



FINANCING RENEWABLES IN AFRICA

– A Review of Funding Sources Available for Promoting Renewable Energy in Africa

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OUTLINE

UN HABITAT FOR A BETTER URBAN FUTURE

IRENA International Renewable Energy Agency

1. Introduction

2. Boosting access to modern energy services using renewables in sub-Saharan Africa

3. Main funding sources available for financing renewables in sub-Saharan Africa

4. Climate change funds as a mean to finance renewable energy

5. Conclusion and recommendations

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1. Introduction

- Africa has huge renewable energy (RE) potential.
- Some of the world's largest RE resources : **solar, wind, hydro and biomass energy**.
- Most of the sub-Saharan (SSA) countries receive about 6-8 kWh/m^2/day
- The RE resources have the potential to cover the energy needs of the continent.
- However RE investments need to be more developed to meet the development goals

ENERGY ACCESS SITUATION (1/2)

- Access to modern energy services is still low in SSA and this lack of access mostly affects rural and peri-urban populations
- More than 80% of people in SSA primarily rely on solid fuels, compared to 56% of those in developing countries as a whole
- The burning of solid fuels is causing million deaths per year (WHO) and children and women are the most affected.
- Access to Improved Cooking Stoves (ICS) is very limited. Less than 7% of people who rely on solid fuels in SSA use ICS compared to 27% in developing countries.
- Lighting: Almost 80% of the SSA population still lives in the dark.
- More than 70% of people in SSA lack access to electricity. As a consequence, peri-urban and rural communities live in dark

Key Barriers (2/2)

- Among critical barriers for achieving universal energy access are the lack of financing and the limited capacity of public institutions and the private sector to deal with clean energy.
- Unless massive efforts are made by Governments, the private sector and donors to invest in clean energy, most of the poor, particularly in peri-urban and rural areas won't improve their living conditions.
- Greater efforts should target fund raising by national institutions as well as the establishment of specific financial mechanisms at national and international level dedicated to RE promotion
- The UN Secretary General SE4All Initiative could be considered as a new and appropriate framework for the global community to finance access to modern energy services using clean energy, particularly RE.

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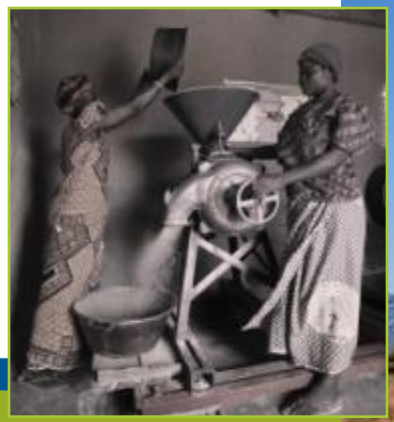

