



**AFRICAN DEVELOPMENT  
BANK GROUP**

**ENERGY SECTOR POLICY**  
*of*  
**THE AFRICAN DEVELOPMENT BANK GROUP**

*(Draft)*

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## Acronyms and abbreviations

ADF	African Development Fund
AfDB	African Development Bank
AsDB	Asian Development Bank
AU	African Union
CAPP	Central Africa Power Pool
CEIF	Clean Energy Investment Framework
CDM	Clean Development Mechanism
CO <sub>2</sub>	Carbon dioxide
CRMA	Climate Risk Management and Adaptation Strategy
DFI	Development and Financial Institutions
EAPP	East African Power Pool
EBRD	European Bank for Reconstruction and Development
EITI	Extractive Industries Transparency Initiative
FDI	Foreign Direct Investments
GCI	General Capital Increase
GDP	Gross Domestic Product
GHG	Greenhouse Gas
G8	Group of eight leading industrialized market economies
IaDB	Inter-American Development Bank
IAEA	International Atomic Energy Agency
IEA	International Energy Agency
IPR	Intellectual property rights
MDGs	Millennium Development Goals
MTS	Medium Term Strategy
NAPP	North African Power Pool
NEPAD	New Partnership for Africa's Development
ODA	Official Development Assistance
ORPC	Operational Resources and Policies Department
PIDA	Program for Infrastructure Development in Africa
PPP	Public Private Partnership
RMCs	Regional Member Countries
RECs	Regional Economic Commissions
SAPP	Southern African Power Pool
UPDEA	Union of Producers, Transporters and Distributors of Electric Power in Africa
WAPP	West African Power Pool
WBG	World Bank Group

## **Some Energy Power Measurement Units:**

Watt Capacity to supply energy at a rate of 1 joule per second  
MW MegaWatt:  $10^6$  Watt  
GW GigaWatt:  $10^9$  Watt  
TW Terawatt:  $10^{12}$  Watt

## 1. Introduction

African countries are faced with many challenges in their quest to improve the welfare of their populations, one of which is the lack of access to affordable and reliable modern energy services. It is estimated that only half of the urban population in sub-Saharan Africa has access to electricity; the ratio is only 8% in the rural area. Moreover, even when modern energy is available, it is expensive and unreliable. If current trends continue, less than half of African countries will reach universal access to electricity by 2050.

Along with South Asia, Sub-Saharan Africa counts the largest number of people relying on traditional solid fuels for energy generation (cooking and heating); these sources carry substantial adverse effects on health and productivity. Sadly, the poorest segments of the population often pay the highest costs (in money, time, and health) for the worst-quality energy services. The lack of access to modern energy services is a major factor for the slow progress in poverty reduction and attainment of other millennium development goals (MDGs) in Africa.

The lack of access to modern energy for industrial use impedes enterprise start up and expansion of opportunities in African countries. It undermines competitiveness and access to regional and global markets for African producers. Adequate supply of modern energy to commercial and industrial sectors is critical for income generation, which in turn is essential for the financial sustainability of the energy sector.

Africa has great potential for meeting its massive energy needs by harnessing its resource endowments. It is estimated that 90 percent of Africa's potential hydropower resources are yet to be developed. Currently Africa's hydropower energy resources are estimated to be more than 3,909 TWh<sup>1</sup> of theoretically potential hydropower. This is true to some extent also for many other energy resources such as coal, geothermal, solar, and wind. While the use of some of these sources of energy has raised concerns over potential negative effects on the environment, improvements in energy production and transmission technology offer great potential for mitigating these negative effects.

Though Africa's sustained economic growth will inevitably result in increasing energy demand and energy-related carbon dioxide (CO<sub>2</sub>) emissions, the continent's contribution to greenhouse gases (GHG) emissions is likely to remain relatively low in the near future. However, Africa is the most vulnerable to climate change. Therefore, although meeting urgent energy needs is the prime objective, it is also necessary to take into account environmental and climate change concerns to enable the continent to gradually embark on a sustainable low carbon growth path.

Increasing access to energy in Africa will require scaling up investments in the energy sector to increase generation capacity. In addition, producing cleaner energy, in many cases, entails additional costs relative to conventional energy production. This constitutes a more challenging option for African countries. The African Development Bank (AfDB) estimates USD 23.8 billion, the average annual investment requirement for universal access to reliable

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<sup>1</sup> World Energy Council (WEC). 2010. *Survey of Energy Resources*. London, United Kingdom

and increasingly cleaner electric power in all the 53 RMCs by 2030<sup>2</sup>. While private sources will play an increasingly important role in financing energy investments, a large share of the long-term energy investments will need to be covered from public sources. The AfDB is called to play a key role in filling this gap by leveraging its own resources and catalyzing additional private and public resources.

Given the uneven distribution of endowment in energy resources across the continent, there is a need for regional cooperation to enable joint development of energy resources to take advantage of economies of scale and to allow trade of energy resources and services notably through sub-regional power pools. The AfDB will be called to scale up and adapt its financing instruments to contribute to this goal.

The Bank Group has accorded high priority to the energy sector, as stated in the Bank Group's 2008-2012 Medium Term Strategy (MTS). The Bank Group elaborated its first Energy Sector Policy in 1994. In light of new developments in the energy sector and emerging development challenges, especially the growing importance of climate-related energy issues, the greater national, regional and continental policy commitment, and the evolution of the economic frameworks, the Bank Group considers this new Energy Sector Policy as a key instrument to guide its interventions in the sector.

Following this introduction, Section 2 provides the background and rationale for the new Policy, including highlights on key opportunities in the energy sector. Section 3 summarizes key lessons from the Bank Group's experience in the energy sector over the past years. Section 4 presents the elements of the new Policy. Section 5 highlights approaches to take into consideration for a sound implementation of the policy. Subsequently, the energy strategy will further elaborate these approaches and propose an operational action plan to achieve the Bank Group's energy sector policy objectives.

## **2. Background and rationale**

### **2.1. Challenges facing the energy sector in Africa**

***2.1.1. Inadequate access to modern energy services constitutes an obstacle to poverty reduction efforts in Africa:*** The high level of poverty in Africa is partly due to a lack of access to modern energy services. Africa has the lowest electrification rate of all regions (26 percent of households), and as many as 547 million people do not have access to electricity<sup>3</sup>.

