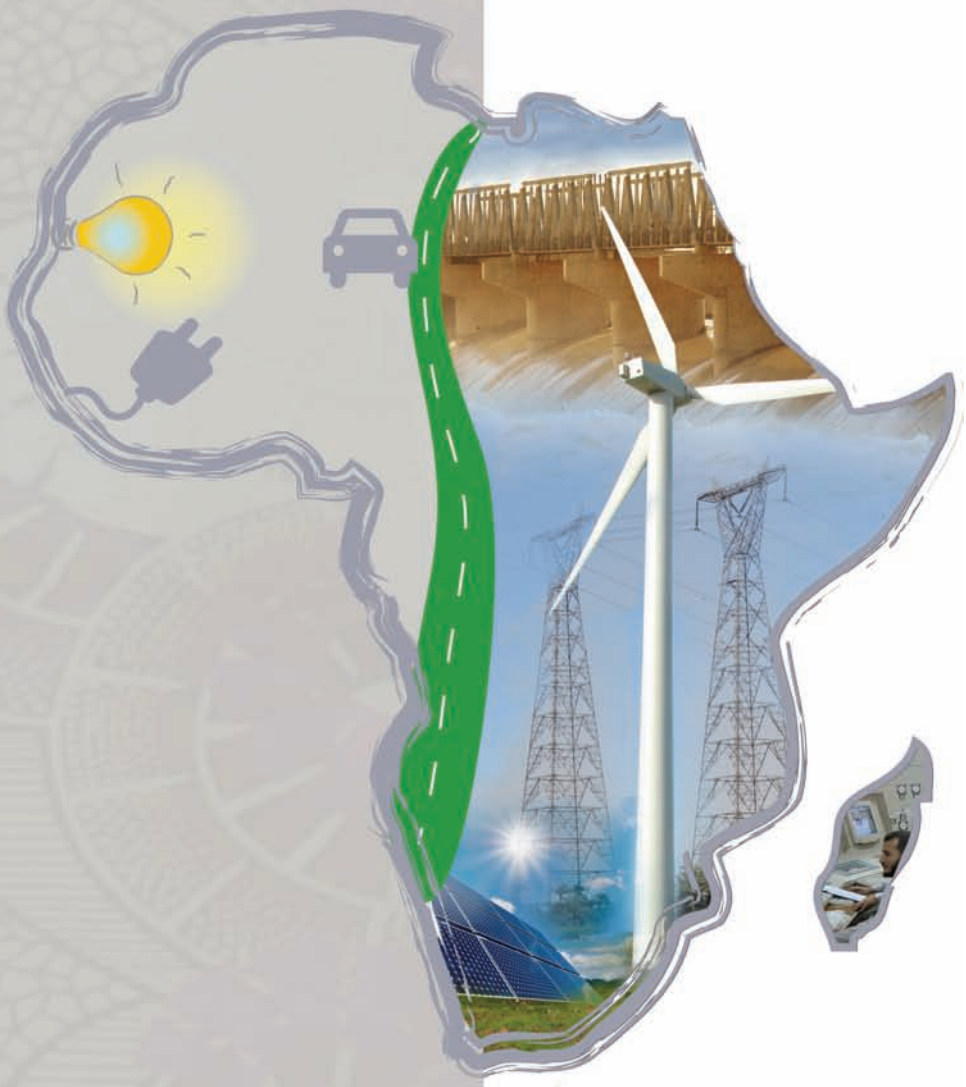
Energy Sector Policy
of the AfDB Group



African Development Bank
Operational Resources and Policies
Department (ORPC)

Energy Sector Policy
of the AfDB Group

African Development Bank Group
Energy Sector Policy

The Energy Sector Policy Task Team Members

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Abbreviations and acronyms

ADB	Asian Development Bank
ADF	African Development Fund
AfDB	African Development Bank
AU	African Union
CAPP	Central Africa Power Pool
CEIF	Clean Energy Investment Framework
CDM	Clean Development Mechanism
COMELEC	Maghreb Electricity Committee
CO2	Carbon dioxide
CRMA	Climate Risk Management and Adaptation Strategy
EAPP	East African Power Pool
EBRD	European Bank for Reconstruction and Development
EITI	Extractive Industries Transparency Initiative
FAO	Food and Agriculture Organization of the United Nations
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
G8	Group of eight leading industrialized market economies
IaDB	Inter-American Development Bank
IEA	International Energy Agency
IPR	Intellectual Property Rights
MDG	Millennium Development Goal
MTS	Medium Term Strategy
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
REC	Regional Economic Community
RMC	Regional Member Country
RO	Regional Operations
SAPP	Southern African Power Pool
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
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: 106 Watt
GW	GigaWatt: 109 Watt
TW	TeraWatt: 1012 Watt

Executive summary

Executive summary

This new Energy Sector Policy provides a general framework for the Bank Group's energy sector operations. It has a dual objective: (i) to support Regional Member Countries (RMCs) in their efforts to provide all of their populations and productive sectors with access to modern, affordable and reliable energy services; and (ii) to help RMCs develop their energy sector in a socially, economically and environmentally sustainable manner.

The Policy recognizes that adequate access to energy is critical for social and economic development of the continent. Yet most African countries are facing inadequate access to affordable and reliable modern energy services, in particular for low income segments of their population. At the same time, the continent's energy sector needs to evolve rapidly to be able to respond to local and global environmental concerns, especially climate change, and to significantly reduce reliance on fossil fuels, which are often imported. Therefore, although meeting urgent energy needs is the prime objective of this Policy, the African Development Bank (AfDB) is committed to supporting the gradual adoption of a low-carbon and sustainable growth path by RMCs.

Nine key principles will guide the Bank's interventions in the energy sector: (i) ensuring energy security and increasing access for all, (ii) moving towards a cleaner energy path, (iii) enhancing governance at the national level, (iv) innovating to increase financial flows in the energy sector, (v) integrating aid effectiveness principles, (vi) promoting social and environmental responsibility, (vii) integrating a response to climate change, (viii) fostering knowledge transfer and (ix) mainstreaming the gender dimension.

The Bank will focus on sub-sectors that are the most likely to address current and future energy demands, while contributing to the development of a sustainable energy sector. These include: (i) renewable energy, (ii) fossil fuels, namely coal, oil and gas, (iii) power transmission and distribution, (iv) regional cooperation, and (v) supply-side and demand-side energy efficiency.

However, since access to energy varies across regions and countries, subject to available resource endowments, the Bank will tailor the supply options to specific energy needs of countries and segments of the population.

The Medium-Term Energy Strategies will propose operational action plans to ensure an optimal implementation of this Policy.

1. Introduction

1. Introduction

African countries face 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. Africa has the lowest electrification rate of all regions. It is estimated that only 42 percent of the population has access to electricity, compared with 75 percent in the developing world. In Sub-Saharan Africa the ratio is much lower, at 30 percent and only 14 percent in rural areas . 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.

