservation of fruits, vegetables or milk in rural areas is a way of achieving economic development. The installation of photovoltaic generators is a solution to the energy problems the sector is suffering. There has not yet been any project development in this area.

THE EAST AFRICAN INFRASTRUCTURE PLAN

envisages an extension of the railway from Tanzania to Burundi (ISAKA-KEZA-GITEGA-MUSNGAZTI or UVINZA-MUSONGATI): these two options, one the construction of 691 km, and the other the construction of 227 km, are necessary to create a transport line to and from the Musongati mines.







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Health sector

There are currently 800 health centres and 64 hospitals in Burundi. However, 20 per cent of the rural hospitals and 70 per cent of the health centres do not have access to energy. There is a considerable public health challenge in supplying these buildings with a minimum level of energy for lighting, refrigeration, and sanitation. While many buildings have already been provided with solar energy, a needs and resources assessment should be carried out to increase access and review which energy type to install (hydropower or solar in most cases), and the eventual injection onto small-scale grids (in the case of hydropower), or the installation of solar generators.

Education sector

The vast majority of schools in rural areas do not have electricity. Although many buildings have been equipped with solar energy, a needs and resources analysis should be carried out to increase access and identify which energy source would be most suitable.

Tourism sector

Access to solar energy or small-scale hydropower for remote tourism destinations would improve the quality of accommodation and also promote the development of ecological tourism.

Capacity building in progression

The international development partners are, and will continue to be, engaged in capacity building at the national level.

The Government of Burundi, and in particular the Ministry of Energy and Mining, wishes to enhance their internal legal and technical capacity, on the one hand to be better able to directly evaluate and negotiate projects proposed by private investors and, on the other hand, to be able to provide better support in the development of such projects.

Available feasibility studies

Feasibility studies to evaluate projects are both costly and risky. International development partners and similar institutions have already carried out a number of pre-feasibility or feasibility studies of sites or projects, especially regarding hydropower projects. More studies are planned for a number of new sites. This kind of support to the energy development, current and future, will reduce risk for investors interested in Burundi's energy sector.

Support for studies of Burundi's wind and solar potential, strategic studies, and the implementation of large-scale projects for rural electrification should also profit from international funding.

THE EUROPEAN UNION has launched a programme that will install solar energy in 25 health centres in four provinces. The programme is expected to be operational in the beginning of 2013.



Opportunities within **renewable energy projects**

Tabl	e 3: Hydropower pro	jects awaiti	ng investment or under fund	ding in Burundi	i			
	River and site	Capacity (MW)	Studies	Managing	State of development	Financing	Date	Remarks
I.					Regional projects			
1	RUZIZI III	147.0	Detailed design carried out	PPP with developer/private investor	International negotiations between Burundi, the Congo, Rwanda and the selected developer. Potential funders: KFW, EIBI, DBSA, AfDD, AFD, PROPARCO, IFC	In process	2018	Regional project (Burundi, Congo, Rwanda)
2	RUZIZI IV	285.0	Pre-feasibility study	PPP with developer/private investor	Feasibility study not yet carried out	To be identified		Regional project (Burundi, Congo Rwanda)
3	RUSUMO-FALLS	80	Detailed design	PPP with Directorate for Public Works and Management Contract	Study for resizing dam to reducing environmental impact currently ongoing	In process	2019	Regional project (Burundi, Rwanda, Tanzania). Possible turnkey contract
- 11.				Nati	onal projects under development			
1	MPANDA	10.4	Feasibility study and DD carried out, HYDROPLAN Report, 1995	REGIDESO	Work contract and the provision of equipment with a Chinese group CNMV-CGC .Work will start in 2012	National Budget. Costs of 45 MUS\$.	2016	
2	KABULANTWA (KABU 016)	20.0	Feasibility study and DD carried out, SOGREAH Report 1995	REGIDESO	Work contract and the provision of equipment signed with the Indian company Angelique International Limited.	EXIM BANK of INDIA: Credit of 80 MUS\$.	2017	
3	KAGUNUZI (KAGU 006)	12		IPP (Swedish comp)	Concession Contract between Burundi and the Company "African Power and Water ABB"	Private financing	2016	
III.				Project	s where finance is under negotiation			
1	MULEMBWE (MULE 034)	17.1	Feasibility study and DD currently being done by FITCHNER	Directorate for public works	Negotiations with the EIB and the WB for the co- financing of the two plants. Financing needs evaluated at about 187 mill for the 2 plants and 32 mill for the 220 kV Mulembwe-Bujumbura high-tension line.	Main principles for financing of the 2 plants agreed.	2017	The EIB will co-finance 50 per cent. The WB has committed to financing of 70 MUS\$
2	(200 ILIL) ILIL	32.5	Feasibility study and DD currently being done by FITCHNER	Directorate for public works			2017	
3	RUZIBAZI (RUZB 007)	17.4	Pre-feasibility study done by FITCHNER. Feasibility study currently being carried out by Chinese Enterprise.	Directorate for public works	Financing agreement with China.	Financing agreement has been reached.	2016	
IV.				Projects where	pre-feasibility studies are done by SOGREAH			
1	GITENGE (KITE 020 or Masango)	9.3	Pre-feasibility study. SOGREAH report of December 1993	Directorate for public works				
2	KABULANTWA (KABU 23)	21.9		PPP between Bu- rundi and KERMAS Limited	KERMAS Ltd is in charge of the financial set-up while the government of Burundi will make available certain hydropower sites to provide the Musongati Refinery Mine and the national grid with electricity			
3	KITENGE (KITE 010 or Rushiha)	15.3		Directorate for public works				