In rural Africa, agricultural production and productivity are constrained by limited access to modern energy services for powering water for irrigation, agriculture mechanization, and post-harvest storage and processing. This in turn depresses crop yields, value added, and farmers' incomes, thus aggravating food security problems. Low incomes from agriculture in turn make it difficult for farmers to afford cleaner modern energy services, thus perpetuating the poverty trap.

Urbanization has accelerated in Africa and has been accompanied by an expansion of large-scale "informal settlements" or slums, mainly inhabited by the poor. Slums in sub-Saharan

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<sup>2</sup> African Development Bank. 2008. *Clean Energy Investment Framework for Africa: Role of the African development Bank Group*

<sup>3</sup> World Bank. 2009. *World Bank Report, G8 Energy ministers meeting ; Rome, May 24-25 2009*

Africa are growing at 4.53 per cent annually, compared to 2.20 per cent in Southern Asia<sup>4</sup>. By 2030, Africa's population will be close to 50% urban<sup>5</sup>; and the expansion of slums will continue to transfer poverty nests from rural zones to urban areas. In poor urban areas, inability to afford electricity services constrains the range and profitability of income generating activities for the urban poor. It also constrains the creation of micro and small enterprises, an important source of employment.

Although energy is not one of the eight MDGs, it is obvious that access to modern energy is a prerequisite to achieving these goals. Energy supports the provision of basic needs (cooking, heating, lighting, access to clean water, transport, social services, etc.), creates productive activities (manufacturing, industry, commerce, agriculture, etc.) and stimulates employment creation. High levels of poverty partly explain the heavy reliance on traditional biofuels as energy source for cooking and heating. According to the International Energy Agency<sup>6</sup>, approximately 73 percent of the population in Africa uses biomass energy (often in inefficient and unhealthy forms), compared to 50% in the developing world as a whole. Reliance on traditional biomass (especially in the form of charcoal) also encourages deforestation and land degradation. In some areas, especially around major cities such as Lusaka, Nairobi, and Dar-es-salaam, charcoal demand contributes to degradation of the surrounding woodlands and forests. Lack of access to reliable, affordable and modern energy services impedes economic growth and constrains key aspects of human welfare. There is therefore an urgent need to accelerate progress in access to energy to unlock development opportunities in Africa.

### ***2.1.2. Modern energy services are not affordable for the poor segments of the population:***

The two main determining factors of affordability of energy services are the cost of services and households' income. Therefore, increasing access to modern energy services in Africa requires increasing the supply of low-cost energy and facilitating affordability, including through targeted subsidies for energy services.

*The costs of energy services are generally high in Africa:* Investments in energy generation and transmission are inadequate and regional cooperation to boost energy supply is moving rather slowly. Moreover, the small scale of most national power systems and the reliance on expensive oil-based generation raise the cost of electricity generation in Africa; at 0.18 USD/Kwh<sup>7</sup>, it is 2 to 3 times higher than the global average. The upfront costs of connection are also very high.

The volatility in energy prices has highlighted the importance of diversifying the energy sources and improving energy efficiency. The price of crude oil rose from less than USD 40 per barrel in 2004 to a high of USD 70.85 per barrel in August 2005. The prices continued to rise, trading at about USD 80 per barrel in 2006, and reaching a record of just over USD 147 per barrel in July 2008<sup>8</sup>. Moreover, with the global energy crisis, new markets have emerged. Africa therefore faces high competition with a broader pool of countries for energy resources.

*Most African households, especially in rural areas, live on very modest budgets and spend more than half of their resources on food<sup>9</sup>, which constitutes a barrier for access to modern*

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<sup>4</sup>UN Economic and Social Council. 2007. *Coordinated implementation of the Habitat Agenda, Report of the Secretary General*

<sup>5</sup>UN-Habitat. 2010. *The state of African Cities 2010, Governance, Inequalities and Urban Land Market*

<sup>6</sup>International Energy Agency (IEA). 2002a. *Energy balances and statistics for Non-OECD Countries 2000-2001, Paris*,

<sup>7</sup>World Bank. 2009. *World Bank Report, G8 Energy ministers meeting ; Rome, May 24-25 2009*

<sup>8</sup>AfDB. 2009., *Oil and Gas in Africa*

<sup>9</sup>IBRD. 2009. *Access, Affordability, and Alternatives: Modern Infrastructure Services in Africa, Africa Infrastructure country diagnosis(AICD)*

energy services. Given the limited resources, providers are not able to expand services based solely on revenues from sales. Meeting the energy needs of low income communities calls for a balance between the traditional supply-oriented approach and a demand-driven approach. This means paying greater attention to the needs of the end-users and their capacity to afford services. Therefore, there is a need to explore innovative pricing mechanisms, including targeted subsidies, to reduce the financial burden for consumers, facilitate access and share potential financial risks with investors.

Furthermore, in most cases, producing cleaner energy entails additional costs. Renewable and clean energy technologies are generally at an early stage of market development, which drives up project risk and costs and results in higher initial capital expenditure outlay. A combination of financing options is required to offset the high cost of generation associated with new technology and ensure the supply of competitively-priced power. A blend of concessional financing with commercial financing can play a key role in encouraging green energy generation and recognizing the global public goods nature of the investment.

**2.1.3. Unreliability of energy services is a challenge for African countries:** Unreliability of energy services in Africa is a significant obstacle to economic growth and competitiveness in the region. At 39 MW per million inhabitants, power generation capacity in Africa is about one tenth of that in other low income regions. More than 30 African countries experience recurrent outages and load shedding, with opportunity costs amounting to as much as 2 percent of GDP<sup>10</sup>. The key factors include the recurrent shocks in oil and gas markets, inefficient supply and consumption practices, growing demand, the unstable rainfall patterns as well as technical, managerial and financial weaknesses.