The lack of access to modern energy services severely impedes social and economic development. Along with South Asia, Sub-Saharan Africa has the largest number of people relying on traditional solid fuels for energy generation (cooking and heating). These sources have substantial adverse effects on health and productivity. Sadly, the poorest segments of the population often pay the highest price (in money, time, and health) for the worst-quality energy services. The lack of access to modern energy also hampers enterprise development and the expansion of other opportunities. It undermines competitiveness and thus access to regional and global markets for African producers. It is a major factor in the slow progress in attainment of the Millennium Development Goals (MDGs) and poverty reduction in Africa.

It is critical and urgent to address the continent's energy needs in order to unlock its development potential. This will require increased investment to build the requisite infrastructure and the establishment of effective governance systems. Africa's sustained economic growth will inevitably result in increasing energy demand and energy-related carbon dioxide (CO2) emissions. While it is recognized that Africa is the least contributor to greenhouse gases (GHG) emissions, the continent is among the hardest hit by climate change. Therefore, although meeting urgent energy needs is a priority, it is also imperative to take into account environmental and climate change concerns to enable the continent to gradually embark on a sustainable low-carbon growth path and transition to a greener economy.

Africa is endowed with important energy resources, including both fossil fuels and renewable sources. If properly harnessed, these resources could help to sustainably meet the continent's energy demand, while responding to the climate change challenge. To this end, African countries will need, among other measures, to tap innovative energy funding approaches, pooling various forms of financing including public, private, external and domestic resources. Furthermore, the global energy market is often characterized by high world fuel prices and recurrent price volatility. African countries must also develop resilience to shocks, especially by improving energy consumption efficiency, increasing regional cooperation and developing alternatives to expensive conventional energy supply systems.

The Bank Group has a long experience in the infrastructure and energy sector. Since its inception, it has given a high priority to assisting its RMCs in their efforts to provide adequate access to energy for all. Between 1967 and 2011, the Bank favored the energy sector by devoting slightly more than one-third of the total infrastructure commitments, i.e. 34 percent, to this sector. Most of the Bank financing in the energy sector has been in support of power supply schemes. Building on its experience and comparative advantage, the AfDB is called upon to play a lead role in assisting RMCs to address the energy gap.

It is within this context that the Bank Group has prepared this new Policy to guide its future operations in the energy sector and align its assistance with the

priorities of RMCs and the current international momentum. The Bank developed its first Energy Sector Policy in 1994. A review of the energy operations conducted in 2007 concluded that despite significant achievements, key issues highlighted in the 1994 Policy were still posing challenges. Also, many developments have taken place since then in the African energy sector and new challenges have emerged over time. These developments include the growing importance of climate-related energy issues; the greater national, regional and continental policy commitment; and the evolution of the economic frameworks. The new Policy sets the stage for the Bank Group's response to this particularly challenging African and global energy landscape. The Policy has been informed by a thorough review of the concerns of the African energy sector, lessons from Bank's experience and key opportunities in the sector. The Policy has also built on extensive internal and external consultations.

Following this introduction, Section 2 presents the objectives, guiding principles and key areas of focus of the new Policy. Section 3 and Annex 1 highlight approaches to take into consideration for sound implementation and monitoring. Annexes 2 to 4 summarize the findings of the various reviews underpinning the formulation of the policy. Subsequently, the Bank Group's Medium-Term Energy Strategies will further elaborate the approaches outlined below and propose focused operational action plans to achieve the Bank Group's energy sector policy objectives.

2. The energy sector policy

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2.1. Vision and objectives

While there is an urgent need to increase access to energy in support of economic and social development in Africa, it is vital to harness renewable sources and make production patterns cleaner for steering the continent's energy sector towards a sustainable path. Cognizant of this dual requirement and consistent with the Bank Group's 2013-2022 Long-Term Strategy objective of achieving an inclusive, sustainable and increasingly green growth in Africa, the Bank's vision for Africa in the energy sector encompasses:

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

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

- To support RMCs in their efforts to provide all of 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.

2.2 Key guiding principles

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

2.2.1. 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. The Bank also recognizes the necessity for the African populations to fully reap the benefits arising from the continent's natural-resource endowment. The Bank will, therefore, help its member countries to harness their energy resource endowments to ensure energy security and expand access to affordable and reliable energy services for households and for industrial and commercial use. The Bank will promote access to electricity as a key driver for economic development. To ensure affordable and higher-quality energy services, the Bank will (i) promote non-market-distorting subsidization mechanisms targeted to the poor and selected productive sectors while taking into account fiscal policy implications, structured to encourage the provision of service at the least cost, and (ii) emphasize production of energy at low cost.

Furthermore, to enhance outreach to poor households, in rural and peri urban areas in particular, the Bank will explore the development of small-scale and cost-effective power generation systems including decentralized schemes.

2.2.2. Moving towards a cleaner energy path: Given the urgent need to increase access to energy for all, fossil fuels will continue to play an important role in power generation in Africa. Thus the AfDB will support power generation from these sources while promoting, as much as possible, the best affordable clean and efficient technologies available so as to increase efficiency and reduce GHG emissions in coal-, gas- and oil-based energy projects. The Bank will support the

gradual introduction of economically viable cleaner technologies. In this respect, it will assist RMCs to (i) gradually increase the sustainable use of renewable energy sources where the potential exists, (ii) foster energy efficiency and (iii) adopt cleaner technologies. Subject to the availability of fully proven and commercially viable Carbon Capture and Storage (CCS) technologies, the Bank will encourage CCS readiness for new-build coal-fired plants in particular.

As the development of cleaner energy may entail extra costs for both consumers and producers, a blend of concessionary and commercial financing can play a key role in supporting the transition to a cleaner and green economy. Appropriate policies and targeted subsidies can also help encourage investments in this area. To this effect, the Bank will help RMCs mobilize concessionary resources and will support knowledge generation to guide the design of policies that enhance the profitability of low-carbon projects, including subsidization, tax incentives and carbon pricing policies, where appropriate.

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 build the required technical capacities and set up a local policy and regulatory framework conducive to better Intellectual Property Rights (IPR) protection and technology transfer.

2.2.3. Enhanced governance at the national level: While past and ongoing reforms have generated some encouraging results, they have not significantly improved access to energy services. In order to enhance efficiency and attract private investment, the Bank Group will support RMCs' efforts to strengthen and accelerate governance and regulatory reforms. At national level, the Bank will help create and maintain an enabling environment by promoting sound fiscal and legal policies, improved public-sector performance and accountability. At sectoral level, the Bank will assist in designing and implementing (i) management policies that clarify the roles of key sector players (policy makers, energy industries, government departments, consumers, supra-national bodies and other stakeholders) and that are coherent with country policies and capacities, and (iii) regulatory frameworks that enable service providers to get a reasonable rate of return on their investment, while providing the consumer with high-quality service at a fair price. In addition, for countries and communities to get an adequate share from the exploitation of their energy resources, the Bank will promote the princi-

ples and standards of the Extractive Industries Transparency Initiative (EITI).

