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Renewable Energy in Africa: Challenges, Opportunities and Role of the Private Sector

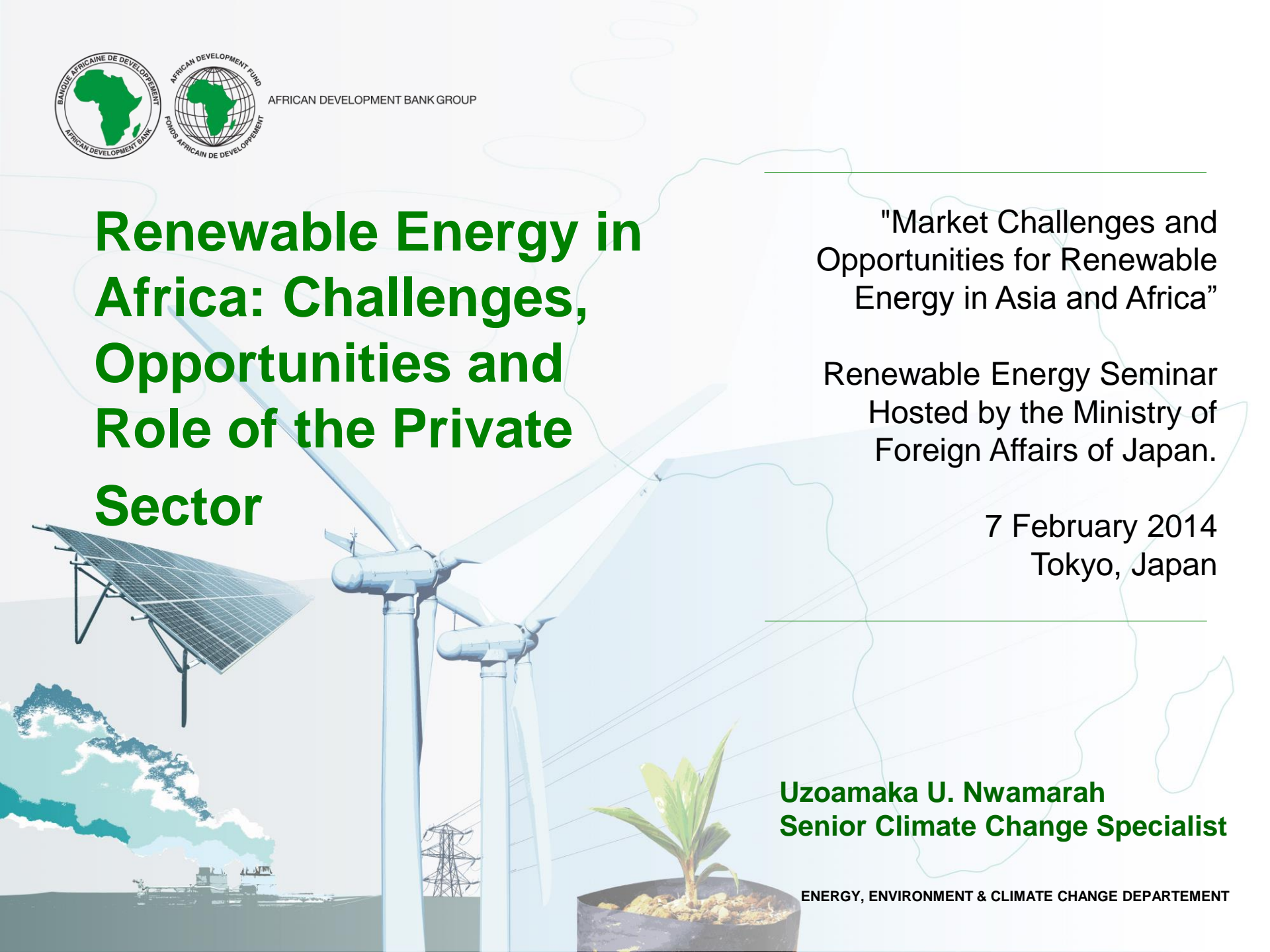
"Market Challenges and Opportunities for Renewable Energy in Asia and Africa"

Renewable Energy Seminar
Hosted by the Ministry of
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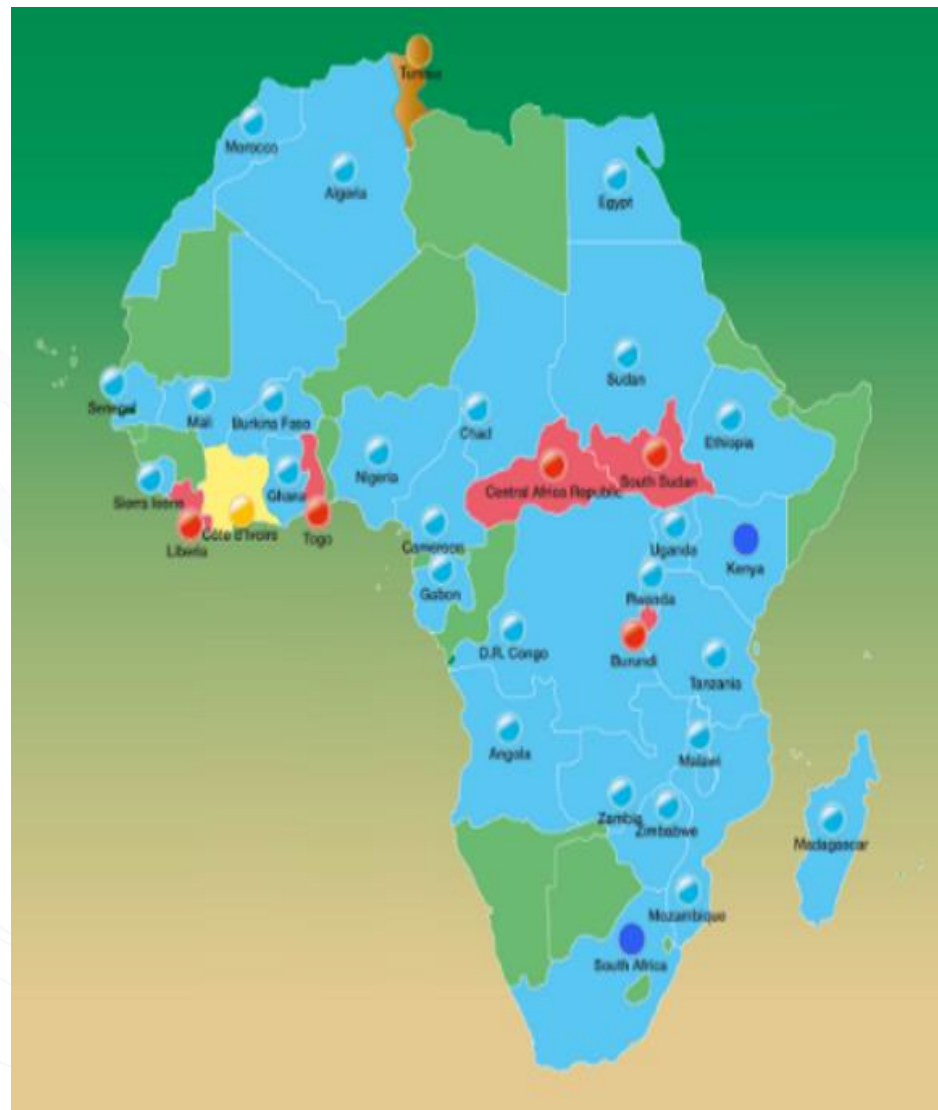


