

# Tapping the Potential of Renewables

**An energy poverty perspective on the European Investment Bank's energy investments in Sub-Saharan Africa**

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**Acronyms**

ACP	African Caribbean Pacific
CEB	Communauté électrique du Bénin.
CEET	Compagnie d'Eau et d'Electricite du Togo
CSO	Civil Society Organisation
EC	European Commission
EDF	European Development Fund
EIB	European Investment Bank
ERA	Electricity Regulatory Authority
ESF	European Sustainability and Security of Supply Facility
EU	European Union
FfD	Financing for Development
FIT	Feed-in tariffs
IATF	Africa Infrastructure Trust Fund.
ICFF	Interact Climate Finance Facility
IEA	International Energy Agency
JVE	Jeunes Volontaires pour l'environnement
GDP	Gross Domestic Product
GEEREF	Global Energy Efficiency and Renewable Energy Fund
HIPC	Heavily Indebted Poor Countries
IF	Investment Facility
IFI	International Financial Institution
IMF	International Monetary Fund
kW	Kilowatt
kWh	Kilowatt hour
MDGs	Millennium Development Goals
m/s	Metres/second
MW	Mega Watt
NAPE	National Association of Professional Environmentalists
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OECD	Organisation for Economic Cooperation and Development
OPIC	Overseas Private Investment Cooperation
OR	Own Resources
PRSP	Poverty Reduction Strategy Paper
REA	Rural Electrification Authority
RMF	Results Measurement Framework
SEFA	Sustainable Energy for All
Shs	Shillings
TA	Technical Assistance
UEDCL	Uganda Electricity Distribution Company Limited
UEGCL	Uganda Electricity Generation Company Limited,
UETCL	Uganda Electricity Transmission Company Limited
UNCSD	United Nations Conference on Sustainable Development
UNDP	United Nations Development Program
UNFCC	United Nations Framework Convention on Climate Change
WHO	World Health Organisation

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This paper provides a preliminary assessment of the energy-lending strategy of the European Investment Bank (EIB) to African countries from the perspective of poverty reduction. We argue that the EIB does not yet adequately address the issue of energy access for the poor in its energy investments. According to the United Nations Development Programme, access to energy for the poor is a prerequisite for achieving the anti-poverty targets contained within the Millennium Development Goals (MDGs).

## EXECUTIVE SUMMARY

This briefing paper looks at the effects of energy investment by the European Investment Bank (EIB) in African countries in terms of their impact on poverty alleviation. The EIB's portfolio of energy funding to African countries has a strong orientation towards the construction and restoration of hydropower dams and the refurbishment and expansion of power grids. It appears to neglect the potential of investments in new renewable energy technology and decentralised power generation which would provide an alternative option better suited to reaching the poor, especially in rural areas.

In much of Africa, energy poverty has similar features and causes. The population is very highly dependent on biomass for much of its energy needs (particularly for cooking). Most of the rural population lacks access to main electricity supplies and electricity generation is highly dependent on increasingly expensive fossil fuels or (often controversial) major hydro projects.

In view of structurally high fossil fuel prices, a strategy for making a transition from carbon dependency to new renewable energy sources might not only be a more sustainable but also a viable and affordable strategy for combating energy poverty.

In line with the Sustainable Energy for All Action Agenda, co-drafted by the European Commissioner on Development, the European Commission (EC) and the EIB should set a clear agenda and help build leadership around the much needed shift to providing sustainable

energy to the poor. In this respect, the Action Agenda points to the interconnectedness of three types of stakeholders.

- National governments, which must design and implement a set of integrated countrywide actions to drive transformative change of the world's energy systems.
- The private sector, whose leadership is fundamental, given the role of businesses as solution providers and primary drivers of investment.
- Civil society organisations, which are needed to effect and sustain change. Their role is fundamental in identifying, advocating, and monitoring public policy and business activities; mobilising social innovation and grassroots action; leading behavioural change; and helping to spread best practices and building capacity at all levels.

This briefing paper offers the following recommendations to the EC and EIB:

### EC and EIB

- There is a need to bring the EIB's energy and climate policies more in line with the aim of the EU's development policy for reducing poverty.

### EC

- The European Commission should ensure that its efforts to provide energy to the poor in Africa are aligned with national energy strategies. Together with the EIB, it should also more specifically define the role that the EIB can play in contributing to these national strategies in order to help governments, such as Uganda, that have set targets for sustainable energy to access funding for these.
- In countries like Togo, where national energy strategies or clean energy targets have not yet been formulated, the EC should help governments to establish them.
- The EC, together with national governments, should ensure civil society participation when national strategies are being drawn up and local investment decisions are taken.

### EIB

- EIB loans should be more in balance with the local potential in developing countries to invest in energy.
- The EIB should support and promote the scaling-up of successful, local, clean energy initiatives and their replication elsewhere. ■

## 1

## INTRODUCTION

## 1.1

## THE ROLE OF EUROPE IN THE DEBATE ON ENERGY ACCESS, CLIMATE CHANGE AND DEVELOPMENT

It is widely accepted that public access to energy is a prerequisite for eradicating poverty. According to the UNDP, none of the anti-poverty targets within the Millennium Development Goals (MDGs) can be met without major improvements in the quality and quantity of energy services in developing countries.<sup>1</sup>

Two out of every three families in Sub-Saharan Africa live without electricity. The International Energy Agency (IEA) expects the number of people without grid connections in Africa to increase, because of population growth. While in OECD and transition economies "only" 3 million people lack access to electricity<sup>2</sup>, there are more than 560 million people in this situation in Sub-Saharan Africa<sup>3</sup> out of an estimated population of 800 million (2007 figures).<sup>4</sup>

The European Commission wishes to play a leading role in tackling energy poverty in Sub-Saharan Africa. 'An agenda for Change' (2011),<sup>5</sup> which sets out new directions in the EU's development policies, sets access to energy for all as a top priority, and a plan of action is provided.