**2.1.4. Weak governance and regulatory frameworks at national and sub-regional level impede performance in the energy sector:** For a long time, the energy sector in Africa (especially the power subsector) was under state ownership and control. Poor management generally led to deterioration of facilities due to inadequate maintenance, poor performance of utilities and low quality of services. The reasons for poor performance include the (i) reliance on government funding which proved inadequate for meeting the financing needs in the sector; (ii) inefficient pricing policies, which focused on making services affordable to users and paid little attention to cost recovery; (iii) monopoly privileges enjoyed by public utilities which shielded them from market competition. Moreover, the lack of autonomy of public utilities made it difficult to hold them accountable for weak performance. In response to these inefficiencies, many African countries initiated reforms to boost performance and energy supply, by setting up new institutional arrangements. However, overall performance in the sector remains weak, and very few countries have been able to take the required actions to create sound and efficient governance and regulatory frameworks. Emphasis should, therefore, be placed on improving governance and regulation at national and sector level, to accelerate progress towards universal access to modern energy services.

At the sub-regional level, the lack of consistency across legal and regulatory frameworks impedes the process towards regional integration and development of effective power pools. The extent to which governments and their respective operators are able to define common legal and regulatory frameworks is critical for the efficiency of regional energy trading systems. Therefore, it is important for the Bank Group to facilitate consensus-building actions in order to establish robust legal and regulatory frameworks at regional level and enhance the efficiency of regional energy markets.

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<sup>10</sup> World Bank. 2009. *World Bank Report, G8 Energy ministers meeting ; Rome, May 24-25 2009*

**2.1.5. Impact of energy production and consumption on the environment and climate change is a growing concern:** Concerns range from local environmental impacts to climate change adaptation and mitigation. Energy conversion, especially from fossil fuels, contributes about two-thirds of world-wide GHGs cumulatively. So far, all African countries combined account for only 4 percent of the world's GHG emissions. Nonetheless, accelerated economic growth and industrialization are likely to significantly increase carbon emissions from the continent, thus justifying a steady shift towards developing cleaner energy supply in RMCs.

## **2.2. Opportunities and major energy initiatives in Africa**

**2.2.1. Africa is well endowed with a variety of non-renewable and renewable energy resources** which include crude oil, natural gas, coal, hydro-electricity, geothermal, biomass, solar and wind. Africa's energy production is about 9.5 percent of the world's total output, including 12.1 percent of the world's crude oil production, 6.8 percent of the world's natural gas output, 4.2 percent of the world's hard coal, and 4.6 percent of global hydro-electric power. The continent holds 9.6 percent of the world's proven oil reserves, and this share will likely continue to rise with new discoveries<sup>11</sup>. However, these resources are unevenly distributed. The majority of African oil reserves (and production) is located in Libya, Nigeria, Algeria, Angola, and Sudan, which together account for more than 90 percent of the continent's reserves<sup>12</sup>. South Africa accounts for 98 percent of total coal production in Africa<sup>13</sup>.

Africa is well endowed with **geothermal energy** especially in the Great Rift Valley. Using the prevailing technology, the region has the potential to generate 20,000 MW of electrical energy<sup>14</sup> from hot water/steam based electricity generation. However, to date, only 150 MW have been exploited in Kenya<sup>15</sup>, and only 7.3 MW in Ethiopia<sup>16</sup>. The limited exploitation of the resource is partially due to the significant upfront cost and specialized expertise required.

**Solar energy** is an abundant renewable energy resource in Africa. A large number of African countries have daily solar radiation ranging between 5 and 6 kWh/m<sup>2</sup>. But solar energy use is still dominated by traditional applications of direct solar energy to dry crops. Some encouraging results with Photovoltaic (PV) systems have been registered, but these largely serve the high-income rural households. In spite of abundant potential, the use of solar water heaters in households and institutions is still limited<sup>17</sup>. It is worth noting that hybrid supply technologies exist and allow compensating possible shortfalls during low-sunlight periods.

Africa is also endowed with substantial **wind energy** potential: In its effort to support wind energy development, the AfDB, with support from the Canadian International Development

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<sup>11</sup> BP. 2010. *BP Statistical Review of World Energy*. London, United Kingdom; IEA. 2010. *Energy Balances of Non-OECD Countries*. Paris

<sup>12</sup> AfDB. 2009. *Oil and gas in Africa*

<sup>13</sup> BP. 2010. *BP Statistical Review of World Energy*. London, United Kingdom

<sup>14</sup> Mwangi, M.N, 2010, *The African Rift Geothermal Facility (ARGE) – Status*. Presented at Short Course V on Exploration for Geothermal Resources, organized by UNU-GTP, GDC and KenGen, at Lake Bogoria and Lake Naivasha, Kenya, Oct 29 – Nov. 19, 2010. <http://www.os.is/gogn/unu-gtp-sc/UNU-GTP-SC-11-48.pdf>

<sup>15</sup> Kenya Electricity Generating Company 5KenGen), 2010, *Annual Report & Financial Statements: Financial year ended 30 June 2010*

<sup>16</sup> Gizaw, B., 2008. *Geothermal Exploration And Development In Ethiopia*. Geological Survey of Ethiopia: 30<sup>th</sup> Annivarsary Workshop August 26-27, 2008 . Addis Ababa,

<sup>17</sup> Mbuti P. and Yuko D., 2005. *Potential Renewable Energy Technologies in Kenya's Electricity Supply – A Review of Geothermal and Cogeneration Technologies*. AFREPREN/FWD Occasional Paper No. 26.. AFREPREN/FWD, Nairobi, Kenya

Agency commissioned a study on wind energy deployment in Africa in 2004. The study shows that the best winds in Africa are found in 15 countries located in the North of the continent and to its extreme East, West and South, with wind speeds ranging from 4 m/s to 7.5 m/s and even more.

The bulk of the electricity produced in Africa is from thermal stations (82 per cent), because of the large coal plants in South Africa and oil and gas-fired generation units mainly in Nigeria and North Africa. In spite of the massive exploitable hydropower capacity in Africa, its contribution to power generation is relatively low: 15 per cent compared to 42 per cent from coal and 28 per cent from gas. Oil contributes 12 per cent<sup>18</sup>.

**2.2.2. Energy sector reforms at the country level:** Countries have undertaken a range of reforms in the energy sector, the most significant being the formulation of more comprehensive energy policies and the incorporation of the private sector's role in the national development agenda. However, implementation of these reforms has been inadequate in most countries due to inappropriate design, lack of implementation capacity and financial resources. Another significant development relates to the economic development frameworks that evolved from Structural Adjustment Programmes (SAPs) to Poverty Reduction Strategies and the MDGs. These new approaches to economic development helped raise the attention on the importance of enhancing access to services, including energy, as a means to improving the welfare of the poor.