2.2.4. Innovation to increase financial flows in the energy sector: As a major stakeholder in Africa's development and a key engine of economic growth, the private sector is expected to play a key role in increasing access to modern energy services. In order to ensure consistent long-term financing flows to the energy sector, the Bank will support RMCs and RECs in (i) removing barriers to private-sector participation in the energy sector and fostering public-private partnerships (ii) leveraging investment sources and capacities beyond official development assistance (ODA) and traditional investors, and (iii) enhancing collaboration between private investors and the public sector in energy sub-sectors where there are limits to private-sector participation (in projects with low returns on investment, for example).

The Bank will also maximize efforts in adapting its business practices and developing innovative financing instruments to strengthen regional energy markets. The challenge of maintaining long-term country commitments to financing regional energy projects should not be underestimated, as it has historically been an important barrier to realizing major regional energy initiatives in Africa.

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 also help countries to maintain good standards for investment practices, especially transparency and environmental and social responsibility.

2.2.5. Integrating aid effectiveness principles: In order to increase the efficient use of development resources in Africa's energy sector, the Bank Group will (i) strengthen the ownership role of RMCs in all its energy-sector operations; (ii) harmonize and collaborate with relevant stakeholders, including emerging donors, to create synergies; (iii) align its energy operations with country and regional strategic priorities and use country systems whenever possible and (iv) aim at enhancing mutual accountability and adding value to its interventions in the energy sector.

2.2.6. Social and environmental responsibility: Sustainable development of the energy sector calls for a viable balance between economic, environmental and social considerations in a project life cycle. The Bank Group will thus seek to enhance sustainability of energy production, supply and consumption from an environmental, social and economic perspective in order to address local, regional and global environmental concerns. In this respect, sector projects, regional programs and policy-based operations should reflect and comply with the Bank's social and environmental standards, as defined in the Bank Group's Environmental and Social Safeguard policies. The Bank will work with governments to identify projects that will help countries and regions move towards an environmentally and socially sustainable energy future. In particular, the Bank will give careful consideration to pre-project phases to ensure that appropriate mechanisms and safeguards are developed to deal with potential negative environmental, social and financial impacts on the long-term effectiveness of its energy-related projects.

2.2.7. Integrating responses to climate change: The overarching 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 Bank is committed to help RMCs move gradually towards environmentally friendly energy production and supply patterns. As the unique multilateral financing institution dedicated exclusively to Africa, the AfDB is in a position to take the lead in providing coordination, brokerage and syndication services to RMCs, bilateral and multilateral institutions, and private development partners, to support strategies for energy access and low-carbon development. The Bank will help RMCs integrate climate considerations in policy and regulatory instruments. Moreover, the Bank will help countries to: (i) identify and implement low-carbon energy supply options that are technically, socially, financially and economically viable; (ii) build the requisite capacity and (iii) understand and take advantage of concessional climate financing options to increase access to cleaner energy.

2.2.8. Fostering knowledge transfer, research-development and innovation: Capacity building and knowledge management are key factors for successful projects and programs aimed at enhancing energy access, security and sustainability. Furthermore, they develop the local and regional expertise required to replicate and scale up successful energy initiatives. Moreover, research, development, and innovation are critical to increase the continent's technological and industrial capacity to provide innovative and cost-effective solutions in the generation, storage, transmission and use of energy, notably in the renewable energy sub-sector. Therefore, to help achieve the objective of sufficient, clean, efficient and reliable energy supply, the Bank will support Research-Development and Innovation in RMCs, in particular, through building and enhancing partnerships with regional and international research institutions. The Bank will also enhance knowledge generation and dissemination in order to facilitate faster responses to specific technological, organizational, environmental and financial needs of RMCs.

This endeavor may include, among other efforts, assistance in accessing IPR-protected technologies and in designing projects that are eligible for certified emissions reductions.

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

2.2.9. Mainstreaming gender dimension: Energy development must respond to the different needs of both women and men. Pursuing gender-sensitive energy development at project planning and implementation levels is critical for inclusive growth. 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 into its energy interventions. The Bank will put particular emphasis on enhancing self-reliance, livelihood and economic opportunities for women, notably by including, as appropriate, in its projects and programs energy access initiatives specifically designed for this vulnerable group. The Bank will support gender-disaggregated energy information and will take advantage of existing initiatives and tools to ensure an effective gender mainstreaming into its energy programs and projects.

2.3. Energy sub-sectors

The following sections delineate the areas in which the African Development Bank Group intends to focus its assistance to the African energy sector. While adopting a demand-driven approach based on RMCs/RECs' own circumstances, resources endowments and priorities, the Bank Group will ensure that its efforts to increase access to energy for all do not undermine its commitment to social and environmental sustainability. The AfDB will therefore help its clients assess different energy options, taking into account as appropriate (i) the energy profile of the country/region (ii) national/regional adaptation and mitigation strategies (iii) a cost-benefit analysis, and (iv) social and environmental impact, including an assessment of GHG.

2.3.1. Renewable energy: In order to increase energy security and reliability in RMCs, the Bank will explore viable sources of renewable energy including hydropower, bioenergy, wind, solar, ocean and geothermal resources. At the country level, the Bank will promote an integrated approach for planning balanced energy

mixes that include both renewable and non-renewable sources. This approach should take into account the assessment of resources, the storage and transmission aspects. The Bank will help RMCs set up conducive policy and regulatory frameworks, as well as create market conditions that address their exploration and development in a commercially viable manner. Where feasible, the Bank will support hybrid energy supply solutions in order to address shortfalls in renewable energy schemes (especially due to low sunlight or wind speed in the case of solar plants and wind farms, respectively) while further contributing to GHG reduction.

To remove financial barriers and make cleaner and renewable energy options attractive, the AfDB will facilitate direct private-sector investment. It will act as a catalyst for private investments and promote financing packages that share risks and reduce costs.
The Bank will devote efforts to enhance skills, research - development and innovation to develop technologies that will enable the efficient use of renewable energy, speed up the rate at which these technologies will be leveraged and help reduce their cost of use to a commercially viable level.

2.3.2. Hydropower: The AfDB will ensure that the hydroelectric power plants it supports: (i) effectively address potential social and environmental impacts, in compliance with its social and environmental safeguards requirements, (ii) take into account climate-change implications and (iii) adequately reflect local and national needs for water and energy development, while giving due consideration to the impact on downstream communities. The AfDB will seek broad agreement with riparian countries in respect of projects emanating from one or more countries on trans-boundary water courses and, in the absence of this, will assess and satisfy itself of any significant impacts on other riparian countries. Whenever possible, the Bank will promote multipurpose hydropower projects. In addition, the Bank Group will draw appropriate lessons

from relevant international organizations. The Bank will also put particular emphasis on helping countries and river basin organizations to develop environmentally and socially sound hydropower schemes and on mobilizing the required financial resources.