At the EU Sustainable Energy for All Summit in April 2012, the Commission and the EU's Development Ministers also underlined their commitment to achieving the UN's Sustainable Energy for All Initiative, which by 2030 will:

- Ensure universal access to modern energy services.
- Double the rate of improvement in energy efficiency.
- Double the share of renewable energy in the global energy mix.<sup>6</sup>

In addition, the Sustainable Energy for All Global Action Agenda, prepared by the UN Secretary General High-level Group on Sustainable Energy for All, including the European Commissioner on Development, Andris Piebalgs, clearly states that "there is already growing momentum for cleaner and more efficient energy solutions that can leapfrog existing systems, much as mobile technology revolutionised telecommunications" and that already "many governments and businesses are acting to speed this transition".

The EIB plays an instrumental role in the EU's development ambitions for Africa and is a major source of financial support to African countries. As one of the largest public financial institutions in the world, the EIB is in a position to make a substantial contribution to the financing needs of renewable energy projects in African countries, thereby also helping to address the issue of energy poverty. There is a growing

recognition within International Financial Institutions of the potential of renewable energy to supply poor people with clean energy. However, to date, little has been done to realise the potential of smaller scale off-grid clean energy options.

The EIB continues to mainly invest in large hydropower and transmission lines in developing countries. It considers large hydropower plants as part of its renewable energy portfolio, even though big dams often have a detrimental impact on both the environment and the livelihoods of many poor people. This paper proposes ways for the bank to better align its energy investments in African countries with the EU's ambition to reduce energy poverty in a sustainable way. ■

## 1.2

## ENERGY ACCESS, CLIMATE CHANGE AND DEVELOPMENT

The European Commission expects the EIB to align its energy policies with the objective of poverty reduction. It recognises that poverty and energy issues are intrinsically interlinked. Energy is often a key factor in achieving significant improvements in infant and maternal healthcare and combating disease (through providing refrigeration, lighting, sterilisation facilities, transport, etc), education (through lighting, heating, telecommunications, information technology, etc), and agriculture and the eradication of hunger (through irrigation, transport, storage, processing, etc).<sup>8</sup>

This is why access to energy is high on the development cooperation agenda. For example, the United

Nations Sustainable Energy For All (UN SEFA) campaign seeks to deliver universal access to energy by 2030. When investigating how to make good on that pledge, the International Energy Agency (IEA) found that half of all energy services will need to be provided by off-grid clean energy.<sup>9</sup>

Unfortunately, today's investments in energy access are heavily skewed toward traditional grid extension, with billions of Euros going to large-scale centralised power projects, often heavily polluting coal plants. According to the IEA, continuing this pattern of investment, at the expense of off-grid clean energy investments, will leave one billion of the world's poor without access to energy by 2030.<sup>10</sup>

The International Energy Agency notes that up-to-date renewable approaches can contribute substantially to sustainable development, offering relatively cheap off-grid energy access to the poor. However, any expansion in their use depends on a range of economic, social and political issues. Policy makers need to play a central role in driving the switch to renewable sources. There are several platforms for policymakers to discuss the inter-linkages between energy access, climate change and development, and to push for the further promotion of renewable energy. These include the annual Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), as well as the 2012 UN Conference on Sustainable Development (UNCSD) in Rio de Janeiro. The International Forum on Financing for Development (FFD) to achieve the Millennium Goals provides a framework to discuss the effectiveness of financial measures in driving development and responding to climate change.<sup>11</sup>

At this point in time there is an increase in finance available for countering and mitigating global climate change. According to the OECD, these sources of finance will have a critical impact on development goals and poverty reduction.<sup>12</sup> As such it is essential that climate finance is aligned with the principles stated in the Paris Declaration on Aid Effectiveness. It should be provided in a way that specifically addresses the energy poverty issue. Finally, the United Nations has designated 2012 as the International Year of Sustainable Energy for All. This offers further opportunities for policymakers to show strong political leadership regarding the energy poverty issue. With the release of the optional lending mandate of 2 billion Euro for 2011 to 2013 to the EIB to support the fight against climate change, the EIB will be able to play an increasingly important role in this respect.<sup>13</sup> ■

## 1.3

## THE BACKGROUND TO THIS BRIEFING PAPER

In 2011, the General Assembly of the United Nations adopted Resolution 65/151 which led to the initiative on Sustainable Energy for All. The Framework for Action of the Secretary-General's High-level Group on Sustainable Energy for All<sup>14</sup> has formulated three critical objectives to be achieved by the year 2030.

- Ensuring universal access to modern energy services.
- Doubling the rate of improvement in energy efficiency.
- Doubling the share of renewable energy in the global energy mix.

<sup>1</sup>United Nations calls for achieving sustainable energy for all', [www.undp.org](http://www.undp.org), 16 January 2012.

<sup>2</sup>World Energy Outlook, 2009.

<sup>3</sup>World Health Organisation, 2009.