2. Boosting Access to Modern Energy Services Using Renewables in sub-Saharan Africa

RE SITUATION IN AFRICA

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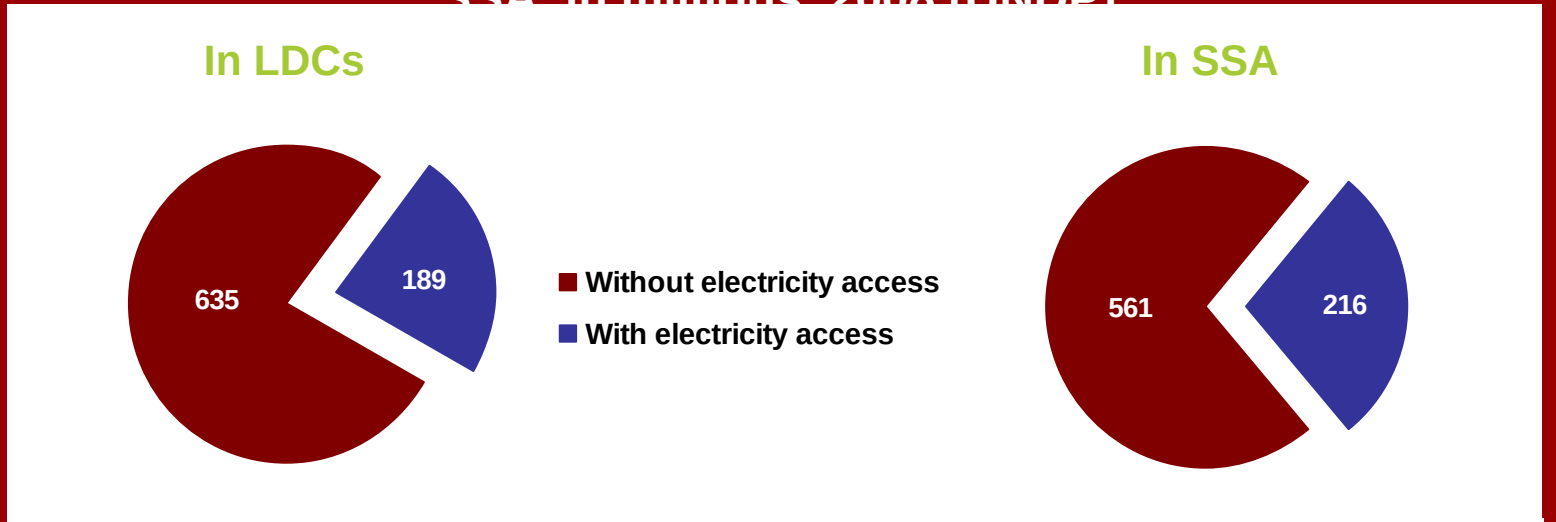
- Several African countries have adopted national targets for RE: South Africa, Egypt, Morocco, Kenya, Senegal, Madagascar, Rwanda and Mali.
- Feed-in tariffs for RE electricity generation have already been introduced in some countries (e.g. South Africa ; Kenya …)
- The following countries are developing wind farms: Morocco, Egypt, Cape Verde, South Africa, Ethiopia, Tanzania.
- Geothermal investments are increasing in the Rift Valley area of Eastern Africa, particularly in Kenya.
- The pipeline of investments in hydropower, solar PV and concentrated solar thermal, and biomass energy underlines the huge potential for a future expansion of RE across the continent.

Improving Access to Electricity through RE

- A significant number of people in SSA live without access to electricity. Promoting RE is considered as a mean to achieve electricity access, in particular in rural and peri-urban areas

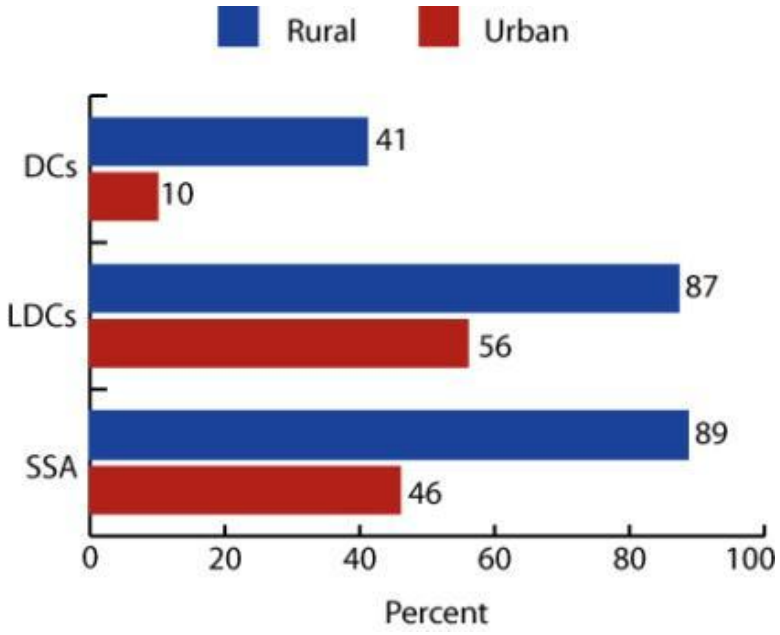
Number of people with and without electricity access in LDCs and SSA, in millions, 2008 (UNDP)



Notes: Based on UNDP's classification of developing countries and the UN's classification of LDCs. There are 50 LDCs and 45 SSA countries, with 31 countries belonging to both categories.