	River and site	Capacity (MW)	Studies	Managing	State of development	Financing	Date	Remarks
V.				Projects eval	uations done by LAHMEYER International			
V.1				Projects for ca	scade and regulation of cascade reservoirs			
1	RUZIBAZI (RUZB 028, 021, 014, 012)	40.6	Survey of sites by Lahmeyer Interna- tional, August 1983	PPP between Bu- rundi and KERMAS	KERMAS Ltdd is in charge of the financial set-up while the government of Burundi will make available			
2	NYAMUHENDE/KIRASA (Nyhe 013, 009, 006, 003)	38.3		Limited	certain hydropower sites to provide the Musongati Refinery Mine and the national grid with electricity			
3	RUVUBU (Ruvu 216, 203, 197, 180.5, 169,167)	68.4						
4	RUVYIRONZA (Luvi 047, 039, 012)	21.2						
5	MUYOVOZI (Muyo 029, 025)	8.2						
V.2					Day tank projects			
1	RUHWA (Lua 035)	10.8	Survey of sites done by Lahmeyer Inter- national, August 1983					
2	KIKUKA (Kiku 002)	3.0						
3	Siguvyaye (Siku 011)	2.4	Survey of sites done by Lahmeyer Inter- national, August 1983	PPP between Bu- rundi and KERMAS Limited	KERMAS Ltd is in charge of the financial set-up while the government of Burundi will make available certain hydropower sites to provide the Musongati Refinery Mine and the national grid with electricity			
VI.			Projets au fil de l'eau ider	tifiés par LAHMEYER	International et nécessitant des Etudes d'optimisation	on avant investissement		
VI.1					Bassin de la Rivière RUSIZI			
1	Nyakagunda (NYGU 022)	2,0	Etude d'identification de Lahmeyer International Août 1983		Nécessité des Etudes de faisabilité avec d'optimisation des puissances, des sites hydroélectriques	A rechercher à travers des Partenariats Public-Privé ou Contrat de Concession		
2	Nyamagana (NYMA 030)	2,6						
3	Muyira (MUHI 016)	2,4						
4	Muzazi (MUZA 028)	2,8						Localise a Muzinda
5	Kapyosha (Kapiki (KANX 010)	2,5						
VI2	Kanyosha/Kaniki (KANT 010)	0,0			Bassin du Lac Tanganika			
1	Kikuka (KIKU 002)	3.9	Etude d'identification de Lahmever		Nécessité des Etudes de faisabilité avec d'optimisation	A rechercher à travers des Partenariats		
2	Mushara (MUSH 021)	2,4	International, Août 1983		des puissances des sites hydroélectriques	Public-Privé ou Contrat de Concession		
VI.3					Bassin de la Ruvubu			
1	Ndurumu (014,012, 009)	3,2	Etude d'identification de Lahmeyer		Nécessité des Etudes de faisabilité avec d'optimisation	A rechercher à travers des Partenariats		
2	Nyakijanda (NYKI 012)	2,8	International, Août 1983		des puissances des sites hydroélectriques	Public-Privé ou Contrat de Concession		
3	Nyakijanda (NYKI 002)	1,7						
4	Sanzu (SANZ 000)	1,7						
5	Kayongozi (KAYO 028)	2,5						
6	Kayongozi (027)	2,5						
7	Kayongozi (KAYO 002)	1,8						