2.3.3. Bioenergy: The Bank Group will assist RMCs to maximize the benefits from bioenergy, including those offered by the Clean Development Mechanism (CDM). For the many households likely to continue relying on traditional biomass, the Bank Group will help RMCs promote sustainable production and use of wood fuels, taking into account specific agro-ecological situations.

Liquid biofuels: The Bank will promote the highest standards of quality in its support to the biofuel sub-sector. Its involvement in this sub-sector will therefore be based on consistent analysis and research to ensure that appropriate frameworks and safeguards are in place to maximize benefits while minimizing risks and threats. The Bank will invest in biofuels production schemes that (i) do not undermine food security and biodiversity, (ii) are integrated into and foster rural development by increasing access to energy and social services, empowering agriculture, and broadening employment and income opportunities; (iii) achieve a net CO2 reduction over their lifetime; (iv) do not adversely affect equality and poverty and that respect land use and labor rights and (v) promote, as much as possible, inclusive business models for smallholder farmers. The Bank Group will draw appropriate lessons from relevant international organizations to support its biofuels projects and to develop guidelines and criteria in order to guide decisions on whether, when and how to provide assistance to countries that express an interest in liquid biofuels.

2.3.4. Coal: The Bank is committed to supporting RMCs achieve universal access to energy in an environmentally sustainable manner. For many African countries, coal-fired power generation is likely to form part of such an approach to help the continent increase its access to modern energy at an affordable cost. To ensure that any Bank support for coal-power generation is consistent with this approach, this support will take place within the broad framework outlined below:

1. Development impact: A proposed greenfield or retrofit coal-fired power plant supported by the Bank should have a strong developmental impact. In particular, such a power plant should contribute: (i) to poverty reduction, and (ii) addressing national and/or regional energy security needs.

2. Transitioning towards green growth: Bearing in mind the Long Term Strategy objective to help Africa

transition to a cleaner energy path, the Bank will collaborate with RMCs to ensure that any coal power plant to be financed by the Bank will form part of a technologically and commercially feasible low-carbon and cost-effective strategy for energy resources.

3. Environmentally responsible: When supporting a coal power plant, the Bank will take advantage of progress in technology to adequately mitigate negative environmental impacts, allow for high efficiency, reduce greenhouse gas (GHG) emissions, and diversify the energy mix.

4. Technology: The Bank will work with RMCs to ensure adoption of the most appropriate, commercially available and affordable technology for reducing GHG emissions. The Bank will assist in sourcing additional financing to invest in such technologies. The Bank will ensure that a desk-top assessment of the technical, economic and financial feasibility of abatement is undertaken, and will encourage assessment of the potential for readiness for relevant Carbon Capture and Storage technologies.

5. Offsetting measures: The Bank is in line with, and seeks to promote United Nations conventions on climate change. Consequently, it ensures that its interventions comply with agreements and related standards that are ratified by its RMCs within the framework of climate-change negotiations in terms of GHG emissions, including offsetting measures. The Bank will therefore support RMCs that express an interest in implementing offsetting measures in relation to these agreements, or on a voluntary basis.

2.3.5. Oil and gas: Future consumption of oil and gas in Africa is poised to increase at rates higher than production as long as the current strong economic growth that most African countries are experiencing is maintained. A key concern about the governance of oil and gas resources is the utilization of resources and distribution of earnings between private companies and governments as well as populations. In order to boost oil and gas supplies on the continent for the benefit of all, thereby alleviating the burden of imported energy and increasing energy security, the Bank Group will (i) support the environmentally and socially sound production, processing, distribution and export of African hydrocarbons; (ii) support power generation from oil and gas; (iii) promote policies, principles, and practices that enhance transparency in the exploitation of the resource as well as in the use and distribution of the revenues; and (iv) support the optimal use of oil and gas resources to secure equitable and intergenerational long-term benefits. The Bank will not support oil and gas exploration activities.

2.3.6. Nuclear energy: The financing of nuclear plants is not an area of comparative advantage for the Bank. Accordingly, the Bank will not provide financing for these types of plants.

2.3.7. Power transmission and distribution: The African power sector is facing challenges of inadequate power 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 transmission and distribution at the national and regional levels.

2.4. Energy cross-cutting areas

2.4.1. Regional integration: Given that the endowment of energy resources on the African continent is not evenly distributed and that the size of national energy markets is small, regional integration is needed to (i) enable joint development of energy infrastructures in order to take advantage of economies of scale; (ii) allow trade of energy resources and services within the continent, notably through sub-regional power pools, (iii) reduce the cost of energy supply and (iv) improve the share of green sources in the energy mix. Recognizing the pivotal role that 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 viable 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 fields to markets. To make regional energy markets functional, the Bank will strengthen existing regional power pools and will support the development of the requisite infrastructure, capacity, policy and regulatory frameworks.

2.4.2. Supply side and demand side energy efficiency: Energy efficiency and conservation offer a powerful and cost-effective tool for achieving universal access to sustainable energy. Improvements in energy efficiency and conservation can lessen 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 through decreasing reliance on imported fossil fuels. Estimates show that 30-40 percent of energy savings can be achieved using currently available technology . For these reasons, while scaling up energy generation and transmission remains important, the Bank will place particular emphasis on energy efficiency. In particular, the AfDB will help RMCs identify and implement options to reduce losses arising from production, transmission, distribution and end-use inefficiencies. In policy dialogue, the Bank will work with governments and with other relevant agencies to emphasize the importance of energy efficiency.

3. Policy implementation

3. Policy implementation

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

3.1. Energy sector strategies

In line with the above-stated objectives and principles, the Bank Group will develop medium-term strategies. The first focuses on two pillars: (i) increasing access to modern energy services and (ii) fostering clean-energy investments. In addition, the strategy has identified three key areas for action: (i) fostering regional integration, (ii) leveraging resources and (iii) enabling public-private partnerships. The preparation of the Energy Strategies will draw as needed on relevant existing frameworks, including the Clean Energy Investment Framework (CEIF) and the Climate Risk Management and Adaptation Strategy (CRMA).

The level of access to energy varies greatly across regions, as well as across countries within the same region. Through its Energy Sector Strategies, the Bank will seek to tailor the supply options to the specific energy needs of countries and segments of the population. In addition, the Bank will engage in constructive dialogue with client countries in order to translate its global policy -- in particular, its cleaner-energy ambitions -- into demand-driven national and regional policies, strategies or projects/programs.

3.2. 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 biofuels can play in improving energy access in Africa on the one hand, and their related social and environmental risks on the other, 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 multilateral development banks (MDBs) to de-

velop guidelines and criteria for coal, hydropower and liquid-biofuels operations. Sections 2.3.2, 2.3.3 and 2.3.4 on hydropower, liquid biofuels and coal, respectively, outline the main criteria that will govern AfDB's operations. They will be further elaborated as operational guidelines to guide staff in coal, biofuels and hydropower projects.

3.3. Mainstreaming of energy dimension in the Bank's policies, strategies and operations

Given that energy cuts across all economic and social sectors, the Bank will integrate energy dimensions into relevant sector policies, strategies and operations. In particular, CSPs and RISPs will analyze the energy context and propose programming choices duly informed by the energy sector policy. During periodic reviews, existing sector strategies and policies will be strengthened by incorporation of the energy dimension.