<sup>4</sup>World Bank database, [http://ddp-ext.worldbank.org/ext/ddpreports/ViewSharedReport?&CF=&REPORT\\_ID=9147&REQUEST\\_TYPE=VIEWADVANCED&HF=N/CPPProfile.asp&WSP=N](http://ddp-ext.worldbank.org/ext/ddpreports/ViewSharedReport?&CF=&REPORT_ID=9147&REQUEST_TYPE=VIEWADVANCED&HF=N/CPPProfile.asp&WSP=N).

<sup>5</sup>[http://ec.europa.eu/europeaid/news/agenda\\_for\\_change\\_en.htm](http://ec.europa.eu/europeaid/news/agenda_for_change_en.htm)

<sup>6</sup>[http://ec.europa.eu/europeaid/what/energy/sustainable/se4all\\_en.htm](http://ec.europa.eu/europeaid/what/energy/sustainable/se4all_en.htm)

<sup>7</sup>See for example: World Bank energy strategy approach paper, 2009.

<sup>8</sup><http://www2.adb.org/Documents/Papers/Access-Energy-Poor/Access-Energy-Poor.pdf>

<sup>9</sup><http://bit.ly/zNduXr>

<sup>10</sup><http://sierraclub.typepad.com/compass/2012/05/energy-access-entrepreneurs.html>

<sup>11</sup>Fourth high level forum on aid effectiveness, Busan 2011

<sup>12</sup>OECS DCD DAC, website 2012.

<sup>13</sup>[http://www.eib.org/attachments/documents/eib\\_external\\_mandate\\_2007-2013\\_mid-term\\_review.pdf](http://www.eib.org/attachments/documents/eib_external_mandate_2007-2013_mid-term_review.pdf)

<sup>14</sup>Sustainable Energy for All - A Framework for Action, High-level Group on Sustainable Energy for All, United Nations January 2012.

Europe has committed itself to the Sustainable Energy for All initiative. The European Commission probably will announce at the Rio+20 environment summit that €400 million of the EIB's climate funds will be dedicated to improving access to clean energy, which is just a third of the €1203 million for climate finance that was committed in 2008.<sup>15</sup> The EIB bases its lending strategy to ACP<sup>16</sup> countries on the EU-ACP Cotonou Agreement, signed in 2000, and revised in 2010. However, according to its mission, the EIB also lends to projects that further EU policy objectives and does not seem to consider itself to be a 'classical' development bank, such as the World Bank. In this paper we propose that further adjustments are needed to the EIB's criteria for energy lending to Sub-Saharan Africa in order for it to fulfil an effective and efficient development mandate.

This paper examines the EIB's energy portfolio from the perspective of energy poverty reduction. The assessment draws on the outcomes of two strategic energy studies developed for us by NAPE in Uganda and JVE in Togo. The studies contrast the actual energy investments made by the EIB with the reality in these two Sub-Saharan African countries, where the majority of poor people still have no access to energy. ■

# 2 THE ENERGY SITUATIONS OF TWO AFRICAN COUNTRIES

## 2.1

### SUB-SAHARAN AFRICA AND ENERGY

Despite decades of bilateral and multilateral support provided to the power sector in African countries and measures taken by many African countries to restructure their power companies<sup>17</sup> (including changes in ownership from public to private and/or vertical and horizontal unbundling of production, transmission and distribution into different company units to make the energy sector operate more efficiently), the prospect of universal access to energy is still remote. Not enough power can be generated to meet demand; poor city areas suffer from frequent power black outs and the majority of the rural poor have no access to energy at all.

The transfer of energy technologies from industrialised countries to Sub-Saharan African countries has, in the past, led to ineffective and inefficient use of energy. This was due to imports of inappropriate technologies, rather than any attempt to develop local production facilities that made use of available energy resources. This, in turn, was compounded by a lack of available or affordable spare parts, inadequate national institutions for energy research and planning, and a lack of appropriate and effective policy instruments.<sup>18</sup>

Today the IEA estimates that annual investments of US\$13 billion are required for new electricity infrastructures in Sub-Saharan Africa. If such a level of investment were maintained through to 2030, it would lead to an overall household electrification rate of 47% by 2030, implying 76 million new connections.<sup>19</sup> This in turn implies connecting almost 26 million new households to the grid.

Yet at present (and even under this optimistic scenario) most people have no access to electricity. The differences in peoples' access to modern energy services within Sub-Saharan Africa are striking. In South Africa, three quarters of the population has access to electricity, but in all other countries (except Ghana where 54% of the population has access) less than half of the population has access to electricity.<sup>20</sup>

Moreover, in all these countries, people in rural areas have less access to electricity than those in urban areas, as they are not connected to a central grid. In developing countries as a whole, 41% of the rural population and 10% of the urban population have no access to electricity. In Sub-Saharan Africa the figures are 89% and 46% respectively.

In much of Africa energy poverty has similar features and causes. The population is very highly dependent on biomass for much of its energy

needs (particularly for cooking). Most of the rural population lacks access to main electricity supplies and electricity generation is highly dependent on imports of (increasingly expensive) fossil fuels or (often controversial) major hydro projects. Yet there are also differences, in terms of available natural resources, government strategies for renewable energy and grassroots initiatives already in place.