Outline

- ❑ Context
- ❑ Challenges and Opportunities
- ❑ Private Sector Role
- ❑ Conclusion

AfDB in Brief

- ❑ A multilateral development finance institution owned by 54 African and 24 non-African countries; and established in 1964.
- ❑ Its mission is to help reduce poverty, improve living conditions for Africans and mobilize resources for the continent's economic and social development.
- ❑ The Bank assists African countries individually and collectively to achieve sustainable economic development and social progress.
- ❑ 34 Offices widely spread across Africa; with the external relations office for Asia in Tokyo, Japan.



Why the Fuss?



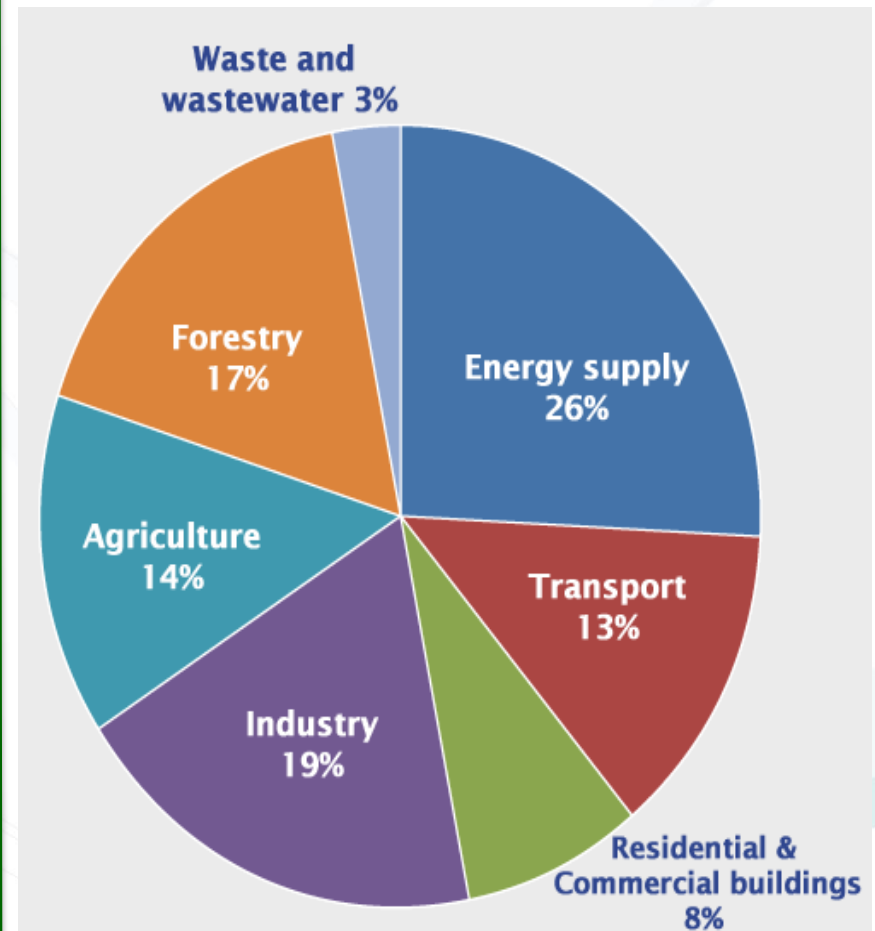
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Energy and Climate Change

- ❑ The burning of fossil fuels for electricity and heat is the largest single source of global greenhouse gas emissions.
- ❑ Greenhouse gas emissions need to be reduced to prevent climate change.
- ❑ We cannot afford to continue with our current carbon intensive growth trajectory.

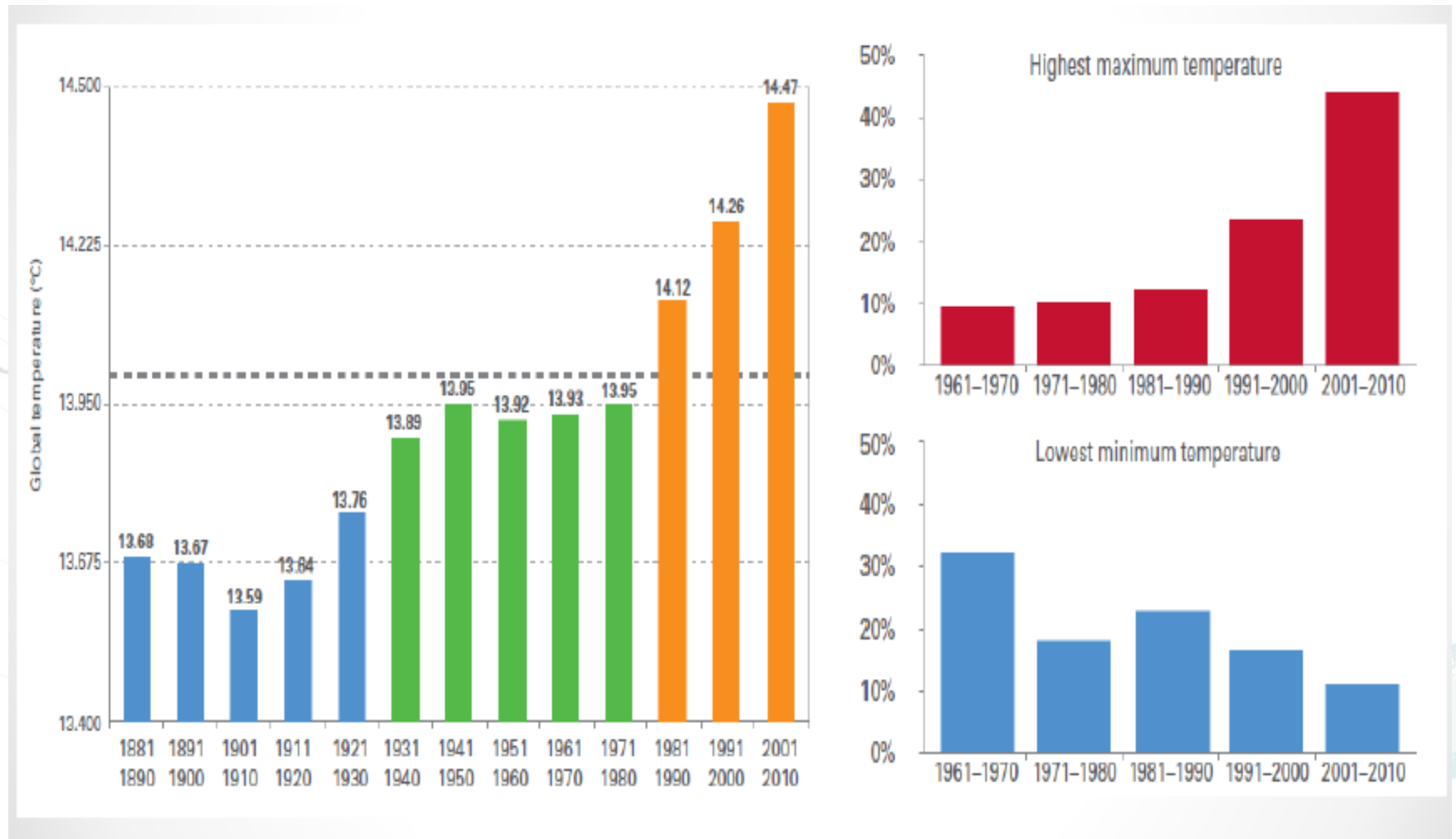
Global Greenhouse gas Emission by Source