**2.2.3. Enhanced regional and continent-level coordination in energy-related initiatives:** There is an increased high-level policy commitment to regional cooperation in the energy sector. African countries have shown interest in jointly developing infrastructure, especially for electricity generation to meet the medium term energy demand in the region. This is illustrated by the setting up of river basin organizations and sub-regional power pools. However, there is still need to accelerate reforms at country level to facilitate the development of functional regional energy markets.

Regional power pools, namely South African Power Pool (SAPP), West African Power Pool (WAPP), Central African Power Pool (CAPP), East African Power Pool (EAPP) and North African Power Pool (NAPP) were established to pool energy resources and promote the development of regional electricity markets to provide stable and reliable electricity supply at affordable costs. With the exception of the SAPP, the rest of the power pools are relatively embryonic. African regional power pools face challenges such as lack of funding, political instability, weakness of cross border regulations. Nevertheless, in order to enhance the security of electricity supply in the continent, regional power pools constitute a base which the AfDB may build on to stimulate cross-border trade of energy resources and services, first at sub-regional level and, thereafter, at the continental level.

Furthermore, arising from the Revision of the AU/NEPAD African Action Plan and the Implementation Progress Review of the NEPAD Short-Term Action Plan, the Program for Infrastructure Development in Africa (PIDA), officially launched in July 2010, is an important platform for the new Energy Sector Policy as AfDB has been mandated by RMCs to be the executing agency for PIDA. Other initiatives include the Africa-European Union Energy Partnership (AEEP), the Union of Producers, Transporters and Distributors of Electric power in Africa (UPDEA) and its coordination instruments among African power pools.

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<sup>18</sup> IEA. 2010. *Energy balances of Non-OECD Countries*. Paris

Moreover policy documents on access to energy were adopted by several African Regional Economic Communities (RECs).

**2.2.4. New climate-related financing opportunities for the energy sector:** Africa has been struggling to secure its fair share of climate finance, as new facilities are being established to help developing countries adapt to and mitigate the effect of climate change. The Bank Group is scaling up its efforts to help RMCs tap into concessional resources (Climate investment Fund, Clean Development Mechanism, the Global Environment Facility, and the Green Fund, etc.).

**2.2.5. New players in the energy sector:** Capital flows to Africa from emerging financiers such as Brazil, China, Gulf States and India have increased substantially in the last few years, amounting to USD 1.1 billion annually for sub-Saharan Africa<sup>19</sup>. These flows tend to focus on large scale power generation including hydropower. It is worth noting the increasing influence of Brazil in the continent's bioenergy industries. These capital flows constitute an opportunity for increasing Africa's generation capacity in the next decades.

### **2.3. Financing the African energy sector**

**2.3.1. Mobilizing financing is critical to African energy sector development:** Addressing low access to modern energy services and chronic power shortages will require large and sustained investments in the energy sector. In addition, producing cleaner energy, in some cases, requires more resources relative to conventional energy production. Most African countries would not be able to afford this option without external resources and support.

AfDB estimates the total investment requirement to implement the scenario of universal access to reliable and increasingly cleaner electric power in all the 53 RMCs by 2030 at USD 547 billion, which means average annual investment needs of USD 23.8 billion<sup>20</sup>. While private sources will play an increasingly important role in financing high-return energy investments with relatively short horizons, a large share of the longer-term energy investments will need to be covered from public sources.

Bank Group's contribution to financing the energy sector has increased over the past 5 years, reaching peak of UA 2.2 billion in 2009; this amount represents 15 percent of the annual investments needed to achieve universal access by 2030. This clearly shows that Bank Group's yearly commitment capacity in the African energy sector is inadequate to meet the investment needs in the sector. The Bank will continue to better leverage its financing capacity through both direct financing and catalyzing additional financing to assist RMCs meet their energy investment needs.

**2.3.2. There are barriers to investment in the energy sector in Africa:** Many factors and risks make business conditions unfavorable and impede investment in the energy sector. These include, among others: (i) financial factors and risk such as high cost of energy projects; limited access to funding and inadequate cost recovery; (ii) weakness of regulation systems; (iii) weak capacity of individuals and institutions; and (iv) political instability (conflicts). To

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<sup>19</sup> Foster, Vivien and Cecilia Briceño-Garmendia, eds. 2010. *Africa's infrastructure: A Time for Transformation*. Washington DC: World Bank. [www.infrastructureafrica.org/aicd/flagship-report](http://www.infrastructureafrica.org/aicd/flagship-report)

<sup>20</sup> African Development Bank, 2008, *Clean Energy Investment Framework for Africa: Role of the African development Bank Group*

resolve Africa's energy problems, countries must take steps to set up a solid enabling environment for investments through reforms and incentives to attract private sector.

### **3. AfDB's experience in the energy sector**

**3.1. The Bank's 1994 energy sector policy:** The 1994 Energy Sector Policy allowed the Bank to play a critical role in the energy sector in Africa, especially by supporting energy sector reforms at the national level. However, many of the challenges outlined in the 1994 policy remain, including: security of supply and energy access; inadequate investments in energy; slow progress in renewable energy and energy efficiency; ineffective regional integration; inadequate energy access for rural development and agriculture; lack of capacity for implementing reforms; and inadequate capacities to manage environmental impacts. Moreover, the challenges and opportunities presented by climate change were not adequately addressed by the 1994 Policy, a gap that this new Energy Policy aims to address.

**3.2. AfDB's energy sector operations (1995-2010):** Between 1995 and 2010, two major phases can be identified in the AfDB Group's energy activities. During the period from 1995 to 2002, the Bank relied on the private sector to expand energy investments and access. Thus, AfDB's interventions in the sector were limited, leaving a large financing gap which the private sector was unable to fill. By the mid - 2000s, the AfDB began to scale up its activities in the energy sector. This coincided with a growing interest in climate-related sustainable energy options, leading the Bank to initiate the Financing Energy Services for Small-scale Users (FINESSE) in Africa programme to assist RMCs generate a pipeline of investment projects in renewable energy and energy efficiency.