Governments are aware of these challenges, but have not wholeheartedly embraced renewable energy options. They have only made tentative steps towards introducing renewable energy technologies. The following sections look at the energy situation in two African countries (Togo and Uganda) and the possible energy strategies they could pursue. These case studies, prepared by two civil society organisations (JVE and NAPE respectively) argue that more emphasis on investing in decentralised and renewable energy systems could boost poor people's access to electricity. ■

#### BOX 1

#### Sub-Saharan African countries and energy - some facts (sources: Fuel for change, Both ENDS (2000) and IAE, World Energy outlook (2011))

- Oil exporting countries in Sub-Saharan Africa have the financial means to tackle energy poverty. The IEA estimates that providing energy services to the poor in the ten largest oil and gas exporting countries would cost around €23 billion, equivalent to around 0.7% of those countries' cumulative revenue from oil and gas exports.
- Oil import bills in Sub-Saharan Africa increased by an estimated €1.7 billion in 2010, over one third more than the increase in Official Development Assistance (ODA) over the year.
- Almost all Sub-Saharan African countries are highly dependent on oil for their industries and commercial supplies.
- At the same time an estimated average of 80% of their populations have no access to modern energy services.
- Energy prices have undergone a long term increase over the past decade. Governments under the scrutiny of International Financial Institutions (IFIs) tend to seek to reduce subsidies for fuel and electricity, but are also under internal political pressure to maintain them.
- Moreover, the international markets for oil and gas have become increasingly volatile. There have been several examples of sudden price hikes in recent years. This not only results in increases in prices at the petrol pump but also in rising food prices, both of which have a direct impact on poor people.
- When energy prices are high, rural populations tend to return to using wood, charcoal and crop and animal residues for cooking.
- Carbon taxes could increase the competitive edge of renewable clean energy. The generated income could be used to subsidise the rural use of green energy to make it more accessible and affordable for the poor. ■

<sup>15</sup>Bilateral finance institutions and climate change, a mapping of 2009 climate financial flows to developing countries, United Nations Environment Program 2010.

<sup>16</sup>The African, Caribbean and Pacific Group of States (ACP) is composed of 79 African, Caribbean and Pacific states, 48 countries from Sub-Saharan Africa, 16 from the Caribbean and 15 from the Pacific. <http://www.acp.int>

<sup>17</sup>Planning and management in the African power sector, African Energy Policy Research Network, 1998.

<sup>18</sup>Fuel for change, World Bank Energy policy, Rhetoric vs. Reality, Zed books, Both ENDS, 2000.

<sup>19</sup>International Energy Agency, 2006

<sup>20</sup>WHO. 2009.

## 2.2

### ON GRID - OFF GRID. TOGO'S RENEWABLE ENERGY POTENTIAL

#### Socio-economic data

Togo, which is classified as a Least Developed Country, has a population of 7 million people. Its economy mainly depends on small commerce and subsistence agriculture. A majority of people live in rural areas. According to international data, the country has a GDP growth rate of nearly 4%. The government recognises the importance of increasing the energy supply for this to continue.

#### Energy outlook: types of available energy, installed capacity and energy services

The current energy mix in Togo consists of biomass (71%), fossil fuels (26%) and electricity (3%).<sup>21</sup> Despite natural biomass being the leading source of energy, investors are mainly interested in improving and extending a regional West African grid and developing large power stations. This grid will distribute the available energy in the region and provide Togo and other West African countries with electricity.

Togo mainly depends on energy imports to meet its industrial and residential power demand. Neighbouring Ghana supplies Benin and Togo with most of their electricity, which is generated by a huge dam on the Volta River. The West African Gas Pipeline, constructed by a consortium led by the American Chevron oil company, provides a supply of Nigerian gas to Benin, Togo and Ghana. In the Togolese capital Lomé, a 100 MW gas power station has been completed by Contour Global, another American company. It cost €160 million and uses gas supplied by the pipeline.

In Togo, electricity is mainly supplied by the Togolese Electricity Company (CEET); and the Benin Electricity Community (CEB), an international public entity set up under an international agreement and the 1968 Benin-Togo Electricity Code. Both have an almost complete monopoly on production. The CEET buys electricity from the CEB and also generates its own electricity from diesel-powered power stations. The CEB is currently seeking to construct a 96 MW dam at Adjarala on the Mono River. It already owns the Nangbeto dam, with an installed capacity of 64 MW. Large quantities of energy generated by this dam are supplied to the government-owned Togo Phosphates Agency (Office Togolais des Phosphates).

#### Available finance - EIB involvement

Togo reached a HIPC<sup>22</sup> debt relief completion point in 2010, when 95% of the country's debt was cancelled. For financing major investments in the energy sector the country depends on international agencies, such as the World Bank, the African Development Bank and the EIB, Export Credit Agencies (particularly in China and the USA) and direct foreign investments from multinational companies. An American company involved in building the gas power station received political risk insurance from the US Overseas Private Investment Cooperation (OPIC). The Export-Import Bank of China provided partial financing (€24 million) for the construction of the Adjarala dam in exchange for supply contracts.

The EIB has further provided a senior loan of €32 million to Benin and Togo (of which €3 million was allocated to Togo) to refurbish electricity interconnections, and a grant (in the form of an interest rate subsidy) in addition to the senior loan. The EIB has also invested in other regional projects that will have a direct impact on Togo's energy supply. The bank provided a €75 million loan to the

Republic of Ghana for the construction of the West African Gas Pipeline project. A further €935,000 grant (from the EU-Africa infrastructure fund) has been provided to undertake a study of the regional power market.