ACCESS TO ELECTRICITY

- In rural areas of African countries, access to electricity is considerably lower than in urban areas, particularly in SSA
- This is why Governments' efforts should address both rural and urban electricity needs for economic and social development

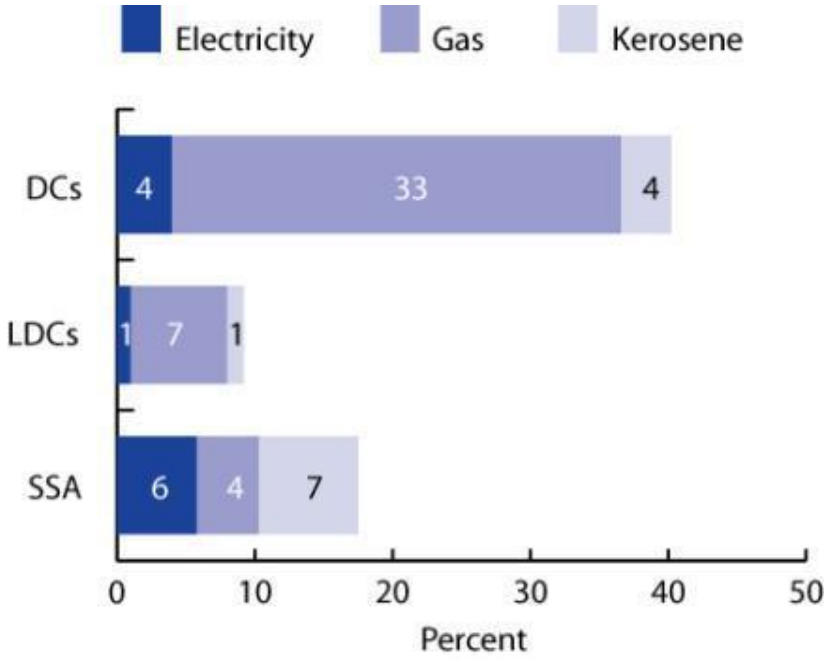


Notes: Based on UNDP's classification of developing countries and the UN's classification of LDCs. There are 50 LDCs and 45 SSA countries, with 31 countries belonging to both categories.

ACCESS TO MODERN FUELS

- Almost 1/3 of the population in developing countries uses gas, but less than 10% of people in LDCs & SSA have access to gas
- Developing biogas as well as efficient cooking stoves could be a solution for African cities

Share of population with access to different types of modern fuels in LDCs and SSA, 2008 (UNDP)

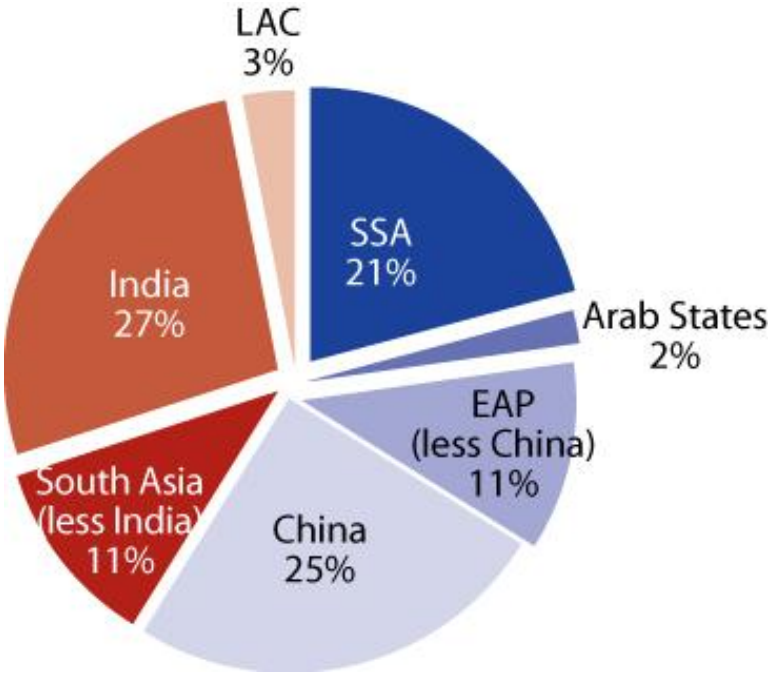


Notes: Based on UNDP's classification of developing countries and the UN's classification of LDCs. There are 50 LDCs and 45 SSA countries, of which 31 belong to both categories.