Solar energy

Photovoltaic solar energy or small hybrid thermal-photovoltaic power plants are suitable for the electrification of remote centres. To develop the rural electrification of dispersed populations, supplying photovoltaic solar home systems could be a solution.

Finally all remote public or private infrastructure (health centres, schools, hotels, telecommunication towers) should be powered by solar energy through an extensive programme for decentralised electrification. These projects could involve private investment and the delegation of public services.

Wind energy

The installation of wind turbines connected to the grid could be a solution if the wind conditions are satisfactory.

Geothermal energy

The conditions in the Rift Valley region are optimal for geothermal findings; the exploitation of these resources by a geothermal power plant would be an additional asset in the energy mix. Such a project could probably be done in the north-western part of the country, as a regional project carried out with Rwanda and the Congo.

Biomass

Given that feasibility studies have demonstrated technical, economic, environmental and social viability, the installation of a peat power plant could be achieved relatively quickly.

The installation of a production plant based on waste through methanization, could, along with the implementation of a waste management system, become a reality in Bujumbura. A cogeneration power station based on bagasse already exists at SOSUMO and could be improved and connected to the grid.



Burundi, a country open to investors

In Burundi, it only takes 24 hours to register an enterprise.



A favourable legal and regulatory framework

A liberalised electricity sector

Burundi has established a legislative and regulatory framework for structuring the energy sector and promoting participation of private investors.

Law No. I/014 of 1 August 2000 relates to the liberalization and regulation of the public services of water and electricity.

- The production, transmission and distribution of electricity are all public services. These public services can be assigned in various ways (including leasing or concession) to public or private entities.
- Self-production (including production, transmission and distribution) are permitted for private use after authorisations are obtained.
- Creating transmission lines to serve third parties is allowed if public service does not yet exist where such arrangements are proposed.
- Self-producers can sell their surplus to public service managers through a price agreement.
- Similarly, the use of public transmission lines is possible through a price agreement.
- The exporting of self-generated energy is allowed.
- In remote areas, private production, transmission and distribution is permitted.

In an area covered by an operator, only distribution may be subject to monopoly arrangements, and this only during the first period of delegation of the public service. Beyond this period, private operators can sign supply contracts with third parties directly, for power exceeding a certain limit (to be defined by decree). These operators have rights of access to the transmission lines and distribution arrangements belonging to the operating company.

- A control and regulation entity was established by Decree No. 100/320 dated 22 December 2011. This entity, called the Control and Regulation Agency for the Water and Electricity Sectors in Burundi, has as main mandate to ensure the development of an orderly and profitable water and electricity sector in Burundi. It should control, regulate and monitor activities related to water and electricity in order to ensure compliance with contract conditions for delegation as well as specifications and additional clauses on the part of operators. It should also ensure the implementation, monitoring and application of tariffs in accordance with the pricing principles that have been established by regulation.
- A rural electrification agency was established by Decree No. 100/318 dated 22 December 2011. The objective of this entity, called the Burundian Agency for Rural Electrification (ABER), is to develop and implement rural electrification projects and programmes, including small-scale hydropower, solar and wind energy, as well as other forms of energy that can improve electricity access for the rural population. The entity is currently under establishment.





- Decrees to promote self-production and re-sales of surpluses to the national distributor are being developed.
- A law on PPP (Public Private Partnership) has been proposed by the government to the parliament and will soon be adopted. This law includes specific actions under the term called IPP (Independent Power Producer).

A new legal framework favourable to private companies

Burundi made major reforms in 2011 to improve its business climate. Procedures for creating a business and obtaining construction permits have been substantially simplified, and measures to ensure better protection of investors have been adopted. Efforts carried out in 2012 to improve the business climate include seven indicators: creation of an enterprise, obtaining construction permits, access to electricity, transfer of property, paying taxes, cross border trading and resolving insolvency. These indicators are materialised through the simplification and significant reduction of costs, time and number of procedures.