#### Renewable energy sources

Until now, Togo's power provision has mainly been depended on large-scale hydropower, which has had harmful environmental impacts, and conventional thermal energy, such as diesel power stations and gas turbines. It is reliant on imports for these oil and gas supplies. Togo, however, has a huge potential for renewable, environmentally-friendly energy:

- There are many rivers and waterfalls in Togo, with the potential to produce hydroelectricity through mini-hydropower dams. Ideally these should be developed alongside local distribution power networks.
- Togo has abundant sunshine to generate electricity with. On average 4.4 kW per hour could be generated per square metre of installed area. But so far, very little solar equipment has been installed.
- There is also a negligible installed capacity of wind energy, even though the country has a coast line, much of which is suitable for setting up wind farms. Numerous sites have been identified as having average wind speeds in excess of 5 m/s.
- There are significant resources available, mainly from agricultural waste and livestock to produce biogas. With the exception of some pilot projects, the country has no experience with biogas installations.
- There are some projects for converting biomass into energy: some private companies are experimenting with developing jatropha plantations. Others have shown interest in promoting ethanol production for use as a fuel source in Togo. Small-scale farming is very widespread in Togo (as in the rest of the region) and a business model

based on plantations might not necessarily contribute to national energy security. Part of the question depends on whether the jatropha and ethanol is meant for export, or for local use in decentralised small-scale energy production. Moreover, plantations often have detrimental side effects on the livelihoods of small-scale farmers and on biodiversity

#### Policy features

Togo does not yet have a renewable energy policy, although the government is drafting an energy strategy. It has already established a national rural electrification agency and aims to establish a legislative and regulatory framework for developing renewable forms of energy. However, Togo's Poverty Reduction Strategy Paper (PRSP) states that this has not yet been done, due to a lack of finance.<sup>23</sup> The PRSP also notes that Togo is diversifying its sources of electricity supply with a view to lowering costs, but there is no mention of how much is to be invested in renewable energy, or ways of increasing the presently limited access to sustainable energy for the majority of the population.

At present the institutional and regulatory framework required for the further promotion of renewable energy is not in place. This is partially due to the fact that responsibility for it is distributed between several ministries. The Energy Directorate falls under the Ministry of Mines, while policies for electricity fall under the Authority for Electricity Regulation.<sup>24</sup>

#### The need for action

The Togolese population is very heavily dependent on firewood and charcoal for cooking and heating. In response, local CSOs have prioritised the distribution of energy-efficient stoves at local level.<sup>25</sup> From an energy poverty and climate perspective, prioritising more efficient use of the

energy sources that the population currently relies on (wood and charcoal) makes a great deal of sense. Even so, the dependency of a large part of the population on firewood and charcoal has negative effects on people's health, their livelihoods and the environment. Growing energy demand is leading to massive deforestation and, according to the WHO, smoke from firewood and charcoal burnt on primitive stoves is the fourth most common cause of death worldwide.

The country is therefore in need of alternative clean energy sources, such as solar and wind power. This shift must be complemented by promoting off-grid production and consumption, which would boost independent power generation in rural areas. While it is possible for private sector companies, NGOs and individuals to set up small-scale power generation and distribution schemes, there is no clear regulatory framework for managing consumer-producer relations within local grids. Such a framework would make it easier to set up standardised local systems that could later be connected to each other at the regional and possibly even national level. ■

<sup>21</sup> Systeme d' information Energetique du Togo (SIE-Togo), 2009.

<sup>22</sup>The Heavily Indebted Poor Countries initiative: an international debt relief programme for the poorest countries, coordinated by World Bank and IMF.

<sup>23</sup>Annual Progress Report on the implementation of the full PRSP, Republic of Togo, IMF 2010.

<sup>24</sup>Etude sur le potentiel du Togo en matiere d'energies alternatives, JVE, 2011. (non published).

<sup>25</sup>Ibid.

## 2.3

### UGANDA'S ENERGY SECTOR: ALTERNATIVES TO DAMMING THE NILE

#### Socio-economic data and energy outlook

With a poor population many lacking access to energy and a growing economy (5-6% GDP growth yearly), Uganda's energy needs are huge. Power generation cannot keep up with demand, and there are regular black outs. Most people have no access to the national grid. In Uganda about 88% of the population resides in rural areas, where traditional biomass (mainly wood) has remained the main source of energy. Electrification coverage in rural Uganda is still very poor, with less than 1% of the rural population having access to the national grid.

#### Available finance

Uganda has a deficit of US\$ 2 billion, 13.8% of its GDP.<sup>26</sup> Uganda is dependent upon finance provided by international agencies, such as the World Bank, the African Development Bank, the EIB and China for new investments, especially in the energy sector. These banks have already invested in the Bujagali dam and more hydro projects may follow. The Government of Uganda has set up an energy fund, intended for the development of energy projects, mainly consisting of dams. However, there are public concerns about where the government is obtaining the capital for this fund.<sup>27</sup>

*Energy outlook: type of available energy, the installed capacity, energy services*

Uganda derives its energy from a variety of sources. There is an overwhelming dependence on biomass in the form of charcoal and firewood.

Uganda's energy supply is derived from biomass (92%), petroleum (6%) and hydroelectricity (about 2% or less). The Ugandan power sector depends on hydropower and diesel-fuelled generators. Diesel-powered thermal generators contribute to over 60% of Uganda's electricity. In spite of Uganda's vast energy potential, it suffers from an acute power supply shortage which has an adverse effect on industrial, commercial and urban residential users.

#### Renewable energy sources

Uganda's renewable energy potential includes; mini-hydro, solar, biomass, geothermal, and wind.