FUELS USED FOR COOKING

- The vast majority of people who rely on solid fuels for cooking are concentrated in Asia and sub-Saharan Africa

Distribution of people relying on solid fuels for cooking by developing regions, 2007 (UNDP)

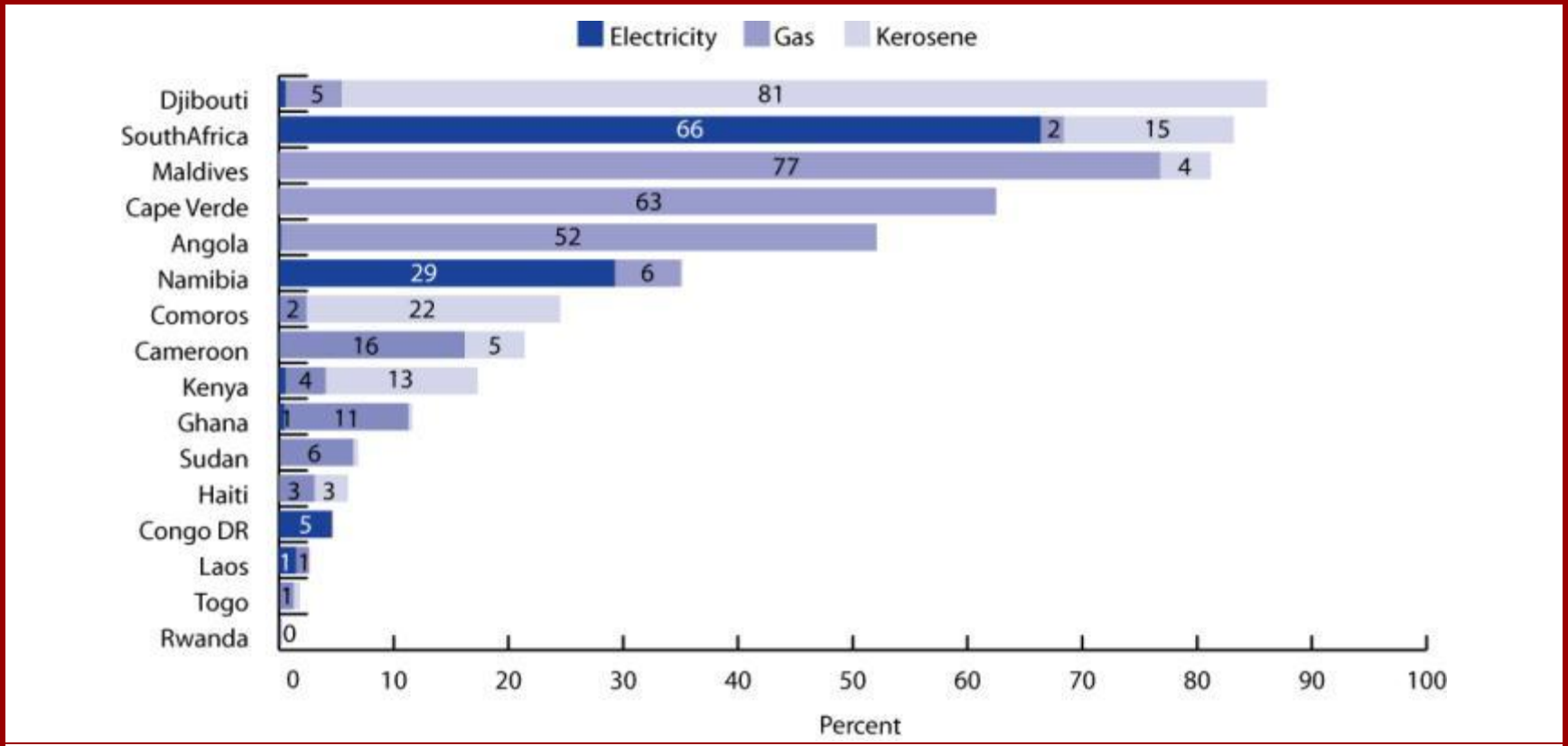


Note: Developing country regions based on UNDP's classification of countries

FUELS USED FOR COOKING

- Developing countries differ widely in their reliance on fuels used for cooking and in the types of modern fuels used