• Burundi's adhesion to **the Treaty for the Establishment of the East African Community** complies Burundi to **modify national laws** to ensure the strict application of the rules of the treaty. Burundi now belongs to a **regional common market** consisting of Kenya, Tanzania, Uganda, Rwanda and Burundi, that is in favour of commercial trade between member states. The EAC allows for harmonisation of customs tariffs and procedures within the community. The Treaty is preparing the establishment of a common currency.



THE INVESTMENT PROMOTION AGENCY facilitates foreign investment in Burundi and supports investors in the event of failure on the part of the public administration. All documents related to corporate/private sector in Burundi, legal documents, and all other forms needed to create a company and start a business in Burundi are available online at www.investburundi.com.

- Law No. 1/24 dated 10 September 2008 has created a new investment code in Burundi with special provisions conducive to foreign investment.
- The new Investment Code introduces the possibility of using international arbitration in order to resolve disputes between the government and investors. Section 13 of the Investment Code prohibits the nationalisation and expropriation of investments or any measure of equivalent effect. In exceptional cases of expropriation for the public interest, the code guarantees investors a procedure that is in accordance with law and that is accompanied by fair ex ante compensation and appeal, and if necessary, to litigation and internal or international institutional arbitration.
- Law No. 1/23 of 24 September2008 has defined all the tax benefits underway for investors in Burundi.
- The Investment Promotion Agency was created by presidential decree No. 1/177 of 19 October 2009. Its mission is to promote investment and exports, especially to inform, assist and support investors to obtain necessary documents and/or to ensure compliance with formalities required by law. The Agency also participates in the elaboration of reforms to improve the business climate. Finally, they advocate towards the public administration in cases of non-application or misapplication of laws or regulations related to the promotion of investments and exports.





• Law No. 1/09 of 30 May 2011 changed the company laws in Burundi. This law defines the possible structures of companies, their organization and their management. The law identifies seven types of private companies: civil companies, simple partnerships, limited partnerships, limited liability companies, sole proprietorships, cooperative societies, and business corporations. In the context of regional integration in the East African Community, the law is under revision in order to harmonize it with the laws of the four other member states.

Simplified administrative procedures

One-stop shop for business creation

Considerable progress has been made in this area, including the opening of a **one-stop shop** for business creation with effect from March 6, 2012. Since that date, all that is needed to start a business in Burundi is to introduce oneself to the Investment Promotion Agency which handles the necessary steps to create a business in **less than 24 hours**.

• Registration procedures:

Just one registration procedure is necessary. Indeed, this rapidity makes **Burundi one of the best** countries in the world to start a business.

• Capital:

There are no minimum capital requirements.



In 2012, Burundi improved its ranking on «protection of investors» from 153rd to 46th place in 2012.



Table 4: Procedure for creating a business in Burundi

Procedure	Duration	Costs (BIF)	Cost (US\$)⁵	Cost
Signing of standard articles of incorporation by the found- ing partners of the company		None	None	None
Complete and sign the articles, obtaining the Commercial Register and the Tax ID Number.	1 day	42 900	29	Carried out by the one-stop shop Standard articles of incorporation avail- able on line or at the one-stop shop
Immediate publication on the Bulletin Board of the Business Court	1 day	42 900	29	
TOTAL				

• Protecting investors

In the «investor protection» section of «Doing Business», Burundi went up from 153rd position in 2011 to 46th⁶ in 2012, reflecting the significant progress that has been made in this area in Burundi. Indeed, in 2012 Burundi strengthened investor protection by introducing new requirements for the approval of transactions between interested parties, requiring greater disclosure of corporate information to the board and in the annual report. Burundi also made it easier to initiate lawsuits against directors for harmful transactions between interested parties (the fight against corruption).



In 2012, the total number of taxes to be paid for enterprises were reduced from 32 to 24.



• Foreign investment

Burundian law authorises all foreign investors to hold a company in Burundi without any obligation of local participation.

Reduced costs and better service for businesses

• Taxes and charges for enterprises The total number of taxes to be paid has been reduced from 32 to 24 in 2012 Further improvement and simplification is underway.