- More than 60 potential mini-hydro sites, with a total potential of about 210 MW, have been identified in Uganda through different studies. Some of the sites can be developed for isolated grids. Other hydropower sites can be developed to supply energy to the central grid.
- Uganda receives 2500 – 3200 hours of sunshine per year and has a mean solar radiation of 5.1 kWh/m<sup>2</sup> per day on a horizontal surface. Despite the huge potential solar offers, it is estimated that there is only a capacity of 200 MW installed for households, institutions and commercial use.
- The average wind speed in Uganda is about 3 metres per second (m/s), although speeds of up to 6 m/s are recorded in flatter areas, especially around Lake Victoria and the Karamoja region, as well as on hill tops. There are therefore areas where the wind speed is sufficient to generate power, but no significant capacity has yet been installed.
- Biomass energy already provides almost all the energy used to meet the basic needs of cooking and water heating in rural and most urban households, institutions and commercial buildings. Biomass in the form of firewood and charcoal is also the main energy source for

rural-based industries. Biomass saves foreign exchange, employs up to 20,000 people and generates Ugandan Shs. 36 billion (€16 million) per year in rural incomes in Uganda.<sup>28</sup> This, however, comes at a price: rural areas are facing a shortage of accessible woody biomass for fuel. The average distance travelled to collect firewood has increased from 0.73 km in 2000 to more than 1 km in 2007.<sup>29</sup>

- All efforts to promote biogas have either been undertaken by church institutions or civil society organisations. If the government were to develop a comprehensive plan for biogas promotion, this would have far more effect. So far there are no exact details about how much has been done. As these initiatives are decentralised, there are no statistics available on their scale.
- Finally, Uganda's geothermal potential is estimated at 440 MW. The installed capacity is currently 170 MW.<sup>30</sup>

#### Policy features

The master energy plan of 1995 stressed the development of 12 big dams on the river Nile, including the Bujagali dam. Since 2007, however, Uganda has been following an alternative energy path set out under its 'Renewable Energy Policy', which is geared towards developing both the potential of its alternative energy resources and more large-scale energy infrastructure development schemes.

The Ugandan government's 2007 policy objective for energy was to increase the use of renewable energy, from 4% to 61% of the country's total energy consumption by 2017. The renewable energy policy spells out strategies to promote small hydro schemes, wind and solar energy. Uganda, however, lacks the resources to implement renewable energy development. Communities lack the finance and infrastructure needed

to organise the use of renewable energy and the incentives to switch from conventional to renewable alternatives, e.g. energy-saving wood fuel stoves, solar water heaters and other energy efficient technologies.

#### Agencies involved

Several ministries are involved in the power sector. The Ugandan Energy Board has been divided into three independent companies: the Uganda Electricity Generation Company Limited (UEGCL), the Uganda Electricity Transmission Company Limited (UETCL) and the Uganda Electricity Distribution Company Limited (UEDCL), each responsible for one of the three core responsibilities - generation, transmission and distribution - in the electricity sector. UETL maintains the national grid. The Rural Electrification Authority (REA) is charged with ensuring that poor rural people have access to energy from the central grid. An independent regulator, the Uganda Electricity Regulatory Authority (ERA) has been set up and is charged with regulating power generation, transmission and distribution as well as having other responsibilities. Umeme, another company (operating under UEDCL) is subcontracted to oversee and collect energy tariffs from energy consumers. While Uganda is moving in the right direction, it is doing so at a slow pace and progress is impeded by the involvement of so many ministries, agencies and private entities.

#### The need for action

Uganda lacks the financial resources and institutional framework to expedite the development of renewable energy. The civil society organisation NAPE has stressed the importance of introducing customer financing programmes that would allow rural communities living far away from the grid to acquire sources of renewable alternative energy such as solar units and energy-efficient technologies that would

provide power, especially to remote communities.

Uganda also needs to adapt feed-in tariffs, which allow small-scale power producers to obtain revenue in return for providing (clean) energy for the national grid. Attractive feed-in tariffs would help to increase the generation of renewable energy.

It is also evident that the involvement of several ministries, agencies and private entities is hampering a swift transition to renewable energy. More political will is needed to shift priorities away from centralised investments in large-scale energy infrastructure to decentralised investments in small-scale energy systems.

Uganda's energy strategies have the potential to contribute to reductions in poverty but need to pay attention to the equitable distribution of access to energy and gender issues. NAPE places a great deal of emphasis on the importance of citizen participation in the development of energy projects and programmes. Civil society participation (at all levels and in all stages of mechanism design and implementation) will ensure that projects and programmes address community priorities regarding access to energy. This is acknowledged in the Sustainable Energy for All Action Agenda.<sup>31</sup> ■

<sup>26</sup>Joint IMF/World Bank debt sustainability analysis, April 2010

<sup>27</sup>Uganda's energy sector: An alternative energy strategy discussion paper, final draft. Kugonza N. Robert Akiiki, National Association of Professional Environmentalists (NAPE), 2011. Not published yet.