Share of population relying on different types of modern fuels for cooking for selected LDCs and SSA countries, 2007 (UNDP)

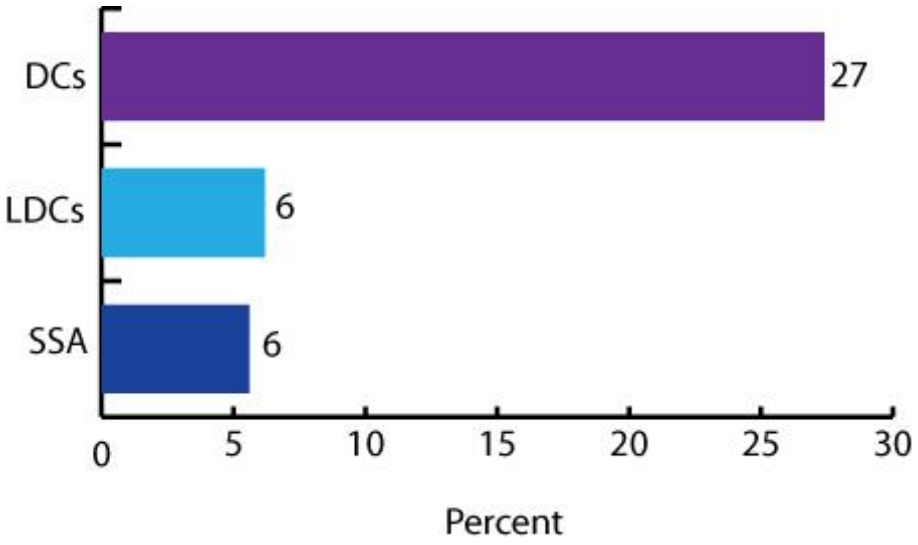


Notes: Based on UNDP's classification of developing countries, and the UN's classification of LDCs. There are 50 LDCs and 45 SSA countries, of which 31 countries belong to both categories. Gas includes natural gas, LPG, biogas, and ethanol. Kerosene includes paraffin (mainly used in Kenya and South Africa).

IMPROVED COOKING STOVES

- Fewer than 30 percent of people in developing countries who rely on solid fuels for cooking use improved cooking stoves

Share of population relying on solid fuels for cooking with access to ICS, 2007



Notes: Based on UNDP's classification of developing countries, and the UN's classification of LDCs. There are 50 LDCs and 45 SSA countries, of which 31 countries belong to both categories. Improved cooking stoves refer to closed stoves with chimney, as well as open stoves or fires with chimney or hood, but exclude open stoves or fires with no chimney or hood. Stoves used with electricity, liquid fuels, or gaseous fuels are not included.

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3. Main Funding Sources Available for Financing Renewable Energy in Sub-Saharan Africa

Financial Need to Achieve Energy Access for All

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- According to the IEA, $756 billion is needed to achieve universal access to energy or $36 billion/year in 2010-30
- In SSA, more funding has been dedicated to electricity access rather than to modern energy services as a whole
- At least, five sources of funding for Renewables:
  - Country government sources
  - Multilateral and bilateral development sources
  - Carbon financing
  - Private sector sources
  - New and upcoming innovative financing