This culminated in the AfDB assuming a lead role in crafting the seminal Clean Energy Investment Framework for Africa (CEIF) and the Climate Change Risk Management and Adaptation Strategy (CRMA) in 2008 and 2009, respectively. These two initiatives are the response of the AfDB to the call launched by the G8 States at their Gleneagles summit in July 2005 and reiterate at their 2006 summit. The CEIF highlights some approaches to increasing energy access and developing clean energy as well as the resource requirement and the role the Bank will play. To reduce vulnerability within the RMCs to climate variability and promote climate resilience in past and future Bank-financed development investments making them more effective, the CRMA put forward three areas of intervention: (i) "climate proofing" investments; (ii) policy, legal and regulatory reforms; and (iii) knowledge generation and capacity building.

The Bank has been successful in turning around and rapidly expanding its energy portfolio to face emerging challenges. The Energy Sector approvals over 2002-2010 have been overwhelmingly dominated by the power sub-sector, mostly electric power plants, but with sizeable investments in transmission and distribution, including rural township electrification programmes. However, there has been little attention for other energy sub-sectors, and equally scant financing support for Energy Sector policy-based and institution support operations. Despite the Bank's efforts to increase its clean energy interventions, a lot remains to be done to effectively develop this sub-sector. The new Policy seeks to address these issues building on past experiences and initiatives.

## 4 The proposed energy sector policy

### 4.1. Vision and objectives

In line with the Bank Group's 2008-2012 Medium Term Strategy and foreseeable future policy priorities, the Bank's vision for Africa in the energy sector is:

- *A sustainable and cleaner energy sector which ensures universal access to modern, affordable and reliable energy services by 2030.*
- *The Bank Group as leading institution supporting RMCs and RECs in their efforts to achieve and maintain access to high standard energy services for all.*

In line with the above vision, the overall objective of the new Energy Sector Policy is twofold:

- *To support RMCs in their efforts to provide all their populations and productive sectors with access to modern, affordable and reliable energy infrastructure and services;*
- *To assist RMCs in developing a socially, economically and environmentally sustainable energy sector.*

### 4.2 Key guiding principles

To achieve the above stated objectives, the Bank's interventions will be guided by the following key principles:

**4.2.1. Ensuring energy security and increasing access for all:** The AfDB recognizes the urgent need for more cost-effective powering of the continent's economic activity to enhance its competitiveness which will, in turn, drive faster economic growth and equitable social development. In a spirit of fairness, the Bank also recognizes the necessity for the African populations to fully reap the benefits arising from the continent's natural resource endowment. Therefore, the Bank will assist its member countries in their efforts to harness their energy resource endowments to ensure energy security and expand access to affordable, reliable and high quality energy infrastructure and services for households, industrial and commercial use. To ensure affordable energy services, the Bank will (i) promote non-market-distorting subsidization mechanisms, targeted to the poor and selected productive sectors; and (ii) emphasize production of energy at low cost.

**4.2.2. Moving steadily to a cleaner energy path:** The primary source of the continent's modern energy is fossil fuels, especially coal and oil. However, the finiteness of these non-renewable energy sources and the potentially significant negative environmental impacts caused by their use, particularly global warming, air and water pollution and acid rain, suggest strongly that harnessing renewable sources and making production patterns cleaner are vital for steering the continent's energy sector towards a sustainable path. Given the urgent need to increase access to energy in Africa, and considering the importance of coal and oil for electricity generation in Africa, the AfDB will support power generation from these sources while promoting as much as possible, the best affordable clean technologies available, so as to increase efficiency and reduce GHG emissions in coal and oil based energy projects. The Bank will support the gradual phasing out of high emission technologies and the phasing in of economically viable cleaner technologies. In this respect, it will assist RMCs to harness and incorporate natural gas into their energy mix, where applicable, and increase gradually the sustainable use of renewable energy sources.

The development of cleaner energy may entail extra costs for both consumers and producers. Targeted subsidies can help encourage investments in this area. To this effect, the Bank will support knowledge generation to guide the design of subsidization policies for clean energy.

Developing countries have raised concerns about potential barriers that intellectual property rights (IPR) policies might pose for access to clean technologies. Some of the limitations associated with the IPR include the high transaction costs of obtaining information, negotiating and acquiring IPR-protected technologies. To address these concerns, developing countries have been claiming special treatment and flexibility in access to environmentally sound technologies. In this context, the AfDB will play an advocacy role to support RMCs in their efforts to access clean technologies. In order to encourage foreign investors to transfer technology, and develop industrial capacity on the continent, the Bank will help RMCs to create a local environment conducive to better IPR protection.

**4.2.3. Pro-poor focus:** The low level of electrification in rural and peri-urban areas, especially in Sub-Saharan Africa, hampers social and economic development. In order to sustainably eradicate poverty, a rapid energy transition must be operated in rural and peri-urban areas to promote access to modern energy services and the development of productive applications. To respond to this challenge, the Bank will promote access to energy for low-income households'. The Bank will assist RMCs to develop efficient ways and approaches to increase energy supply and access for low income segments of the population. The Bank will direct technical support and financial resources to proven and innovative solutions to increase energy access in rural and peri-urban areas.

**4.2.4. Enhanced governance at the national level:** Effective governance and regulatory frameworks are crucial for promoting sound management practices, increasing competition and attracting private investments in the development of the energy sector in an equitable, responsive and accountable fashion. While past and ongoing reforms have generated some encouraging results, these reforms have not resulted in significant improvement in access to energy services. In order to enhance efficiency, attract and harness private investment, the Bank Group will support RMCs in their efforts to strengthen and accelerate governance and regulatory reforms. This includes: (i) at national level, creating and maintaining an enabling environment by promoting political stability, sound fiscal and legal policies and improved public sector performance; (ii) at sector level, designing and implementing clear and coherent sector management policies and regulatory frameworks that protect users and investors, while fostering inclusive pricing systems and targeted subsidies. In addition, the Bank will promote the principles and standards of the Extractive Industries Transparency Initiative (EITI) in order to make energy resources benefit all.