Tableau 2 Taxes in Burundi

Тах	Annual payment	Base	Rate
Corporate tax	1	Profit	35%
Social security	4	Gross salaries	3.9 %
Health insurance	4	Gross salaries	3%
Capital gains tax		Gains	35%
Property tax	1	Area occupied	36 BIF/m ²
Vehicle tax	1	Per vehicle	3 900 BIF/tri.
Estate tax	1	Vacant land	3 BIF/m ²
VAT	12	Added value	18%
Total	24		

Source : Doing Business Burundi 2012

Import tax

Burundi applies the customs tariff of the Common Market for Eastern and Southern Africa: 0 per cent on capital goods and raw materials, 10 per cent on intermediate goods and 25 per cent on finished products. All goods to be used for renewable energy in Burundi are taxed 25 per cent. The exception is parts for products to be manufactured in Burundi, which are taxed at 0 per cent.

• Benefits

There is no exchange control in Burundi. Thus, the law does not prohibit foreign investors from repatriating profits earned in Burundi.

Incentives for foreign investors

Burundi has introduced an advantageous tax legislation regime for foreign investors. The legislation is still being simplified, and development of new measures even more transparent and new incentives for investors are ongoing.

Table 6 on page 47 shows currently existing incentives and the draft law that should be applicable from January 1st, 2013⁷. This draft law aims to make taxation simple, attractive to investors, transparent, equal for all, and consistent.





Tableau 3 Fiscal incentives

Mesure	ln 2012	On January 1st 2013
Exemption from transfer taxes on the acquisition of land and buildings	In force	Maintained
Deduction of a tax credit of 37 per cent of the amount of depreciable assets invested in any asset equivalent to or greater than 100 million FBU (approximately 68,000 USD ⁸) in the first year and which creates at least 10 permanent jobs in Bujumbura or 5 permanent jobs outside the capital	In force	Abolished
Reduction respectively of 2 and 5 per cent tax rate on profits for companies that respectively employ between 50-200 employees and over 200 employees	In force	Abolished
Exemption from customs duties on all imports of capital goods	In force	Maintained
Complete exemption, from, and no prepayment of, VAT on imports for all investments worth over 500 million FBU (approximately 342,000 USD)	In force	Maintained
Reduction of countervailing duties on imports that exceed 5 per cent, 3 per cent and 1.5 per cent respectively for any investment worth over 5 billion FBU (about 3,4 mill USD) and 10 FBU billion (about 7,2 mill USD)	In force	Maintained
API has the possibility to propose to the Minister of Finance the granting of additional tax and customs benefits under an exemption arrangement for investment projects that have strategic importance for the country	In force	Abolished
Automatic accelerated depreciation of 40 per cent for all investment exceeding 50 million FBU (approximately 34,000 USD)		Anticipated
Ability to depreciate assets in groups (pooling method)		Anticipated
Automatic temporary exemption on corporate income tax for 9 years for any investment exceeding 10 billion FBU (about 7,2 mill USD).		Anticipated
Corporate income tax reduced to 30 per cent		Anticipated
Possibility of carrying forward losses for 3 years to 5 years		Anticipated

Source: OBR

Improved access to credit

The banking sector in Burundi has difficulties in accommodating large-scale infrastructure investments. International private sector investment in Burundi could therefore seek the assistance of international development partners.

Consequently, the investor should first contact the major international institutions in Burundi to determine how and where the investor could obtain grants or loans (table 7).

The options offered by such institutions are many and varied:

- Legal assistance
- Financial assistance
- Support through equity
- Credit
- Loans at subsidized rates (generally to the State or a State-owned company)
- Commercial rate loans
- Loan guarantees

Through the intervention of these institutions, whether through the leverage of their participation or the security provided by their guarantees, it would be possible to establish financial mechanisms that include conventional commercial banks and institutional investors.





Tableau 7 Possible support from international institutions

Nom	Support tow sector ir	ards private nvestors	Supp pub	oort towards blic entities
	Commercial Ioans	Loan guaran- tees	Grants	Prêt concessionnels
The African Development Bank	Х	Х	Х	Х
The World Bank Group	SFI	SFI	Х	Х
The French Development Agency	PROPARCO		Х	Х
KFW	Х			
The European Union			Х	
The European investment bank	Х			

Financial institutions that for facilitate investments

The institutions that are already present in Burundi are involved in important and ongoing efforts to organize the energy sector and other areas to open the market to private investors.