World Bank Group and Renewable Energy Financing

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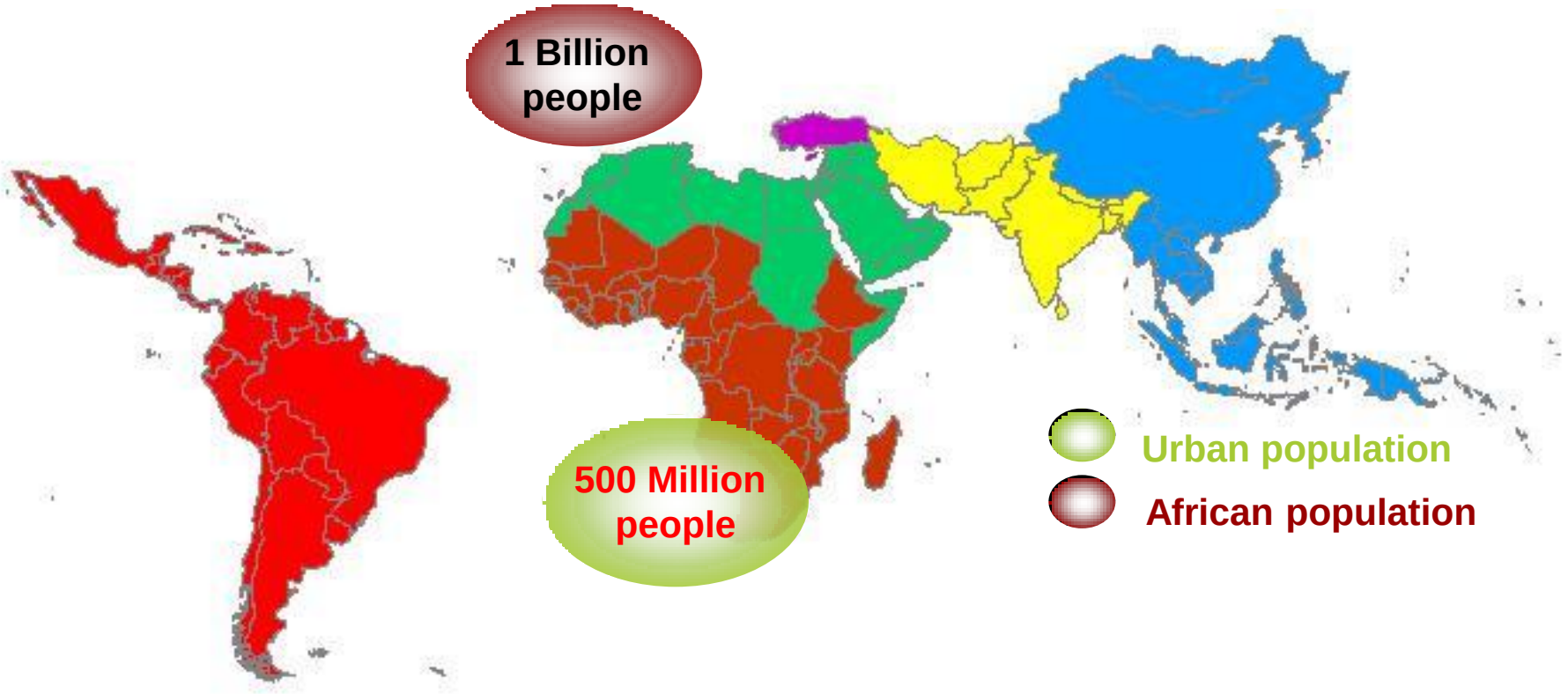
- According to the WBG, RE has the potential to transform people's living conditions in sub-Saharan Africa.
- Many countries are considering RE sources to provide affordable energy services to enhance energy security and reliability



World Bank Group and Renewable Energy Financing

- Government resources alone are inadequate to meet the large investment requirements of scaling up RE services
- Equally, private investors, in SSA countries find it risky to invest in clean energy including RE
- Therefore, mobilizing multilateral and bilateral financing institutions is vital for ensuring a sustainable development of RE market in Africa
- The World Bank Group including (IBRD; IDA, IFC;) recognizes that RE can make a significant contribution in people quality of life.

World Bank Group and Renewable Energy Financing

- The World Bank Group has established financial and non-financial instruments in support of countries' efforts for advancing clean energy including RE.
- Among these instruments are:
  - conventional lending instruments,
  - equity and quasi-equity,
  - partial risk guarantees,
  - currency,
  - commodity and interest rate risk management, and
  - Carbon finance.