Source IPCC 2007

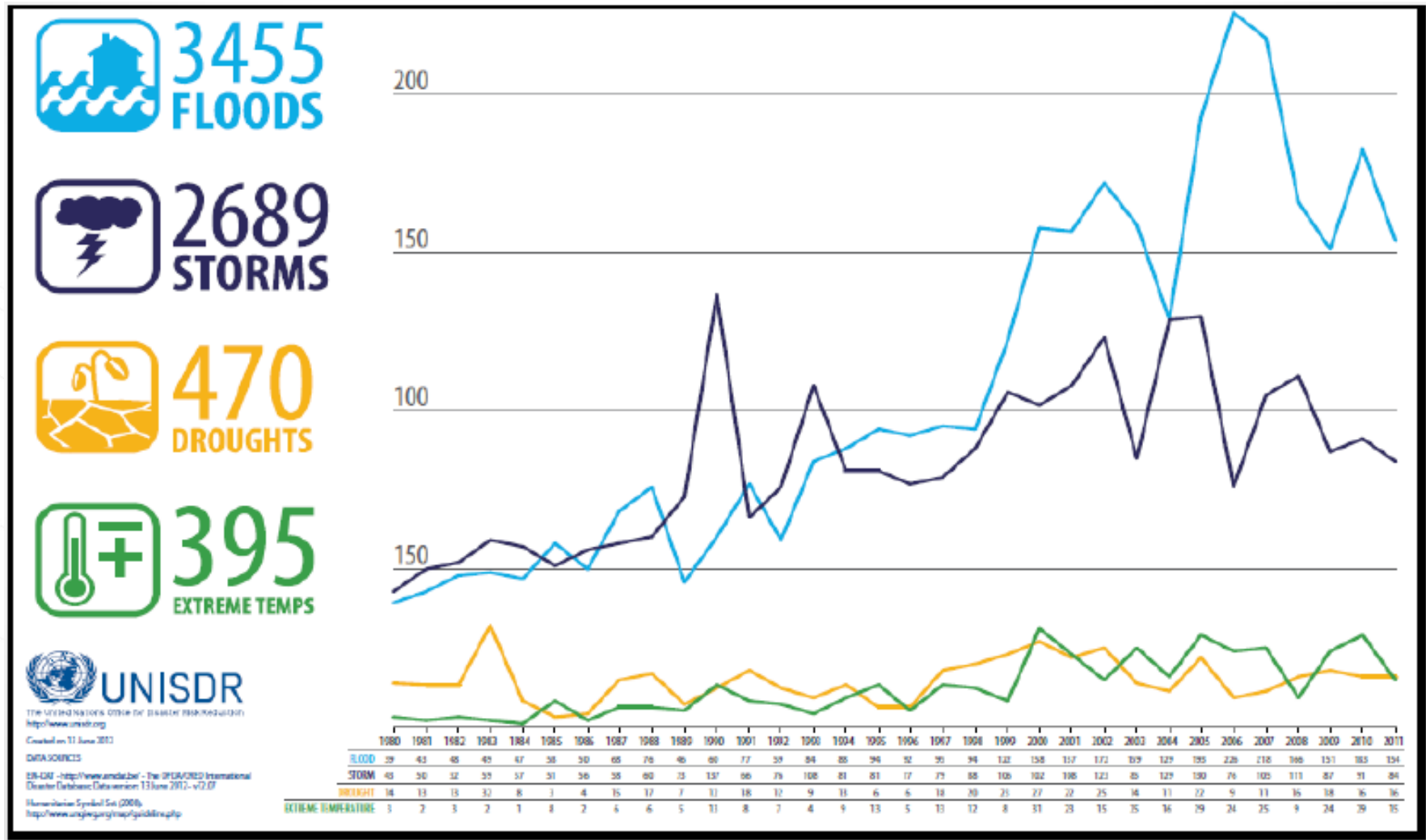
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Temperature on the Rise