<sup>28</sup>The National Biomass Study 2003

<sup>29</sup>Ministry Water Environment 2007

<sup>30</sup>Development renewables- Uganda country study 2006

<sup>31</sup>[http://www.sustainableenergyforall.org/news/item/download/15\\_27223d732e1e6b2e9eb5737c368100c5](http://www.sustainableenergyforall.org/news/item/download/15_27223d732e1e6b2e9eb5737c368100c5), p.7

# 3

## THE EIB AND ENERGY POVERTY

### 3.1

#### THE EIB'S ENERGY INVESTMENTS IN AFRICA

The EIB is the EU's long-term lending bank. The EIB raises funds on capital markets, which it lends to projects and programmes that further economic development. The EIB is active both inside and outside the EU. The majority of lending goes to projects within the EU, although 10% is lent to countries outside the EU.

The EIB is entrusted with the Investment Facility component (IF) of the European Development Fund (EDF). The EDF is the EU's main instrument for providing development aid in the ACP countries, provided the financing is directed towards private and commercially run public sector utilities. In 2010 the ACP countries (including South Africa) received an estimated €1 billion from the Investment Facility and other EIB operations that funded 26 projects. The bank also provided €70 million in small direct grants, grants for technical assistance (consultancy) (€7 million) and interest rate subsidies (€63 million).

In 2010, 21% of the money that the EIB allocated to the ACP countries went to the energy sector. The bank claims that it is shifting the focus of its lending in the energy sector towards renewable energy projects.

#### BOX 2

##### Some facts about the EIB and Sub-Saharan countries

- Cooperation between the EU and Sub-Saharan Africa is based on the Cotonou Agreement for 2000-2020.
- EIB lending must be coherent with the European consensus on development.
- The EIB is entrusted with managing the ACP investment facility for the support of private sector investment. 75% of EIB investments in Africa in 2009 went to financial intermediaries or hedge and equity funds.
- The EIB also supports infrastructure development. For example the Bujagali dam in Uganda was financed by the ACP Investment Facility, while the West African gas pipeline seems to have been funded from own resources (OR). ■

Yet despite this, out of the €600 million of the banks own resources, €120 million (20%) has been allocated for a single geothermal plant project in Kenya. Only one Investment Facility project (costing €30 million) has been approved - for wind energy in Cape Verde – which represents just 8% of the total amount of €360 million of IF funding to ACP countries.

At the same time, the EIB is supporting the construction and/or restoration of hydro dams and high-voltage transmission lines through the EU – Africa Infrastructure Trust Fund (IATF). This trust fund catalyses private finance for infrastructure development: combining aid with private sector finance with the fund paying for technical assistance and interest rate subsidies. In 2010, it approved grants for two transmission lines, one to provide technical assistance (TA) for a

regional power transmission project in Rwanda and the Democratic Republic of the Congo (part of a broader regional inter-connection with Burundi, Kenya, and Uganda). Another was for a transmission line in Mozambique. Grants were also approved for technical assistance to two hydro projects, one to rehabilitate the Mount Coffee Power Plant in Liberia (64 MW) and one for a smaller run of plants on a river on the South African-Namibian border. Earlier the trust fund provided TA funding to the Gibe III dam in Ethiopia, but this was cancelled after the Ethiopian authorities discontinued negotiations with the EIB and other international donors on the financing. Finally, there are capacity strengthening projects that provide assistance to intermediary financiers and local banks to expand credit lines to investors sponsoring renewable energy and or energy efficiency. ■

#### BOX 3

##### The EIB's involvement in renewable energy finance partnerships

- The EIB is heavily involved in joint EU climate finance initiatives. It has thus far pledged €589 million for six carbon funds, one of which supports small programmes and projects in the least developed countries.
- The EIB also counts its €50 million contribution to the Interact Climate Finance Facility (ICFF) as a climate action. This fund is meant to leverage part of the fast-start grant resources pledged by the EU to meet its international commitments to provide new and additional resources to developing countries for renewable and energy efficiency.
- The EU's Global Energy Efficiency and Renewable Energy Fund (GEEREF) invests in regional risk capital funds, that catalyse private investments in energy efficiency and renewable energy projects in developing/transition countries. GEEREF does not directly provide funding to renewable energy

and energy efficiency projects or enterprises but invests in private equity funds that specialise in providing equity finance to small and medium-sized project developers and enterprises that focus on renewable energy and energy efficiency projects and/or technologies. The funds in its portfolio are directed to projects requiring up to €10 million equity investment. GEEREF also manages a technical support facility which provides about €2.5 million support to companies, including private equity, that generate private capital and provide advisory services to small and medium-sized enterprises in the renewable energy sector.

- Finally the EIB IF Annual report 2010 claims that the EIB provided €3 billion under the Energy Sustainability and Security of Supply Facility (ESF) to support low-carbon and climate-resilient projects in the ACP. This facility promotes the transfer of sustainable energy technologies between the EU and developing countries. ■

### 3.2

#### ASSESSING THE EIB'S CLIMATE AND ENERGY PORTFOLIO FROM AN ENERGY POVERTY PERSPECTIVE

Until now the EIB's support for energy projects in Sub-Saharan Africa has given priority to supporting hydro dams and electricity transmission. The EIB includes large hydropower plants in its renewable energy portfolio.

The bank emphasises that large infrastructure projects are needed to guarantee the availability of energy,

which is regarded as a necessary condition for further economic growth in developing countries. A number of these large projects, such as the West African Gas Pipeline in Ghana, or the Bujagali Hydroelectric Project in Uganda, are being opposed by civil society groups and there is much controversy regarding their local environmental and social impacts.

In its Statement of Environmental and Social Principles and Standards,

the EIB states that it is committed to supporting clean energy growth paths outside the EU, including the promotion of the transfer and development of clean technologies.