 The World Bank Group supports the Government of Burundi in doing tariffs and price analysis of the REGIDESO. This has led to changes in rates, financial restructuring and recapitalisation of the REGIDESO. The Bank is involved in the development of legislation to promote private investments in the energy sector (following the law of 2000) and is also contributing to the development of hydropower projects by funding feasibility studies (Fitchner study on 4 sites in 2010).

THE MULTILATERAL INVESTMENT GUARANTEE AGENCY (MIGA) insures eligible projects against losses linked to the inconvertibility of currency and the restrictions on transfers, expropriation, war, terrorism, and civil disturbance as well as breach of contract and failure to meet sovereign financial obligations.

- The African Development Bank (AfDB) has participated in the rehabilitation of hydropower plants since 2007, as well as in the rehabilitation of medium and low tension transmission lines, electrification of urban and peri-urban areas, installation of public lighting and training personnel and assisting the REGIDESO. AfDB is participating in the development of strategies for the sector: in 2009 the bank funded an action plan for infrastructure in Burundi, and funding for strategic studies and technical assistance are planned for 2012 and 2013. AfDB is also committed to the regional interconnection of Burundi (NELSAP) with Rwanda and the DR Congo and has, in addition, made plans to invest in the hydropower plants Rusomo Falls and Ruzizi III.
- **The European Union** (EU) financed strategy studies on the energy sector that were carried out in 2010. It has made provision in the 11th EDF to invest 135 million in all aspects of electrical energy (generation, transmission, distribution and governance). For the production of energy, the EU gives priority to clean, renewable energies that are sustainable and environmentally friendly. Finally, the EU is supporting regional projects and programmes that affect Burundi.
- **The French Development Agency** (AFD) has recently committed to supporting self-producers (SOSUMO and the Burundi Tea Office in particular) by financing feasibility studies and facilitating the implementation of purchase contracts from REGIDESO.
- The United Nations Development Programme (UNDP) is involved in the financing of strategic studies in the renewable energy sector. It has also funded installations of photovoltaic systems.





- **GIZ** (German International Cooperation) is mostly involved in photovoltaic solutions for the rural electrification through the ENDEV initiative.
- The **EIB** (European Investment Bank) has confirmed its interest in financing the hydropower projects Jiji and Mulembwe (50 MW) and their transmission lines.

Some donors participate only in feasibility studies and/or aid to the state or state agencies. Others are likely to support private investment, either through direct loans to investors, through equity contributions or through concessional loans often associated with PPP (public private partnership) projects (loan to the government or national agencies).

A number of donors recently intervened in specific areas (JICA: Japan International Cooperation - BTC: Belgian Technical Cooperation) but do not plan on engaging further in the energy sector. Investment projects in the energy sector in Burundi will have to call upon the abovementioned donors, at least for partial credits to facilitate the access to credit with international commercial banks.



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Abbreviations and acronyms

ABERB	Burundi Rural Electrification Agency (Agence Burundaise de l'Electrification Rurale)
ACR	Agency for the Control and Regulation of the Drinking Water and
	Electricity Sectors (Agence de Contrôle et de Régulation du Secteur de
	l'Eau Potable et de l'Electricité)
ADEME	French Environment and Energy Management Agency (Agence de
	l'Environnement et de la Maîtrise de l'Energie) (France)
AFD	French Development Agency (Agence Française de Développement)
APD	Detailed Design (Avant Projet Détaillé)
API	Burundi Investment Promotion Agency (Agence Burundaise de
	Promotion des Investissements)
APS	Summarized Detailed Design (Avant Projet Sommaire)
BAD	African Development Bank (Banque Africaine de Développement)
BEI	European Investment Bank (Banque Européenne d'Investissement)
BIF	Burundian Franc (Legal abbreviation) (Franc Burundais (Abréviation
	légale))
BM	The World Bank (Banque Mondiale)
BMM	Burundi Mining Metallurgy
BNUB	United Nations Office in Burundi (Le Bureau de Nations Unies au
	Burundi)
BRGM	Geological and Mining Research Bureau (France) (Bureau de
	Recherche Géologique et Minière (France))
BT	Low-voltage (Basse Tension)
CEEAC	Economic Community of Central African States (Communauté
	Economique des Etats d'Afrique Centrale)
CEPGL	Economic Community of the Great Lakes Countries (Communauté
	Economique des Pays des Grands Lacs)
COMESA	Common Market for Eastern Southern Africa
CSLP	Poverty Reduction Strategy Paper (Cadre Stratégique de Lutte contre a
	Pauvreté)
CSP	Concentrating Solar Power (Solaire à concentration)
CTB	Belgian Technical Cooperation (Coopération Technique Belge)
DGHER	General Directorate for Hydropower and Rural Electrification (Direction
	Générale de l'Hydraulique et de l'Electrification Rurale)