Source: WMO 2013

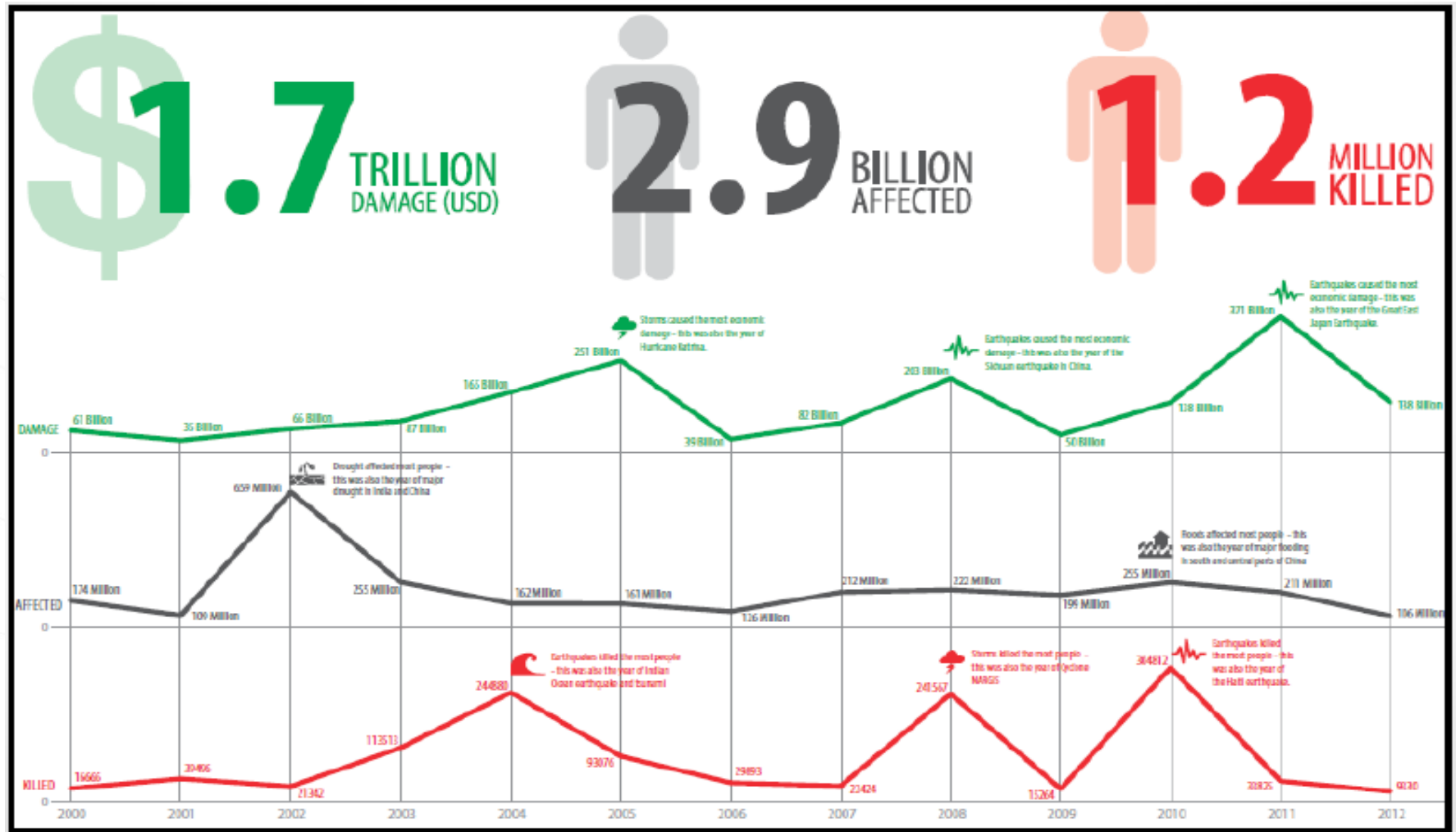
Number of Climate Related Disasters Around the World (1980 – 2011)



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Socio-Economic Costs of Disasters (2000 – 2012)



Source: UNISDR 2012

State of Play



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THE QUEST TO POWER AFRICA

A CONTINENT IN SHADOWS

IN TERMS OF POPULATION AND LAND MASS, AFRICA IS THE SECOND LARGEST CONTINENT IN THE WORLD, TRAILING BEHIND ONLY ASIA. BUT, AMAZINGLY, A MAJORITY OF THE BILLION PEOPLE LIVING ON THE CONTINENT SURVIVE EVERY DAY WITH LITTLE TO NO ACCESS TO ELECTRICITY. IN THE MIDST OF ECONOMIC, SOCIAL, AND GEOPOLITICAL TURMOIL, MANY OF THE POOREST NATIONS IN AFRICA ARE UNABLE TO SCROUNGE UP THE MONEY, RESOURCES, AND GENERAL KNOW-HOW TO BRING ELECTRICITY TO THEIR PEOPLE.

79%

of people living in Third World African nations have no access to electricity.

1.5 BILLION

(25% OF THE GLOBAL POPULATION)

people in the world have no access to electricity—they are mostly concentrated in Africa and southern Asia.



In 11 countries in Africa, **MORE THAN 90%** of people go completely without electricity.

In Burundi, Chad, Central African Republic, Liberia, Rwanda, and Sierra Leone,

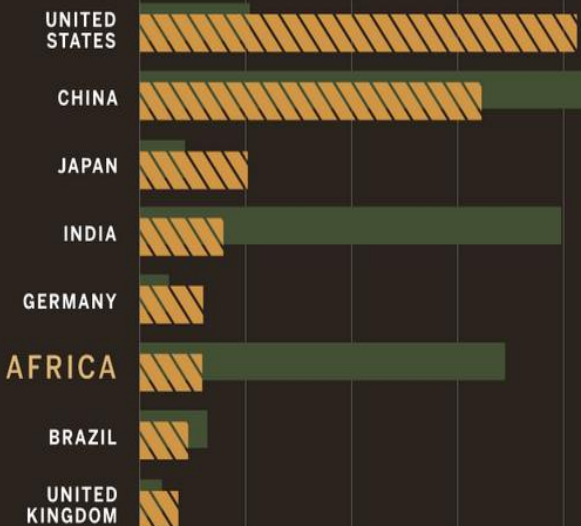
3-5%

of people have easy access to electric power.

Africa has the **LOWEST PER CAPITA ENERGY** use of any continent.

ELECTRICITY GENERATION AND POPULATION BY REGION

POPULATION 0 300 MILLION 600 MILLION 900 MILLION 1.2 BILLION



KWH 0 1,000 2,000 3,000 4,000



Each day, New York City consumes the same amount of electricity as all sub-Saharan African nations combined, excluding South Africa.