3.4. 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 other benchmarks, adoption of energy policy reforms, increased financing allocations into the energy sector). Where applicable, during the implementation of the Policy, gender mainstreaming should be closely monitored and reported using measurable disaggregated indicators.

3.5. 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 areas of energy efficiency, energy trade and financing. In addition, the Bank will identify and select best practices and technologies successfully used elsewhere and ensure that its staff has ownership of such practices and technologies.

3.6. Knowledge generation

The Bank will promote knowledge generation and dissemination on the challenges, opportunities and

best practices in various energy sub-sectors and technologies to assist decision making in its own operations and to help RMCs plan and manage energy sector activities, especially in energy efficiency and conservation, governance, and technologies and processes for gradually reducing reliance on inefficient conventional energy production systems and increasing the use of cleaner energy production. In this regard, the Bank will undertake its own analysis and leverage knowledge generated by sister institutions and think tanks both in Africa and abroad.

3.7. Partnerships

Successful implementation of this Policy will require strong partnerships with RMCs. As key beneficiaries

and actors, governments and the private sector will have a pivotal role in the identification, development, financing and implementation of energy projects and programs. Effective partnerships will also be necessary with other entities in order to develop synergies and to pool efforts and resources. In particular, the areas of collaboration will include co-financing of projects and programs, development of joint strategies, knowledge generation and dissemination as well as capacity building. Key institutions for partnership with the AfDB will include the World Bank and other MDBs, sub-regional development banks and bilateral agencies. The Bank Group will also strengthen its collaboration with the UN specialized agencies, notably UNEP, UNDP, the FAO and UNIDO.

3.8. Policy Review

The policy will be considered for review ten (10) years after its approval. However, should a major change occur in the Energy Sector, the Bank may undertake an earlier review.

4. 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.

Annexes

Annex 1 Results framework for the implementation of the policy

Annex 1 Results framework for the implementation of the policy

This Framework provides key results monitoring indicators to guide the implementation of the Policy. The Medium-Term Energy Sector Strategy will set specific targets for the identified results.

Impact: Increased social and economic development through sustainable access by households and productive sectors to modern, affordable, reliable and cleaner energy services[4].

Outcome	Outcome indicators	Output	Output indicators	Key activities and initiatives contributing to achieving outcome	Assumptions/ Risks
1. Increased access, affordability and reliability of energy services	1.1. % of population with access to electricity (increase from baseline) 1.2. Primary energy consumption per capita (increase from baseline) 1.3. Number of days of outages per year (decrease from baseline)	1. Investment flows at the national and regional levels to bridge infrastructure gap is increased (UA million increase from baseline)	1.1. AfDB's lending volume (UA million increase from baseline) 1.2. Total volume of investments from the private sector and other donors (UA million increase from baseline) 1.3. MW of total generation capacity installed (increase from baseline) 1.4. Km of transmission, distribution lines built or rehabilitated (increase from baseline) 1.5. Number of newly connected households and business (grid and off-grid connections)	Support for national and regional energy production, transmission and distribution Support for rural electrification projects/programs Promotion of enabling environment to enhance private-sector participation Enhancing partnerships for project co-financing Support for capacity development	Political stability and strong commitment from RMCs Synergy with other donors Continued economic growth on the continent
2. Increased energy efficiency	2.1. Energy savings (increase from baseline)	2. AfDB investment in energy efficiency is effective and has increased	2.1. Efficiency gains (increase from baseline)	Support for infrastructure rehabilitation and demand-side efficiency initiatives	Political stability and strong commitment from RMCs Synergy with other donors Continued economic growth on the continent
3. Greater use of renewable energy and clean technologies	3.1. % of renewable energy in total generation capacity (increase from baseline) 3.2. CO2 emissions per Kwh (decrease from baseline)	3a. Financial flows in renewable and clean energy is increased (increase from baseline) 3b. Clean technology transfer, research - development are enhanced and effective	3a.1. AfDB lending volume for clean energy (UA increase from baseline) 3a.2. % of climate financing in Bank-supported projects (increase from baseline) 3a.3. % of private-sector investments for clean energy (increase from baseline) 3b.1. Tons of CO2 avoided through use of clean technologies (in particular, through retrofitting or development of greenfield coal projects) 3b.2. Number of new clean technologies schemes installed (increase from baseline) 3b.3. Number of operations and volume of financing in support of research-development and innovation.	Investments in renewable grid based and off-grid power plants Promotion of cleaner technologies in power generation Promotion of risks mitigating instruments Establishment of carbon market support mechanisms suitable for Africa Development and use of subsectors (coal, hydropower and biofuel) and options assessment guidelines Support for clean technology transfer, R&D and capacity building	
4. Enhanced governance and increased viability of the sector	4.1. Financial and technical performance of energy utilities/ enterprises 4.2. Financial flow in the sector (Increase from baseline)	4. AfDB's support for sector governance and regulatory reforms and capacity development is effective and	4.1. Number of countries where policy dialogue led to reform of energy sector aimed at increasing efficiency, governance and low carbon growth	Advisory services at three levels: policy dialogue, assistance for institutional reforms and transaction assistance	Strong commitment from RMCs Coordination with other actors

[4] L'impact est un développement social et économique accru et une réduction de la pauvreté. Cela peut être mesuré par exemple à travers le PIB par habitant, l'indice de développement humain, la compétitivité des pays et l'indice du niveau de service.

Annex 2

Annex 2

1. Challenges facing the energy sector in Africa

1.1. Inadequate access to modern energy services is an obstacle to economic growth and poverty reduction 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); as many as 547 million people do not have access to electricity .

In rural Africa, agricultural production and productivity are constrained by limited access to modern energy services to power water for irrigation, agriculture mechanization, and post-harvest storage and processing. This in turn depresses crop yields, added value and farmers' incomes, thus aggravating food-security problems. Low incomes from agriculture in their 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. Slums in sub-Saharan Africa are growing at 4.53 percent annually, compared with 2.20 percent in Southern Asia . By 2030, Africa's population will be close to 50 percent urban , and the expansion of slums will continue to transfer poverty nests from rural zones to urban ones. In poor urban areas, the inability to afford electricity services constrains the range and profitability of income-generating activities for the poor. It also constrains the creation of micro and small enterprises, an important source of employment. 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.

The transport and industry sectors account approximately for 15 percent and 18 percent, respectively, of total energy consumption in Africa . This energy demand is growing with the economic growth and urbanization trends on the continent associated with industrialization and increased demand for transport. This situation affects the energy-supply industry, where capacities are already under pressure. The African industry and transport sectors thus face inadequate supply, which undermines their competitiveness.