**4.2.5. Innovation to increase financial flows in the African energy sector:** There is a large gap between investment needs and actual outlays in the power sector, especially in sub-Saharan Africa, that will need to be bridged through strategic mobilization of resources from both public and private sources, from domestic and external markets. The Bank Group will support RMCs and RECs in removing barriers to investments in energy sector and leveraging investment sources and capacities beyond official development assistance (ODA) and traditional investors. It will promote financing approaches that ensure consistent long-term financing flows to the energy sector. In particular, the Bank will maximize efforts in developing innovative financing instruments to strengthen regional energy markets. The challenge of maintaining long-term country commitment to financing regional energy projects should not be under-estimated as it has historically been an important barrier to the realization of major regional energy initiatives in Africa.

In order to remove financial barriers and make cleaner and renewable energy options attractive, the Bank will facilitate direct private sector investments. The Bank will act as catalyst for private investments and will promote financing packages that share risks and reduce costs.

The increasing role of emerging financiers has changed the landscape in the energy sector. The Bank recognizes the need to effectively develop partnerships to leverage funding and knowledge for large-scale investments. In order to help RMCs benefit from the new investments, the Bank will develop effective ways to partner with emerging financiers. The Bank will equally assist countries to maintain good standards for investment practices, especially transparency, environmental and social responsibility.

**4.2.6. Integrating aid effectiveness principles:** While the volume of aid and other development resources must increase to achieve the continent's development goals in the energy sector, aid effectiveness must increase as well to support RMCs' efforts to strengthen governance, improve development performance and thus enhance the impact of aid on the population's well-being. In order to increase the efficient use of development resources in Africa's energy sector, the Bank Group will (i) emphasize and strengthen the ownership role of RMCs in all its energy sector operations; (ii) prioritize harmonization and collaboration with relevant stakeholders in the African energy sector to create mutually beneficial synergies; (iii) align its energy operations with country and regional strategic priorities and use country systems whenever possible; and (iv) aim at enhancing value added for its interventions in the energy sector.

**4.2.7. Social and environmental responsibility:** Although the continent's energy-related adverse environment impacts as well as carbon footprint are currently very low, they are likely to increase with growing demand for energy if the continent's economic growth ambitions materialize. The Bank Group will, therefore, seek to enhance sustainability of energy production, supply and consumption from an environmental, social and economic perspective to address both local and regional environmental concerns. In this respect, energy sector projects should reflect and comply with the Bank's social and environmental standards, as defined in the Bank Group's Environmental and Social safeguard policies. In particular, the Bank will give careful consideration to pre-construction phases to ensure that appropriate mechanisms are developed to deal with potential negative environmental, social and financial impacts on the long term reliability and viability of its energy related projects.

**4.2.8. Integrating response to climate change:** The energy challenge is how to balance the need to meet the increasing demand for affordable and secure energy, with the need to tackle climate change. The AfDB adheres to the principle of "common but differentiated responsibilities" stated in the Rio Declaration. Nevertheless, the Bank is committed to help RMCs move steadily towards environment friendly energy production and supply patterns. As the unique multilateral financing institution dedicated exclusively to Africa, the AfDB is in a position to take a lead role in providing coordination, brokerage and syndication services to RMCs, bilateral and multilateral institutions, and private development partners, in support of strategies for energy access and low-carbon development. The Bank will assist RMCs integrate climate considerations in policy and regulatory instruments. Moreover, the Bank will help countries assess climate adaptation options, understand and develop cleaner alternatives, build requisite capacity and take advantage of green financing options to increase access to cleaner energy.

**4.2.9. Fostering knowledge transfer:** Capacity building and knowledge management constitute key factors for successful projects and programmes aimed at enhancing energy access, security and sustainability. Skills development and transfer of know-how foster greater commitment to energy initiatives by local stakeholders and increase the likelihood of sustainability after the withdrawal of external partners. Capacity building and knowledge generation further develop the local and regional expertise required for the replication and scaling up of successful energy initiatives. In order to support the development of the energy sector in Africa, the Bank Group will enhance knowledge generation and dissemination to facilitate faster responses to specific technological, organizational, environmental and financial needs of RMCs; this may include assistance in designing projects that are eligible for certified emissions reductions. In addition, the Bank will develop partnerships with regional and international institutions to boost Research & Development in Africa, especially in the area of clean technologies to support the development of a sustainable energy sector.

The Bank Group considers the improvement of information systems for the energy sector as important for the development of any Energy Sector Policy, both at country and the Bank level. The Bank Group will continue to support projects aimed at enhancing and updating existing energy information systems at the national and regional level, including information on renewable and non-renewable energy sources.

**4.2.10. Mainstreaming gender dimensions:** As women are the main direct users of traditional biomass, they often suffer higher rates of respiratory diseases due to particulate emissions from cooking fuels smoke. The cost of cleaner modern energy services is, in most cases, beyond the reach of most rural poor households, and in particular women, who form the majority of the rural poor. To promote gender-sensitive energy development, the Bank will ensure that: (i) the gender implications are properly reflected in the energy sector project cycle, and (ii) gender-related capacity building and training efforts are adequately integrated in the Bank's energy interventions.

### **4.3. Key focus areas**

The following sections spell out the areas in which the African Development Bank Group intends to focus its assistance to the African energy sector. Annex 1 provides a comparison of the approaches to key energy sub-sectors across MDBs.

**4.3.1. Renewable energy:** Africa has significant potential in renewable energy, which, if properly harnessed, could help meet a significant proportion of energy demand and allow RMCs to respond to the environmental impacts and climate change challenges. Especially, they could help respond to the access needs of Africa's large rural population, including through off-grid technologies. However, high costs of developing renewable energies, inadequate policy and legal frameworks, insufficient budgetary support as well as limited local expertise constitute important barriers to the deployment of renewable energy in RMCs. Moreover, a major technical barrier is the unavailability of accurate renewable energy resource data. In order to increase energy security and reliability in RMCs, the Bank will explore available sources of renewable energy including hydropower, bioenergy, wind, solar and geothermal resources, depending on the countries' endowment. The Bank will assist RMCs to set up conducive policy and regulatory frameworks that address their exploration and commercially viable development. The Bank will support hybrid energy supply solutions to address shortfalls in renewable energy schemes, especially in the case of solar plants and wind farms and will lead the wider deployment of clean technologies.