The EIB has also developed a Results Measurement Framework (RMF) for the appraisal of projects outside the EU. This takes into account factors such as their contribution to EU priorities and countries' development objectives. ■



# 4

## ALTERNATIVE ENERGY STRATEGIES AND INNOVATIVE FINANCING MECHANISMS

### Alternative energy strategies

The African continent holds a huge potential of renewable energy, which is still largely untapped. Energy sources such as geothermal energy, small-scale hydro, solar, wind, tidal energy and local biomass fuels, including agriculture waste, have a significant potential to deliver Africa's energy needs.<sup>32</sup>

It makes sense for African countries to start making use of their own renewable energy potential through combinations of off-grid means, mini-grids and off-grid extensions. This will have a beneficial effect on climate change and will contribute to poverty reduction. Large-scale energy infrastructure investments may be good for industrialisation, but until now, they have failed to meet the energy needs of rural economies and local communities.

Access for the poor (and particularly the rural poor) to electricity services appears to depend less on aggregate electricity production and more on where and how that energy is produced and distributed. Green energy technologies such as solar, photovoltaic, wind or micro hydro power, as well as electricity generated from locally produced bio fuels, are likely to prove to be more effective in achieving a wider spread energy distribution than centralised energy system. They can also be controlled and maintained locally. Renewable energy systems also generate local employment. They open opportunities for small entrepreneurs to become sales partners in renewable energy sales networks, serving as installation and servicing technicians.

There is no reason (in principle) why developing countries cannot construct new systems for distributing electricity from scratch, leapfrogging the large power plants that rely on fossil fuels. They can start building mini-grids that distribute locally produced energy. This is an effective way to address energy poverty, especially in rural areas. It will then be possible to expand these grids throughout the region and connect them to each other.

While the existence of a functional power grid enables countries to pool available energy from different sources and secure a steady energy supply, large-scale hydro power often exacts a high price from local communities, as they entail a loss of control over the natural resources that these communities depend on for their livelihoods.

### Financing mechanisms

The upfront cost of renewable facilities is high and needs to be reduced. Photovoltaic systems, biogas units and fuel-efficient stoves are more expensive than fireplaces or kerosene lamps. The upfront costs for mini-grids run into hundreds of thousands of euros. This is where investors can play a role. Local authorities usually lack the skills and leverage to attract and repay the amounts needed to enhance wider energy access.

Upfront public investment brings down costs and makes renewable energy a default choice. At a global level, fossil fuels alone received \$409 billion in subsidies in 2010.<sup>33</sup> This money could be redirected towards renewable energy instead.

The EIB could support a global fund for feed-in tariffs [FITs]. This global fund would allocate money to national feed-in programmes. Feed-in tariffs are an incentive that would promote local energy production, as producers get paid for the electricity they provide to the grid. Around 90 per cent of the expansion of wind power in Europe since 1995 has been in countries with feed-in tariffs, while China's wind capacity has doubled every year since the introduction of a FIT in 2006. The IPCC sees FITs as a key enabling policy.<sup>34</sup>

The potential of locally available financial resources for investments should be identified through an initial local needs assessment. Renewable energy investments need to be adjusted to the local socio-economic requirements of, what is usually, a predominantly informal economic sector.

Small-scale savings groups and local associations of small entrepreneurs can also help to pay the upfront costs. These upfront costs for installing the technology can later be repaid through the revenue from generation. The EIB could play a valuable role in promoting the scaling-up of successful local finance initiatives and their replication elsewhere. ■

# 5

## CONCLUSIONS AND RECOMMENDATIONS

We believe that the EIB's energy investments do not yet adequately address the issue of energy access for the poor. African civil society organisations that work with the poor argue that the bank (and their governments) should more resolutely adopt strategies that enable the poor to have access to sources of sustainable energy. Both NAPE from Uganda and JVE from Togo argue the benefits of sustainable small-scale energy solutions, and advocate the participation of civil society in design, planning and decision-making related to energy development.

Based on their respective roles and responsibilities, we propose the following recommendations to the EC and the EIB:

### European Commission and the European Investment Bank

- There is a need to bring the EIB's energy and climate policies more in line with EU development policy poverty reduction aims.

### European Commission

- The European Commission should ensure that its efforts to provide energy to the poor in Africa are aligned with national energy strategies. Together with the EIB, it should also more specifically define the role that the EIB can play in contributing to these national strategies in order to help governments (e.g. in Uganda) to access funding for their targets for sustainable energy.
- In countries like Togo, where national energy strategies or clean energy targets have not yet been formulated, the EC should help governments to establish them.
- The EC, together with national governments, should ensure civil society participation when national strategies are drawn up and local investment decisions are taken.

### European Investment Bank

- EIB capital should be more in balance with local financing potential in developing countries to invest in energy.
- EIB support should promote the scaling-up of successful, local clean energy initiatives and their replication elsewhere. ■

<sup>32</sup>Low-carbon Africa: leapfrogging to a green future - Alison Doig et al, Christian Aid 2001.

<sup>33</sup>IEA world energy outlook, 2011.

<sup>34</sup>Quote from: <http://www.whatnext.org/resources/Publications/FOE---Reclaiming-Power.pdf>

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**Both ENDS** strives for a socially just and sustainable world. To this end we support organisations in developing countries that are active in the areas of poverty alleviation and environmental management. These local organisations have in depth knowledge of what the problems are and often come up with inspiring, sustainable solutions. We support them by providing information and mediation in funding, lobbying and networking.



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