EAC	East African Community (Communauté de l'Afrique de l'Est)
EAPP	Eastern Africa Power Pool (EAPP)
ENDEV	ENergising DEVelopment
FBU	Burundian Franc (Current abbreviation)
	(Franc Burundais (abréviation courante))
FED	European Development Fund (Fonds Européen de Développement)
FMI	The International Monetary Fund (Fonds Monétaire International)
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit – (German
	Cooperation)
GW	Gigawatt
GWh	Gigawatt-hours
HT	High Tension
ICEIDA	Icelandic International Development Agency (Coopération islandaise)
IDA	International Development Association
IDH	Human Development Index (Indice du Développement Humain)
IPP	Independent Power Producer (Producteurs d'Energie indépendants)
JICA	Japan International Cooperation Agency
KFW	Kreditanstalt für Wiederaufbau (German Development Bank)
kW	Kilowatt
kWc	Kilowatt-peak(photovoltaic unit)
kWh	Kilowatt-hour
MAE	Ministry of Agriculture and Livestock (Ministère de l'Agriculture et de
	l'Elevage)
MCIT	Ministry of Commerce, Industry Post and Tourism (Ministère du
	Commerce, de l'Industrie des Postes et du Tourisme)
MEM	Ministry of Energy and Mines (Ministère de l'Energie et des Mines)
MEPS	Ministry of Education for Primary and Secondary School Teaching
	(Ministère de l'Enseignement Primaire et Secondaire)
MSP	Ministry of Public Health (Ministère de la Santé Publique)
MIGA	Multilateral Investment Guarantee Agency
MT	Average Tension (Moyenne Tension)
MW	Megawatt
MWc	Megawatt-peak (photovoltaic unit)
MWh	Megawatt-hour

NELSAP	Nile Equatorial Lakes Subsidiary Action Programme
NREL	National Research Energy Laboratory
OBR	The Burundi Revenue Office (Office Burundais des recettes)
OMD	Millennium Development Goals (Objectifs du millénaire pour le
	Développement)
ONATOUR	The National Peat Production Office (Office National de la Tourbe)
ONG	Non-governmental organization (Organisation Non Gouvernementale)
ONU	United Nations Organisation (Organisation des Nations Unies)
OTB	The Burundi Tea Office (Office du Thé du Burundi)
PIB	Gross Domestic Product (Produit Intérieur Brut)
PNUD	United Nations Development Programme (Programme des Nations
	Unies pour le Développement)
PNUE	United Nations Environment Programme (Programme des Nations
	Unies pour l'Environnement)
PPP	Public-private partnership (Partenariat Public Privé)
PV	Photovoltaic (Photovoltaïque)
PV GIS	Photovoltaic Geographical Information System
RDC	Democratic Republic of the Congo (République Démocratique du
	Congo)
REGIDESO	The utility for production and distribution of water and electricity in
	Burundi (Régie de Production et de distribution d'Eau et d'Electricité du
	Burundi)
SE4ALL	Sustainable Energy For ALL
SFI	International Financial Corporation (Société Financière Internationale)
SINELAC	the International Society for electricity in the Great Lakes Region
	(Société Internationale d'Electricité des Pays des Grands Lacs)
SNEL	National Electricity Company of the Democratic Republic of Congo
	(Société Nationale d'Electricité de la République Démocratique du
	Congo)
SOSUMO	Moso Sugar Company (Société Sucrière du Moso)
SWERA	Solar and Wind Energy Resource Assessment (Atlas mondial de l'éolien
	et du solaire)
UE	European Union (Union Européenne)
US\$	US Dollar (Dollar américain)