**4.3.2. Hydro-power:** While hydropower has many advantages, it is vastly under-exploited. The resource is readily available, and produces cleaner electricity than other traditional resources such as coal and oil; it is highly versatile and can be used to meet national electricity grid requirements, rural electrification programs and industrial power needs. Consequently, the AfDB will support rehabilitation and development of new large, medium and small scale hydroelectric power plants as long as they (i) have demonstrated developmental benefits for local communities; (ii) use resources in an efficient manner and are economically sustainable; and (iii) encompass a plan to effectively address potential social and environmental adverse impacts in compliance with AfDB's social and environmental safeguards requirements. Whenever possible, AfDB will promote multipurpose hydropower projects. The Bank Group will draw appropriate lessons and knowledge from relevant international organizations, to support its hydropower projects. The Bank will also put particular emphasis on assisting and strengthening countries and river basin organizations in the development of environmentally and socially sound hydro-power schemes and the mobilization of the required amounts of financial resources.

**4.3.3. Bioenergy:** Bioenergy which includes biomass and biofuels, is an abundant renewable resource and the most commonly used in sub-Saharan Africa. In spite of its potential problems, bioenergy use in agro-industries (the term agro-energy stems from the use of biomass waste and by-products to generate heat and power, and produce liquid fuels) offers attractive opportunities for providing low-cost and locally available modern energy services. The Bank Group will assist RMCs to maximize the benefits derived from bioenergy/agro-energy development in a socially, economically and environmentally sustainable manner. The Bank will support bioenergy schemes that (i) consider a balance between fuel and food; (ii) are part of a broader rural development plan; (iii) do not impact adversely on equity and poverty, respect land use and labor rights; and (iv) promote inclusive business models for smallholder farmers. As for hydro-power, the Bank Group will draw appropriate lessons and knowledge from relevant international organizations, to support its biofuels projects and develop guidelines and criteria to guide decisions on whether, when and how to provide assistance to countries that express interest for liquid biofuels. For the many households that are likely to continue to rely on traditional biomass, the Bank Group will assist RMCs explore ways for the sustainable production and use of wood fuels.

**4.3.4. Coal:** Many RMCs have expressed interest in developing coal resources and are embarking on ambitious development plans. The Bank will support the generation of power from coal to meet the large energy needs on the continent, while taking advantage of progress in technology to allow for high efficiency and reduce GHG emissions and minimize other potential negative impacts of coal-based energy supply schemes. The Bank's decisions will be based on a consistent analysis of (i) alternatives to identify a portfolio of technologically feasible, commercially available low carbon resources that could serve projected demand, including through more carbon efficient fossil fuel generation, renewable sources, supply side and demand side energy efficiency improvements; (ii) developmental impact of the project in terms of meeting national energy security needs; and (iii) economic and financial viability of identified alternatives. In addition, as a matter of principle, the Bank will encourage the implementation, in the power sub-sector, of accompanying measures aimed at globally reducing the carbon footprint.

**4.3.5. Oil and gas sub-sector:** Over the past 20 years, the African oil and gas sub-sector has been characterized by rising oil and gas proven reserves in the continent and the emergence of

new players in the production scene triggered by successes in exploration activities<sup>21</sup>. Future consumption of oil and gas in Africa is set to increase at rates higher than production as long as the current strong economic growth being experienced by most African countries is maintained. Moreover, a key concern regarding the governance of oil and gas resources is that the governments of African oil and gas producing countries receive an inadequate share of the large rents from production. In order to boost oil and gas supplies in the continent for the benefit of all, thereby alleviating the burden of imported energy, the Bank Group will promote policies, principles, and practices that support the utilization of oil and gas resources in a manner that optimizes the use of resource base and secures equitable and intergenerational long term benefits. The Bank will support the environmentally, socially-sound and equitable production, processing, distribution and export of African hydrocarbons as a means of promoting growth and development in the continent.

**4.3.6. Power generation, transmission and distribution:** The African power sector is facing challenges of inadequate power generation, transmission and distribution capacity and performance to ensure energy reliability and security at least-cost to existing consumers and meet increasing demand. As a result, African countries are seeking to expand the capacity of their power plants as well as improve their transmission/distribution networks including through interconnection within the framework of power pools. To support RMCs' efforts to provide modern, reliable and affordable electricity services, the Bank will support the scaling up of investments in power generation, transmission and distribution at national and regional level.

**4.3.7. Regional cooperation:** The fact that endowment of energy resources in the African continent is not evenly distributed calls for regional cooperation for: (i) Enabling joint development of energy resources in order to take advantage of economies of scale; (ii) allowing trade of energy resources and services within the continent, notably through sub-regional power pools. Recognizing the pivotal role regional cooperation can play in contributing to energy security and reliability for the continent and in compliance with its social, environmental and economic sustainability principles, the Bank will promote the development of regional large scale energy and power generation projects, using a variety of energy resources including fossil fuels, hydropower, wind, geothermal and solar. The Bank will also actively support regional and cross-border pipelines to carry oil and gas supplies from field to markets. To make regional energy markets functional, the Bank will strengthen existing regional power pools, and will support the development of requisite infrastructure, capacity, policy and regulatory framework.

**4.3.8. Supply side and demand side energy efficiency:** Energy efficiency and conservation offer a powerful and cost effective tool for achieving universal access to a sustainable energy. Improvements in energy efficiency and conservation can reduce the need for investment in energy infrastructure, cut fuel costs, increase competitiveness, enhance environmental benefits and improve consumer welfare. Energy security can also be enhanced by improved energy efficiency by decreasing the reliance on imported fossil fuels. Estimates show that 30–40 percent of energy savings can be achieved using currently available technology<sup>22</sup>. For these reasons, while scaling up energy generation and transmission remains the priority, the Bank will promote energy efficiency in its energy operations and will help RMCs identify and

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<sup>21</sup> Ogunlade, D. 2007. *The Oil and Gas Sector: Energy Security and Sustainability in Africa*, Freetown ; BP. 2010. *BP Statistical Review of World Energy*. London, United Kingdom

<sup>22</sup> *International Energy Forum (IEF). 2011. IEF Symposium on Energy Efficiency in Developing Countries; Hosted by the Ministry of Energy and Mines, 21-22 June 2011, Jakarta, Indonesia*

implement options to reduce losses arising from production, transmission, distribution and end use inefficiencies. In policy dialogue, the Bank will work with governments and other relevant agencies to emphasize the importance of energy efficiency as part of the solution to the continent's energy security and supply challenges.