Although energy is not one of the eight Millennium Development Goals (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 an energy source for cooking and heating. According to the International Energy Agency, approximately 73 percent of the population in Africa uses biomass energy (often in inefficient and unhealthy forms), compared with 52 percent in the developing world as a whole . Reliance on traditional biomass (especially 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 the 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 towards access to energy in order to unlock development opportunities and foster inclusive growth.

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 household income. The-

refore, increasing access to modern energy services in Africa requires raising 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 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 , it is two to three times higher than the global average. The up-front costs of connection are also very high. The volatility in energy prices has highlighted the importance of diversifying energy sources and improving efficiency. Moreover, with the global energy crisis, new markets have emerged. Africa therefore faces strong 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 , which constitutes a barrier for access to modern 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 one. This means paying greater attention to the needs of the end-users and their capacity to afford services. Therefore, it is necessary 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 outlays. 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 highlighting the public-good nature of the investment.

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. 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 . The key factors include recurrent shocks in oil and gas markets, inefficient supply and consumption practices, growing demand, unstable rainfall patterns as well as technical, managerial and financial weaknesses.

1.4. Weak governance and regulatory frameworks at the national and sub-regional levels impede performance in the energy sector: Effective governance and regulatory frameworks are crucial for promoting

sound management practices, increasing competition and attracting private investments in the energy sector in an equitable, responsive and accountable fashion. By setting up the rules in the sector, regulation increases comfort for the private sector to invest and imposes on utilities cost discipline and quality standards for enhanced efficiency. Regulation also helps maintain a balance between the interests of service providers and the needs of consumers in terms of quality of service, profits and reasonable tariffs.

For a long time, the energy sector in Africa (especially the power sub-sector) was under state ownership and control. Poor management deteriorated facilities due to inadequate maintenance, poor performance of utilities and low-quality service. The reasons for poor performance include (i) a reliance on government funding, which proved inadequate to meet the financing needs; (ii) monopoly privileges enjoyed by public utilities, which shielded them from market competition; and (iii) political interference requiring utilities to play a difficult dual role as commercial entities and implementers of governments' social objectives. Confused governance roles (e.g. the government may have a political, shareholder's and a regulator's role) created a challenge because they contradict the goals of providing affordable services while ensuring an adequate return on assets. Public utilities' lack of autonomy made it hard 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. Overall performance in the sector remains weak, however, and 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 the national and sector levels, 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 operators can 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 in order to establish robust legal and regulatory frameworks at the regional level and enhance the efficiency of regional energy markets.

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 worldwide GHG cumulatively. The primary source of the continent's modern energy is fossil fuels, especially coal and oil. So far, all African countries combined account for only 4 percent of the world's GHG emissions. However, the character of these non-renewable energy sources and the potentially significant negative environmental impacts caused by their use, particularly global warming, air and water pollution, are likely to worsen significantly with accelerated economic growth and industrialization. Therefore, harnessing renewable sources and making production patterns cleaner are vital for steering the continent's energy sector towards a sustainable path.

RMCs will need support to address challenges that IPR policies might pose for access to clean technologies. Some of the limitations associated with 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. Other barriers to technology transfer include unfavorable conditions, such as a lack of an appropriate legal and regulatory framework to protect IPR or failures in their enforcement, a lack of required skills and absorptive capacity, as well as the absence of free markets in some developing countries.

The United Nations Conference on Sustainable Development (UNCSD) held in Rio in June 2012 sought to secure political commitment for sustainable development, assess the progress to date and the remaining gaps in the implementation of the outcomes of the major summits on sustainable development, and address new and emerging challenges . The conference placed particular emphasis on the "green economy in the context of sustainable development and poverty eradication". While helping increase access to energy in support of economic growth in Africa, the Bank must therefore pursue a green-growth strategy through sustainable use of energy resources.

2. Opportunities and major energy initiatives in Africa

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 natural-gas output, 4.2 percent of 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 . These resources are unevenly distributed, however. 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 . South Africa accounts for 98 percent of total coal production in Africa . The uneven distribution of resources underscores the need in this Policy to pay close attention to the diversity of situations.

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 environmental impacts and climate change. Especially, they could help respond to the access needs of Africa's large rural population, including through off-grid technologies. Barriers to the deployment of renewable energy in RMCs, however, include the high costs of developing renewable energies in many instances, inadequate policy and legal frameworks, insufficient budgetary support as well as technical limitations in the application of renewable energy, and limited local expertise. Moreover, a major technical barrier is the unavailability of accurate renewable energy resource data.

There is an important exploitable hydropower capacity in Africa, but only 7 percent of it has been harnessed. Hydropower energy resources are estimated to be more than 3,909 TWh of theoretically potential

hydropower . Eastern, southern, central and parts of western Africa have many permanent rivers providing excellent opportunities for hydropower development. For example, the proposed Grand Inga project on the Congo can generate at least 300 TWh of energy in one year, which is enough to meet 60 percent of the continent's current demand . Hydropower has many advantages: it is readily available and produces cleaner electricity than other traditional resources such as coal and oil; it is also highly versatile and can be used to meet national electricity grid requirements, rural electrification and industrial power needs.

Although dams have played an important role in helping countries and communities harness their water resources for food production, energy generation, flood control and domestic use, their environmental and social effects need to be carefully considered, notably impacts on watersheds, ecosystems and populations' social welfare. For hydropower projects to sustainably yield expected benefits, it is imperative to balance the need for energy with the requirements of ensuring social and environmental sustainability. This requires a wider approach to water resources and river-basin management, as well as due consideration to climate-change effects (floods and droughts) and the related adaptation/mitigation measures. Most importantly, it requires establishing appropriate governance mechanisms for transparency, fairness, accountability and public participation in project planning.

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 from hot water/steam-based electricity generation. To date, however, only 150 MW has been exploited in Kenya and only 7.3 MW in Ethiopia . 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. Many African countries have daily solar radiation ranging between 5 and 6 kWh/m2. 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 high-income rural households. In spite of the abundant potential, the use of solar water heaters in households and institutions is still limited . It is worth noting that hybrid supply technologies exist and can compensate for 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 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.

Biomass can be converted using various technologies to provide more convenient forms of bioenergy. It offers attractive opportunities to provide low-cost and locally available modern energy services (electricity and heat production through co-generation, production of biogas from organic waste, production of liquid biofuels, etc.) and to create jobs through the development of local industries. In addition, sustainable production and use of biomass has a significant potential for reducing CO2 emissions through co-firing. Social and environmental challenges associated with bioenergy production, however, must be addressed. Despite concerns about liquid biofuels, Africa has a great potential for their development. Liquid biofuels can be an alternative to meet the growing needs of the transport sector. Several countries, including Kenya, Mozambique, South

Africa and Zambia, plan to expand domestic biofuel production in the coming years .

The bulk of the electricity produced in Africa is from thermal stations (82 percent), 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 percent, compared with 42 percent from coal and 28 percent from gas. Oil contributes 12 percent .

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 have helped raise awareness of enhancing access to services, including energy, to improve the welfare of the poor.

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. This is illustrated by the establishment of river-basin organizations and sub-regional power pools. However, there is still a need to accelerate reforms at the country level to help develop functional regional energy markets.