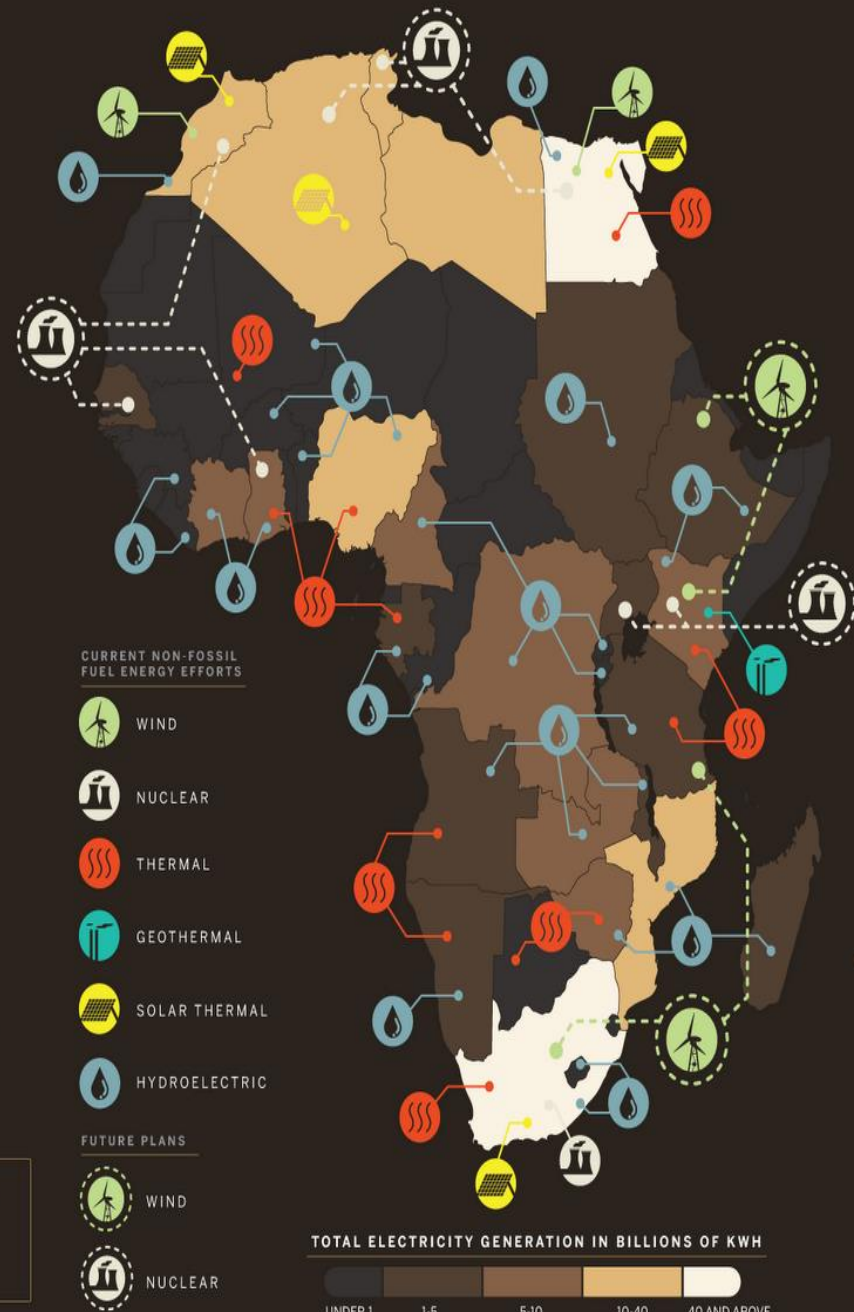


African soil contains an estimated **18%** of the world's recoverable uranium

The two reactors in South Africa account for **5%** of its energy generation

"This [crisis in Africa] is very bad and is something that the energy community and others should be ashamed of"

- FATIH BIROL, IEA'S CHIEF ECONOMIST



The Paradox

Situation

- ❑ About 600 million African people (60% of the population) have no access to electricity (AfDB).
- ❑ African consumers and small businesses spend \$17 billion a year on kerosene lamps and candles (WB).

Potential

- ❑ 93% of Africa's natural and renewable energy resources remain untapped (IRENA).
- ❑ Renewable energy technologies now provide economical solutions for off-grid and mini-grid electrification in remote areas (IRENA).

What Can We Do?



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Distribution of Identified Renewable Energy Potential in Africa



- 93% of Africa's natural and renewable energy resources remain untapped (IRENA).
- Only 17% of Africa's total electricity generation is from renewable energy resources (AfDB).



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Identified Challenges

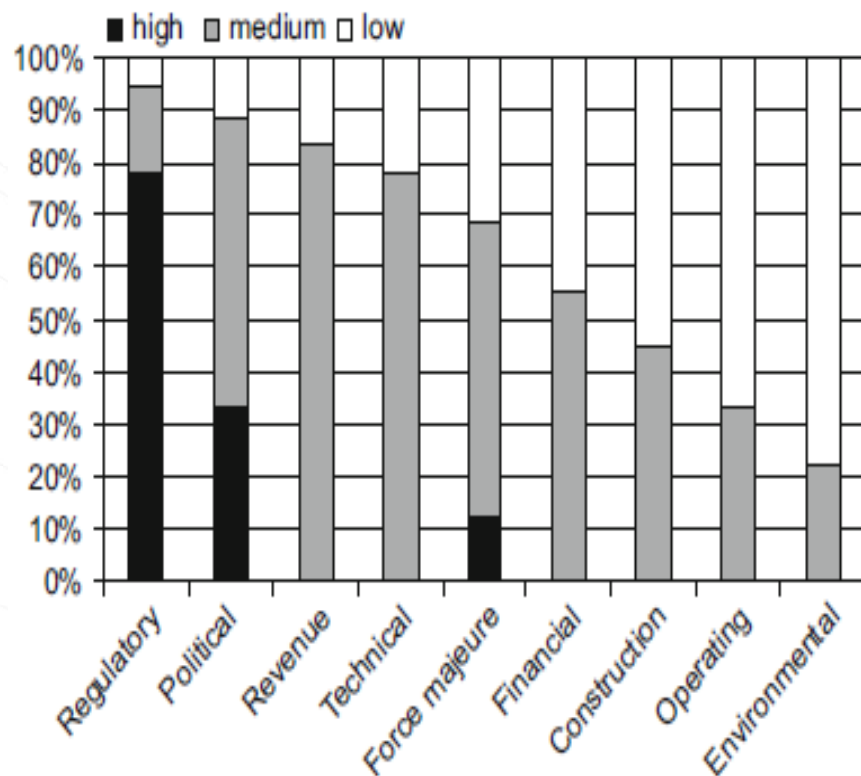
Financing and Investments	Policy, Regulatory and Institutional Frameworks	Information and Technical Capacity
<p><u>Impediments:</u></p> <ul style="list-style-type: none"> ❑ High costs inherent to the energy sector ❑ Limited access to funding 	<p><u>Impediments:</u></p> <ul style="list-style-type: none"> ❑ Lack of independent or impartial regulators ❑ Lack of competition to networks ❑ One-off PPAs ❑ Inefficient tendering processes 	<p><u>Impediments:</u></p> <ul style="list-style-type: none"> ❑ Inadequate skills to manage PPPs ❑ Weak judicial systems ❑ Non-harmonised regional regulatory frameworks
<p><u>Risks:</u></p> <ul style="list-style-type: none"> ❑ Insufficient cost recovery ❑ Elastic demand ❑ Non-payment or inability to pay for services ❑ Foreign exchange risk 	<p><u>Risks:</u></p> <ul style="list-style-type: none"> ❑ Breach of contracts ❑ Partiality of regulators ❑ Inability to raise tariffs to cover costs 	<p><u>Risks:</u></p> <ul style="list-style-type: none"> ❑ Bureaucratic procedures ❑ Uneven policies in different countries