## **5. Policy implementation**

In order to ensure optimal implementation of the policy, the following approach shall be adopted:

### **5.1. Energy sector strategy**

In line with the above stated objectives and principles, the Bank Group will develop medium-term strategies. The first is being developed and will focus on two major strategic areas: (i) access to affordable and reliable energy services for all; and (ii) low carbon growth path in the energy sector moving to cleaner energies and fostering energy efficiency. The preparation of the Energy Strategy will draw as needed on relevant existing frameworks including CEIF and CRMA.

Access to energy varies greatly across regions in the continent and also across countries within the same region. Through the implementation of Energy Sector Policy, the Bank will seek to satisfy specific energy needs of different countries and segments of the population and will tailor the supply options to the specific needs of the populations. The Bank Group will take advantage of appropriate technological, organizational, environmental and financial options to meet these needs.

### **5.2. Guidelines for specific energy sub-sectors**

Energy sub-sector guidelines and implementation methods shall be prepared to guide energy sector operations. Given the important role coal, hydropower and bioenergy can play in improving energy access in Africa, in one hand, and their related social and environmental risks, on the other hand, the Bank will give careful consideration to the decision making, preparation and implementation phases of projects in such sub-sectors. To this end, the Bank will broadly consult with all stakeholders including RMCs, civil society and other MDBs to develop guidelines and criteria for coal, hydropower, and bioenergy operations. In the case of hydropower projects, the guidelines will put emphasis on the developmental impact of the project, the viability of the scheme, efficient use of resources, and adequate mitigation of potential social and environmental adverse impacts. Coal projects will be assessed against their capacity to address energy needs, effective use of available clean technologies, and economic and financial sustainability. As to bioenergy guidelines, they will focus on the required balance between food and fuel production, integration into a broader rural development plan, and the potential for fostering inclusive, equitable social development and respect of land laws and labor rights.

### **5.3. Mainstreaming of energy dimension in the Bank's policies, strategies and operations**

In view of the fact that energy cuts across all economic and social sectors, the Bank will integrate energy dimensions in relevant sector policies, strategies and operations. During periodic reviews, the other Bank Group sector strategies and policies, notably in the areas of infrastructure, agriculture, health, education, environment, etc. - will be strengthened by specific incorporation of the energy dimension.

#### **5.4. Monitoring and evaluation**

In the spirit of results-based programming, the implementation of the Energy Sector Policy will be monitored and its impact will be assessed against the following expected outcomes: (i) expansion of access to modern energy services in RMCs, including for low-income populations; (ii) increased reliability of energy services; (iii) affordability of energy services; (iv) increased use of renewable energy sources and clean technologies; (v) improved efficiency; and (vi) improved national and regional frameworks for energy policy and governance (as measured by, among others, adoption of energy policy reforms, increased financing allocations into the energy sector)

#### **5.5. Bank Group staff capacity development**

The Bank Group will strengthen its energy skills mix, especially in the area of renewable and clean energy technologies. Special attention will be given to strengthening expertise in the area of energy efficiency, energy trade and financing. In addition, the Bank will focus on identifying and selecting best practices and technologies successfully used elsewhere and make sure that its staff gets ownership of such practices and technologies.

#### **5.6. Knowledge generation**

The Bank will promote knowledge generation and dissemination on challenges, opportunities, and best practices in various energy sub-sectors and technologies to assist decision making in its own operations and to help RMCs build capacity to plan and manage energy sector activities especially in the area of energy efficiency and conservation, governance, technologies and processes for phasing out inefficient conventional energy production systems and phasing in clean energy production. In this regard, the Bank will undertake its own analysis and leverage knowledge generated by sister institutions and think tanks in Africa and abroad.

#### **5.7. Partnerships**

Successful implementation of this Energy sector policy will require effective partnerships, particularly in the area of co-financing of projects and programs, development of strategies, knowledge generation and dissemination as well as capacity building. Key institutions for partnership with the Bank will include the World Bank and other Multilateral Development Banks, sub-regional development banks and bilateral agencies. The Bank Group will strengthen its collaboration with the UN Specialized agencies, notably UNEP, UNDP, FAO and UNIDO.

### **6. Effectiveness and recommendations**

This new Energy Sector Policy replaces the 1994 Bank Group Energy Sector Policy and the 1985 Framework for Public Utility Tariff Policy previously applied to Electric Power, Telecommunications, Water Supply and Sewerage operations.

The Policy will be effective upon its approval by the Board.

The Board is requested to approve the 2011 Energy Sector Policy.

## Annex 1

### Approaches to energy across MDBs: Cases of coal, hydropower, and biofuels

Energy sources	AsDB - 2009	IaDB - Energy policy	EBRD - Energy operations policy, 2006	The World Bank Energy strategy, 2011
<b>Coal</b>	<p>AsDB will not finance coal mine development except for captive use by thermal power plants.</p> <p>AsDB will selectively support coal-based power projects if cleaner technologies are adopted and adequate mitigation equipment and measures are incorporated into the project design</p>	<p>IaDB is engaged in supporting coal activities and has developed guidelines for coal-fired power plants.</p>	<p>EBRD remains willing to consider financing coal projects which can demonstrate their competitiveness and which are in keeping with EBRD's Environmental Policy. In the medium to longer term, development of infrastructure to support coal exports from the Region, particularly to the East, chiefly to China, could also be supported as part of this broader process.</p>	<p>The World Bank's Energy Strategy is still under development. Therefore, there is not a final decision yet on coal, hydropower and biofuels.</p>
<b>Hydropower</b>	<p>AsDB will selectively support large hydroelectric power plants requiring seasonal storage reservoirs with multipurpose domestic or regional benefits.</p>	<p>The Bank will ensure that measures are taken to enhance the region's hydroelectric resources potential in ways that are environmentally and economically sustainable;</p>	<p>The Bank will consider financing projects in hydro and hydro rehabilitation, in compliance with the EBRD Environmental Policy requirements.</p>	

**Bioenergy**

Considering the global interest in biofuels, AsDB will support further studies to assess the costs and benefits of sustainable biofuels development, particularly on food security, the net energy balance of crops, and environmental impacts. Where the benefits indicate it is appropriate, AsDB will support their development

IaDB supports research and pilot projects to test the viability of the best renewable energy ideas, including efficient ethanol

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