Regional power pools, namely the South African Power Pool (SAPP), West African Power Pool (WAPP), Central African Power Pool (CAPP), East African Power Pool (EAPP) and Maghreb Electricity Committee (COMELEC) were established to pool energy resources and promote the development of regional electricity markets in order to provide stable and reliable electricity at an affordable cost. Most power pools are fairly embryonic and face challenges such as a lack of funding, political instability and weak cross-border regulations. Nevertheless, in order to enhance the security of electricity supply on the continent, regional power pools constitute a base that the AfDB may build on to stimulate cross-border trade of energy resources and services, first at the sub-regional level and thereafter at the continental level.

Furthermore, an important platform for the new Energy Sector Policy has arisen 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. RMCs have mandated the AfDB 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. Moreover, several African RECs have adopted policy documents on access to energy.

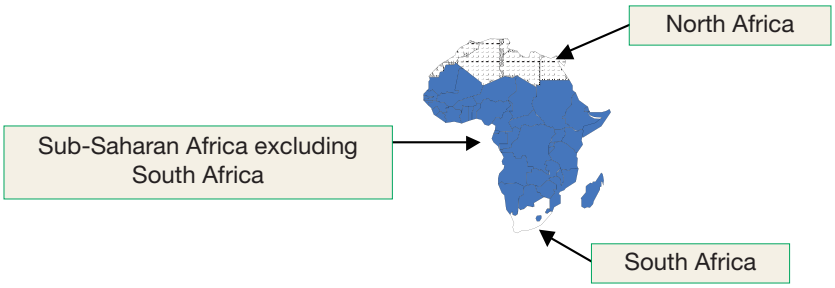
2.4. New climate-related financing opportunities for the energy sector: Africa has been struggling to secure its fair share of climate finance, as new facilities are being established to help developing countries adapt to and mitigate the effects of climate change. The Bank is scaling up its efforts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

2.5. New players in the energy sector: Capital flows to Africa from emerging financiers such as Brazil, China, the Gulf states and India have increased substantially in the last few years, amounting to USD 1.1 billion annually for sub-Saharan Africa . 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.

3. Summary of regional key challenges and opportunities

Africa's energy sector is best understood through the lens of three distinct regions : North Africa, South Africa and sub-Saharan Africa excluding South Africa.

Figure 1 Map of Africa illustrating the 3 regions in terms of energy challenges



Disclaimer: This map is provided by the African Development Bank exclusively for the use of the readers of the report to which it is attached. The names used and the borders shown do not imply on the part of the Bank and its members any judgement concerning the legal status of a territory nor any approval or acceptance of these borders.

North Africa: An abundance of oil and gas, wind and solar energy resources constitutes a golden opportunity. Universal access to electricity (generated mostly by oil or gas thermal plants) is close to being attained, thanks to competent state-owned but autonomous energy and power utility corporations. The five countries are directing their efforts towards two main objectives: improving rural access to modern energy services, and strengthening interconnection of power grids and building capability for efficient power trading.

South Africa: Despite having the largest energy system in Africa, the country is grappling with ensuring an adequate energy supply, especially electricity. Vast untapped renewable energy resources (e.g. biomass co-generation, wind and solar) represent a great opportunity for the country to partly deal with the energy supply issue.

Sub-Saharan Africa excluding South Africa: Major challenges include a very high dependence on traditional biomass, very low access levels to modern energy, electricity-supply shortfalls and rapid urbanization. Opportunities exist in the use of modern biomass technologies and the use of renewable energy resources. Recent oil and gas findings are a major development that, if well handled, could boost the modern energy supply.

In addition, as outlined below, island states and landlocked countries face specific challenges.

Island states: Heavy reliance on imported oil is a major challenge that leads to a high cost of the energy supply. Nevertheless, as demonstrated by Mauritius, via the use of local renewable resources (in this case, biomass), islands can greatly reduce their dependence on imported energy.

Landlocked countries: The main challenges of these countries are delays in imported energy (especially oil & gas) and inadequate strategic reserves. However, opportunities exist for the joint development of infrastructure with neighboring countries that could expedite energy imports, e.g. oil and gas pipelines, railways and high-voltage transmission lines.

4. Financing the African energy sector

4.1. Mobilizing financing is critical to African energy sector development: There is a large gap between investment needs and actual outlays in the power sector, especially in sub-Saharan Africa. Addressing low access to modern energy services and chronic power shortages will require bridging this gap through sustained investments and strategic mobilization of resources from both public and private sources, from domestic and external markets. In addition, produ-

cing cleaner energy in some cases requires more resources relative to conventional energy production. Most African countries cannot afford this option without external resources and support.

The 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. 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. The Bank Group's contribution to financing the energy sector has increased over the past five 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 the 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 help RMCs meet their energy-investment needs.

4.2. There are barriers to private sector investment in the energy sector in Africa: The private sector can play an important role in tackling Africa's energy crisis. Private companies' participation in the African energy sector will be critical in filling the funding gap for projects, fostering competition and reducing operating costs, which is essential for the financial viability of energy-supply schemes. In addition to contributing to project financing, the private sector can provide technological and managerial expertise for projects' efficiency and viability. Many factors and risks make business conditions unfavorable and impede investment in the energy sector, however. These include (i) financial ones such as the high cost of energy projects, limited access to funding and inadequate cost recovery; (ii) weakness of regulation systems; (iii) weak institutional capacity and (iv) political instability or conflicts. To resolve Africa's energy problems, countries must take steps to establish a solid enabling environment for investments through reforms and incentives to attract the private sector.

5. AfDB's experience in the energy sector

5.1. A long experience in the infrastructure and energy sector: Since its inception, the Bank has acquired a tremendous experience and expertise in infrastructure development in Africa. Between 1967 and 2010, the Bank favored infrastructure by devoting the bulk of its total commitments (42.64 percent) to this sector, mainly for operations in energy, transport, water supply and sanitation, and communications. Slightly more than one-third of the total infrastructure

commitments, i.e. 34.05 percent , was allocated to the energy sector, especially for financing power-supply schemes. Furthermore, the Bank has been entrusted with a leadership role in the implementation of the NEPAD Infrastructure Programme, which has given a fresh impetus to the sector. Infrastructure-development activities have been considerably stepped up, particularly in regional infrastructure. These responsibilities and knowledge have put the AfDB in a comfortable situation for the efficient implementation of this Energy Sector Policy.

5.2. The Bank's 1994 Energy Sector Policy: The 1994 Energy Sector Policy allowed the Bank to play a critical role, especially by supporting reforms at the national level. Nevertheless, many 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 1994 Policy did not adequately address challenges and opportunities presented by NEPAD and regional integration, climate change, and the Bank's focus on infrastructure development. This new Energy Policy aims to address the gaps.