Responding to the Challenges

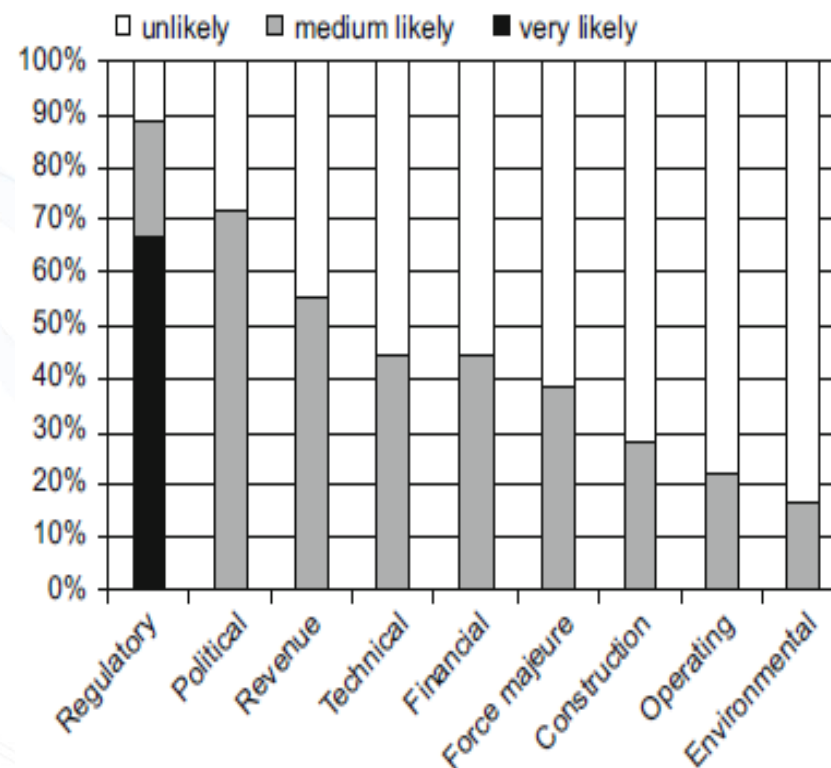
Financing and Investments	Policy, Regulatory and Institutional Frameworks	Information and Technical Capacity
<ul style="list-style-type: none">❑ Investing in cost reducing technology❑ Using syndicated loans❑ Alternative financing sources - bonds❑ Increasing partial risk guarantees	<ul style="list-style-type: none">❑ Utility unbundling to open up competition❑ Setting multi-year tariffs - with adjustment clauses❑ Clear and transparent procurement process	<ul style="list-style-type: none">❑ Streamlining public agencies❑ Hiring and developing individuals with PPP experience❑ Strengthening regional capacity and cooperation.

Perception of Risk

❑ Risks perceived as being most serious by investors.



❑ Perception on degree of likelihood to happen.



Role of the Private Sector

In addition to contributing to **project financing**, the private sector can provide **technological** and **managerial** expertise for project efficiency and viability.

- ❑ It is estimated that at least \$43 billion a year is required to meet future demand in the African power sector (AfDB).
- ❑ Private investment flows are essential for the transition to a low-carbon and climate-resilient future.
- ❑ Careful and wise use of public funds in combination with private funds can generate truly transformational investments.

Voices from Africa

- ❑ “While many of the challenges facing businesses in key African markets are no more significant than elsewhere in the world, the rewards on offer are substantial. Critically, it is this risk-reward equation that makes African investment so compelling – the returns remain among the highest in the world, while risks are diminishing and can be effectively managed.

Diana Layfield, Africa CEO, Standard Chartered Bank, 2013

- ❑ “As governments, we need to improve the business environment and strengthen dialogue with the private sector. Our efforts to create wealth will be in vain if we fail to create an environment that allows entrepreneurs to thrive.”

Mompoti Sebogodi Merafhe, Honorable Vice President of the Republic of Botswana, 2012

- ❑ “Africa needs its business leaders as never before – to help it generate more electricity, grow more food, and create more jobs to keep growing strongly, while also improving people’s well-being through less poverty, better health and education, and more hope.”

Thierry Tanoh, C.E.O. Ecobank Group, 2012

AfDB Intervention Highlights



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Enabling Public Private Partnerships (PPPs)

Assisting with the required **enabling environment** and; contributing to a government's ability to **fulfill its obligations**.

- ❑ Financial support through direct equity investment and loans;
- ❑ Advice to enterprises on the structuring of such projects;
- ❑ Funding an equity contribution by a government;
- ❑ Providing partial risk guarantees to the government or state-owned enterprises;
- ❑ Providing the financing a government needs to invest in related infrastructure such as transmission lines;
- ❑ Mobilizing concessional climate financing to improve a project's viability if it reduces/avoids emissions;
- ❑ Assisting a government with structuring and providing advisory services to implement PPPs.

○ *Africa Legal Support Facility hosted by the AfDB.*

AfDB and CIF for a Climate-Smart Africa

Climate Investment Funds \$7.6 billion

CLEAN TECHNOLOGY FUND (CTF)

- CTF worldwide: \$5.2 billion
- CTF in Africa: \$1.9 billion
- AfDB channeling: \$757 million

Demonstrate, deploy and transfer of low-carbon technologies for low GHG emissions development

Renewables, energy efficiency, urban transport, commercialization of sustainable energy finance

Egypt, Morocco, Nigeria, South Africa and MENA Region (Algeria, Egypt, Jordan, Morocco and Tunisia)

STRATEGIC CLIMATE FUND (SCF)

- SCF worldwide: \$2.4 billion
- SCF in Africa: \$615 million
- AfDB channeling: \$250 million

Targeted programs to pilot new approaches to initiate transformation with potential for scaling up climate resilience

PILOT PROGRAM FOR CLIMATE RESILIENCE (PPCR)
\$1.3 BILLION

Mainstream resilience in development planning

Mozambique, Niger and Zambia

FOREST INVESTMENT PROGRAM (FIP)
\$639 MILLION

Reduce emissions from deforestation and forest degradation

DR Congo, Burkina Faso and Ghana

SCALING-UP RENEWABLE ENERGY PROGRAM (SREP)
\$505 MILLION

Create economic opportunity, increase energy access through renewables

Ethiopia, Mali, Kenya, Tanzania and Liberia

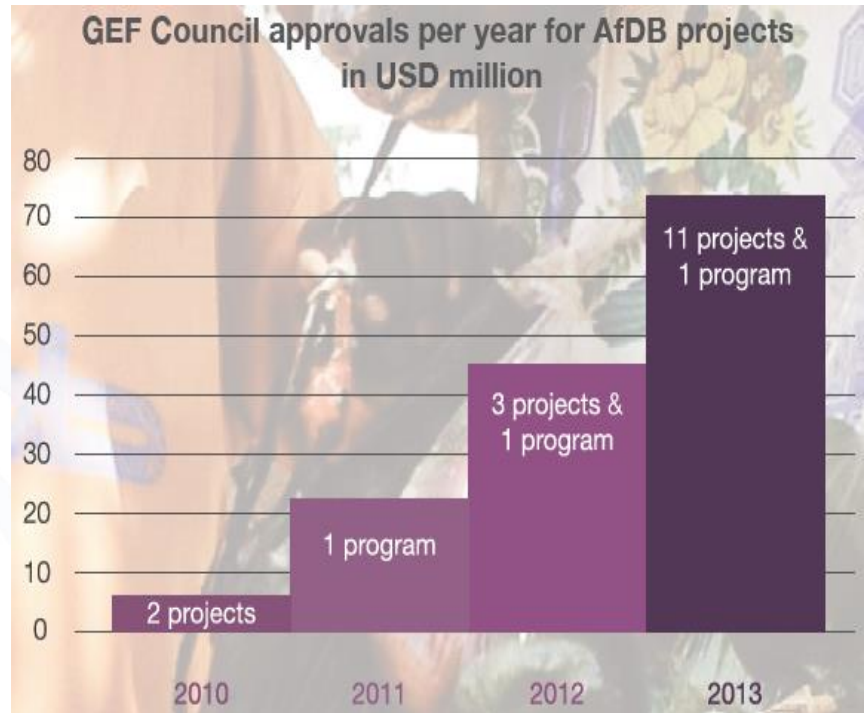
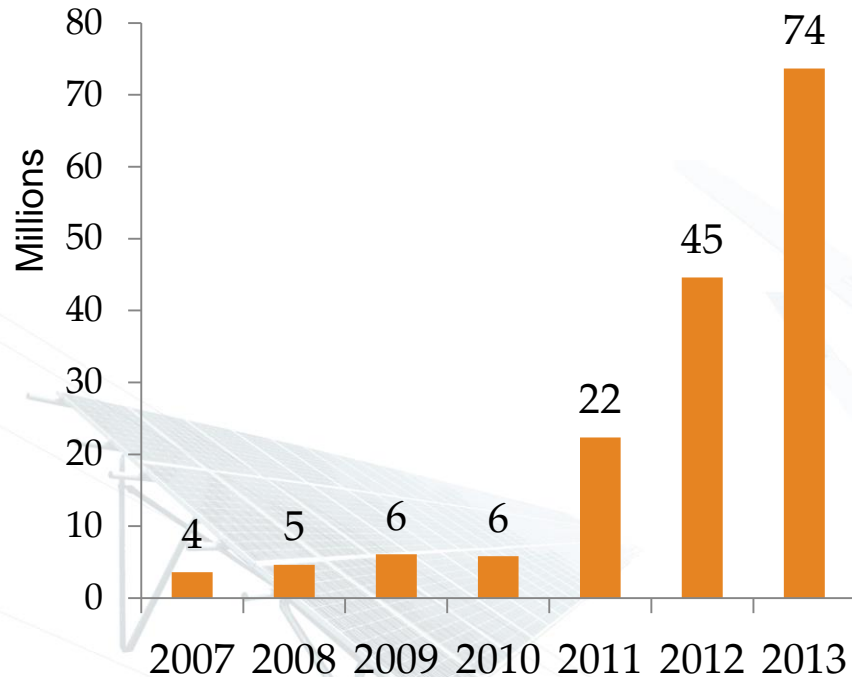


❑ **\$7.6 billion**
CIF Global

❑ **\$2.5 billion**
CIF Africa

❑ **\$1 billion**
Channeled by AfDB

AfDB-GEF Approvals



- ❑ Mobilized an equivalent of \$ 160 million distributed across 23 projects and programs.
- ❑ Leveraged over 1.1 billion in co-financing from Bank investments, recipient countries governments and the private sector.

Sustainable Energy Fund for Africa



SEFA is an AfDB-managed Multi-donor Trust Fund designed to promote **private sector investments in small to medium size Renewable Energy & Energy Efficiency projects.**

	I - PROJECT PREPARATION GRANTS	II - EQUITY INVESTMENTS	III - SE4All AND ENABLING ENVIRONMENT (Q4 2013)
SCOPE (Size range)	<i>Preparation support to medium-size RE/EE Projects</i> [USD 30m - 200m]	Seed/growth capital for small to medium sized RE/EE Projects [USD 10m - 80m]	Enabling environment for private investments and SE4All activities
FINANCING INSTRUMENT	Grants to project developers / sponsors	Equity and TA through a Private Equity Fund	Grants for TA and capacity building of public actors
MANAGEMENT	SEFA Secretariat	Berkeley Energy*	SEFA Secretariat / SE4All Africa Hub

Operationalized in January 2012 and Reached a total commitment of USD 43.4 million.

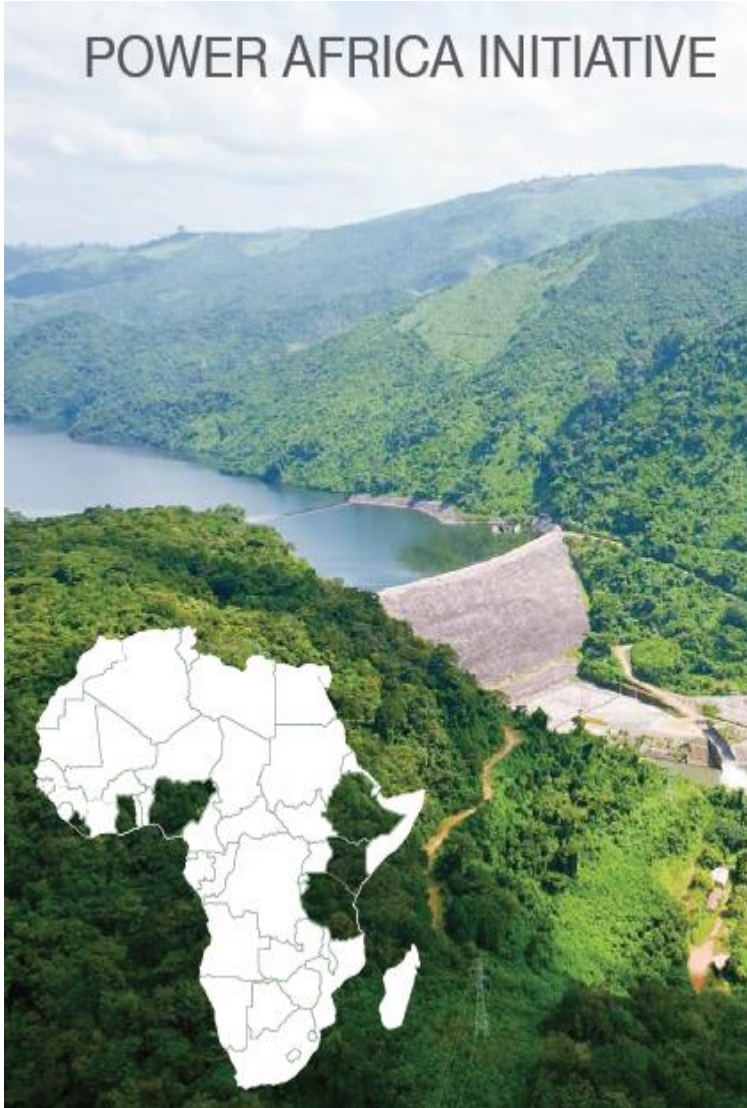


Africa Renewable Energy Fund

- ❑ Set up in 2013 and will focus on the development of **small to medium size renewable energy projects** producing 5 – 50MW, and ranging from \$ 10 – 80 million.
 - Supply technical capacity building in relation to project design, structuring and execution;
 - Take the role of finance enabler as well as to provide developer equity; and
 - Optimize capital structures to ensure sustainability and financial viability of underlying projects.
- ❑ Equity – African Development Bank:\$25, Sustainable Energy Fund for Africa:\$25, Global Environment Facility:\$4.5

Power Africa Initiative

POWER AFRICA INITIATIVE



- ❑ Aims to support economic growth and development by increasing access to reliable, affordable, and sustainable power in Africa.
- ❑ Governments of the United States of America, Tanzania, Kenya, Ethiopia, Ghana, Nigeria and Liberia, the US and African private sector, and the African Development Bank (AfDB).
- ❑ The AfDB expects to allocate as much as \$3 billion over the next 5 years.