5.3. AfDB's energy sector operations (1995-2010): Between 1995 and 2010, two major phases can be identified in the AfDB Group's energy activities. From 1995 to 2002, the Bank relied on the private sector to expand energy investments and access. Thus, the AfDB's interventions in the sector were limited, leaving a large financing gap that the private sector was unable to fill. By the mid-2000s, the AfDB began to scale up its activities. 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) to help RMCs generate a pipeline of investment projects in renewable energy and energy efficiency.

This culminated in the AfDB's assuming a lead role in crafting the seminal CEIF and CRMA in 2008 and 2009, respectively. These two initiatives are the AfDB's response to the call launched by the G8 states at their Gleneagles summit in July 2005 and reiterated at their 2006 summit. The CEIF highlights some approaches to increasing energy access and developing clean energy, as well as specifying the resource requirements 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, the CRMA delineated three areas of intervention: (i) "climate proofing" of investments; (ii) policy, legal and regulatory reforms and (iii) knowledge generation and capacity building.

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

5.4. AfDB's social and environmental protection policy: Despite the Bank's efforts in preventing and mitigating any adverse environmental and social impacts of its energy operations, some of its projects over the last decade have faced recurrent requests from the Independent Review Mechanism following complaints from NGOs or community organizations. This has slowed project-proposals processing and in some cases has led to their cancellation. In order to improve the performance of its operations, the Bank is updating its environmental and social (E&S) safeguards policy. The Bank Group's future energy operations will comply with the approved Policy.

Independent Review Mechanism (IRM): Moreover, the AfDB has established the IRM to allow affected people to complain to the Bank if they believe that as result of non-compliance with the Bank Group's policies and procedures, their rights or interests have been,

or are likely to be, adversely affected in a direct and material way. The IRM handles the complaint through problem solving (mediation) and/or compliance review. Information and requirements for submissions of complaints are available at www.afdb.org/irm.

5.5. AfDB and regional integration: The AfDB has acknowledged the potential of a regional approach to development, evinced by the increasing support to Regional Operations (ROs) over the last decades and reflected in the Bank's 2008-2012 MTS, including a growing number of multinational energy projects. The Bank's commitment to supporting regional integration is equally evinced by the recent formulation of Regional Integration Strategic Papers (RISPs), aimed at providing coherent frameworks for streamlining regional operations. RISPs are the instrument for implementing the Bank's vision of enhancing regional integration. Recent RISPs have prioritized energy-infrastructure development as a key pillar of regional integration, where the Bank is expected to play a catalytic role in financing regional energy operations and leverage additional resources through co-financing and private-sector investments. Like other Bank multinational operations, however, energy ROs face more challenges than single-country operations, including implementation delays and slow disbursement. These challenges stem from the complexity of such operations in terms of structure, coordination, supervision and the generally weak management capacity of regional institutions. ROs also often require harmonizing legal and institutional arrangements among participating countries. A recent review of the Bank's ROs has led to the following findings and recommendations : the Bank needs to (i) adapt its business practices to RO requirements, since the lack of tailored practices appears to be a major factor impeding effective regional approach, and (ii) rethink its financing modalities, notably in relation to the cost sharing among beneficiary countries.

While RMCs may be reluctant to embark on multinational operations and prefer national operations over which they exercise better control, regional cooperation appears to be the only viable approach to sustainably ensure energy security on the continent. This is justified by the uneven distribution of energy sources and the small size of most African energy markets. Within this context, the Energy Sector Policy will build on past lessons and experience to propose a framework aimed at supporting the AfDB's efforts to develop regional energy operations and markets.

Annex 3 Differences between the 1994 Energy policy and the current energy Policy

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Key issues covered by the 1994 Energy Policy

The objective of the 1994 Energy Sector Policy was to help strengthen RMCs' capacities to attain optimal coverage of the energy needs of all their economic sectors, social activities and households, by developing an efficient and environmentally sustainable management of energy resources. A review of the 1994 Energy Policy highlighted the following as critical issues:

- Shortage of investment capital;
- High dependence on imported petroleum products;
- Exposure to the risks of fluctuations in world oil prices and foreign-exchange rates;
- Shortage of specialized energy experts;
- Poor maintenance of energy production, storage (oil and gas), processing, transportation/transmission, and distribution facilities;
- Unsustainable energy supply and consumption patterns;
- Limited regional cooperation in energy development;
- Obstacles to efficient energy pricing;
- Inadequate demand-side management;
- Insufficient data and information on the African energy sector.

The document outlines policy statements related to the following: (i) energy sub-sectors (oil and gas, coal, electricity, fuel wood and biomass, solar and wind); (ii) institutional support; (iii) energy supply and demand; (iv) financial and cost recovery; (v) training; (vi) the environment; (vii) women in development; and (viii) information processing.

Gaps covered by the current Energy Sector Policy

Some of the issues raised in the 1994 Energy Policy continue to pose significant challenges to the energy sector. Key among these are: 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.

While at the time of its preparation, the policy document covered key energy concerns, major developments have since taken place that call for a revision of the Policy. These include: (i) energy sector reforms at the country level; (ii) an evolution of the economic development frameworks from Structural Adjustment Programmes (SAPs) to Poverty Reduction Strategies and the MDGs that helped raise awareness of the importance of enhancing access to services, including energy, to improve the welfare of the poor; (iii) regional and continental level energy initiatives, (iv) the ongoing oil crisis; and (v) increased concerns over climate change and other environmental issues. The current energy Policy takes into consideration the new context and related challenges that were not adequately addressed in the 1994 Policy.

- The need to increase access for the poor and the absence of financial mechanisms to facilitate such access;
- Climate-change issues and the need to move towards a low-carbon energy sector;
- Social equity in the exploitation and use of the continent's energy resources;
- The need to enhance regional cooperation;
- The need for an integrated approach to grid and off-grid electrification initiatives.

Annex 4 Approaches to energy across multilateral development banks: Cases of coal, hydropower, and biofuels

Annex 4 Approaches to energy across multilateral development banks: Cases of coal, hydropower, and biofuels

Energy sources	ADB - 2009	IaDB - Energy Policy (IaDB website)	EBRD - Energy Operations Policy, 2006	The World Bank Energy Strategy, 2011
Coal	ADB will not finance coal-mine development, except captive use by thermal power plants. ADB will selectively support coal-based power projects if cleaner technologies are adopted and adequate mitigation equipment and measures are incorporated into the project design.	IaDB supports coal activities and has developed guidelines for coal-fired power plants.	EBRD remains willing to consider financing coal projects that demonstrate their competitiveness and 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.	The World Bank's Energy Strategy is still under development. Therefore, there is not a final decision yet on coal, hydropower and biofuels.
Hydropower	ADB will selectively support large hydroelectric power plants requiring seasonal storage reservoirs with multipurpose domestic or regional benefits.	The Bank will ensure that measures are taken to enhance the region's hydroelectric resources potential in ways that are environmentally and economically sustainable.	The Bank will consider financing projects in hydro and hydro rehabilitation, in compliance with the EBRD Environmental Policy requirements.	
Bioenergy	Considering the global interest in biofuels, ADB 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, ADB 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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