AfDB Green Bond Programme

- ❑ Green bond transaction issued in 2013, and raising \$ 500 million.
- ❑ The success of this transaction underscores the growing demand from investors for green bonds from triple-A rated entities.
- ❑ It also demonstrates the AfDB's commitment to financing low-carbon and climate resilient development.
 - ❑ Investor type distribution: 43% with asset managers, 28% with central banks and official institutions, 28% with insurance companies and pension funds, and 1% with retail and private banks.
 - ❑ Geographical distribution, 52% of the bonds were placed with accounts in the Americas, 39% with EMEA, and 9% with Asia.

*“This first Green Bond of the AfDB is part of its quest to use **public-private partnerships** to meet the challenges of development in Africa. It is another opportunity for private capital to earn market rates of return, while supporting sustainable and low-carbon growth in the continent”* - Donald Kaberuka, President, African Development Bank Group.

Africa Carbon Support Programme (ACSP)

- ❑ ACSP commenced in 2010 with funding from the Fund for African Private Sector Assistance (FAPA).
 - FAPA is a multi-donor thematic trust fund financed by the AfDB, the **Government of Japan**, the Government of Austria and the Austrian Development Bank.
 - Japan announced further support in January 2014 of \$2 million.
- ❑ The ACSP aims to provide direct technical support, awareness and training to AfDB staff, project owners and government agencies on the CDM and other issues of climate change impact.
- ❑ Through ACSP, the **first cross border electricity transmission project for the Clean Development Mechanism (CDM)** was developed in 2012- *“AM0108: Interconnection between electricity systems for energy exchange”*

Ethiopia – Kenya Interconnection Project

DESCRIPTION

- ❑ Developed jointly by Ethiopian Electric Power Corporation and the Kenya Electricity Transmission Company Limited.
- ❑ Construction of a transmission line of more than 1,000km from Ethiopia to Kenya.
- ❑ A priority project of PIDA.
- ❑ First of its kind and selected by the G20 as an exemplary regional project.
- ❑ Approved in 2012 and expected to be completed in 2017.

IMPACT

- ❑ 1.4 million households to benefit from improved electricity access by 2022.
- ❑ Reduce annual CO₂ emissions by 3.5 million tons during first year of operation.
- ❑ About 4,000 jobs to be created during construction phase and 125 during maintenance.
- ❑ Foster regional electric grid interconnectivity .

AfDB FUNDING

- ❑ \$341 million from the AfDB .



Morocco – Ouarzazate Concentrated Solar Power Plant

DESCRIPTION

- ❑ Ultimate purpose of generating 500 MW to support the national economy and also export energy to Europe.
- ❑ To promote clean power generation and energy security; while lowering carbon intensity of electricity production.
- ❑ First phase will be delivered through a public-private partnership between the Moroccan Agency for Solar Energy (MASEN) and a private partner.
- ❑ Approved in 2012 and expected to be completed in 2015.

IMPACT

- ❑ 160 MW of additional CSP generation capacity - diversifying the energy mix.
- ❑ 240,000 tons of CO₂ avoided each year.
- ❑ 800 jobs to be created during construction phase and 50 during maintenance phase.
- ❑ Contribution towards the realisation of the commercial viability of CSP and its potential in the MENA region.

AfDB FUNDING

- ❑ \$215 million from AfDB.
- ❑ \$100 million from the Clean Technology Fund (CTFs).



Kenya

Menengai Geothermal Plant

DESCRIPTION

- ❑ Development of the geothermal field for steam production which the private sector will subsequently use to produce electricity.
- ❑ This investment in drilling and steam production laid the foundation for private sector investment in IPPs.
- ❑ Procurement for IPP projects (capacity of approximately 400 MW) is currently underway, which is expected to result in over USD 500 million of private sector investment.
- ❑ Approved in 2011 and expected to be completed in 2016.

IMPACT

- ❑ Produce the level of energy equivalent to the needs of 500,000 households and 300,000 small businesses.
- ❑ Avoid 2 million tons of CO₂ emissions per annum.
- ❑ Boost geothermal development in East Africa – AfDB currently working with Djibouti, Tanzania and Comoros.

AfDB FUNDING

- ❑ \$121 million from the AfDB .
- ❑ \$25 million from the Scaling up Renewable Energy Program (CIFs).



Cape Verde Cabeólica Wind Power

DESCRIPTION

- ❑ Four on-shore wind farms are being developed on four islands – 25.5 MW.
- ❑ The first large scale public-private partnership in the Cape Verdean infrastructure sector.
- ❑ The first independent power producer (IPP) in wind to operate in Sub Saharan Africa.
- ❑ Approved in 2010 is fully built and commissioned.

IMPACT

- ❑ Greatly reduces the archipelago's reliance on costly imported oil for electricity generation by up to 20,000 tonnes – saving the country about €12-15m a year.
- ❑ Provides about 25% of the nations energy.
- ❑ Established a model for large-scale renewable power projects with private investment, which can be replicated elsewhere in Sub Saharan Africa.

AfDB FUNDING

- ❑ EUR 15 million from the AfDB .
- ❑ USD 1 from FAPA.



AfDB Advancing the Clean Energy Agenda

Between 2011 and 2012 AfDB doubled its **clean energy** commitments and became the **largest financier** on the continent.

Bloomberg
NEW ENERGY FINANCE



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Africa tomorrow



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AfDB, largest financier of clean energy on the African continent with \$4.3 billion in energy projects

Between 2011 and 2012, the AfDB increased by a staggering 92% its investment in clean energy in Africa, according to a new report by Bloomberg New Energy Finance. The publication, which looks at the clean energy transactions of 26 national and multilateral development banks from 2007 to 2012, found the AfDB to be the largest source of clean energy financing for the African continent.



AfDB, largest financier of clean energy on the African continent



Sierra Leone - Transitioning Towards Green Growth



ADF 13 - \$7.3 billion for 2014 to 2016



Dakar-Diamniadio Toll Highway Officially Open



Conclusion

- ❑ The energy needs of developed and developing economies should be met with cleaner forms of energy in order to mitigate climate change.
- ❑ Africa is in dire energy poverty and requires huge investment flows to address its energy crisis.
- ❑ Private sector investment is crucial in addition to public resources to meet the financial gap.
- ❑ Governments should continue to work on providing the enabling environment for private sector participation.
- ❑ Africa has bright prospects for renewable energy generation; existing innovative projects should be replicated and scaled-up.
- ❑ AfDB is committed to promoting renewable energy, including private sector development, through the variety of instruments at its disposal – working together with its development partners.



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