World Bank Group Financing for Clean Energy

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- There has been increasing support for the implementation of the World Bank Group's Clean Energy and Development Investment Framework and Renewable Energy and Energy Efficiency Action Plan
- This Action Plan encompasses a target of a 20 percent average annual growth in RE and EE commitments
- Carbon Finance is also another avenue for the World Bank Group to encourage investment in RE and EE
- In response to demand from developing countries, WBG financing for energy projects has reached US$8.2 billion in fiscal year 2011

World Bank Group Financing for Clean Energy

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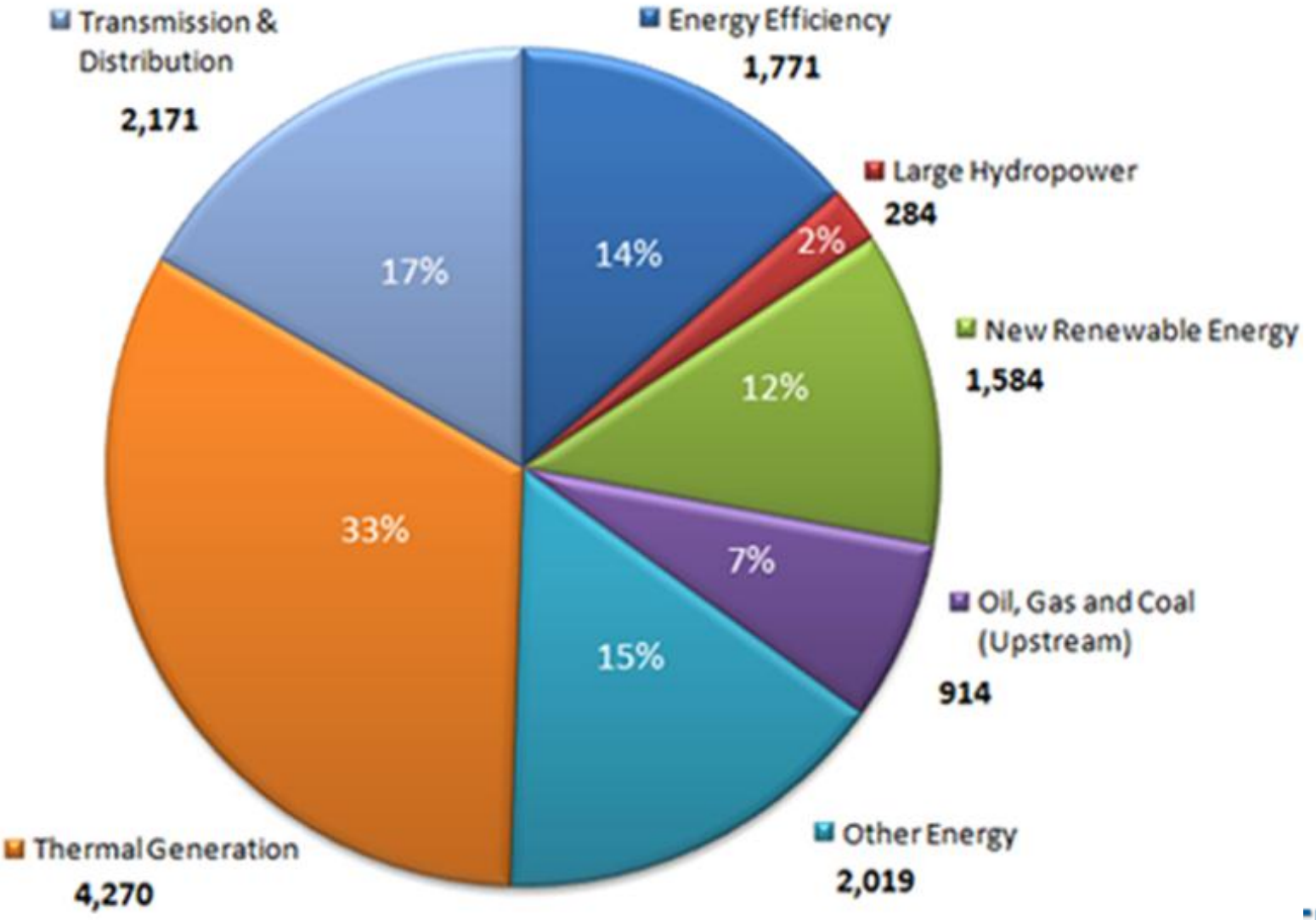
World Bank Group Energy Financing for FY10 | Figures in $US Millions



World Bank Group Financing for Clean Energy

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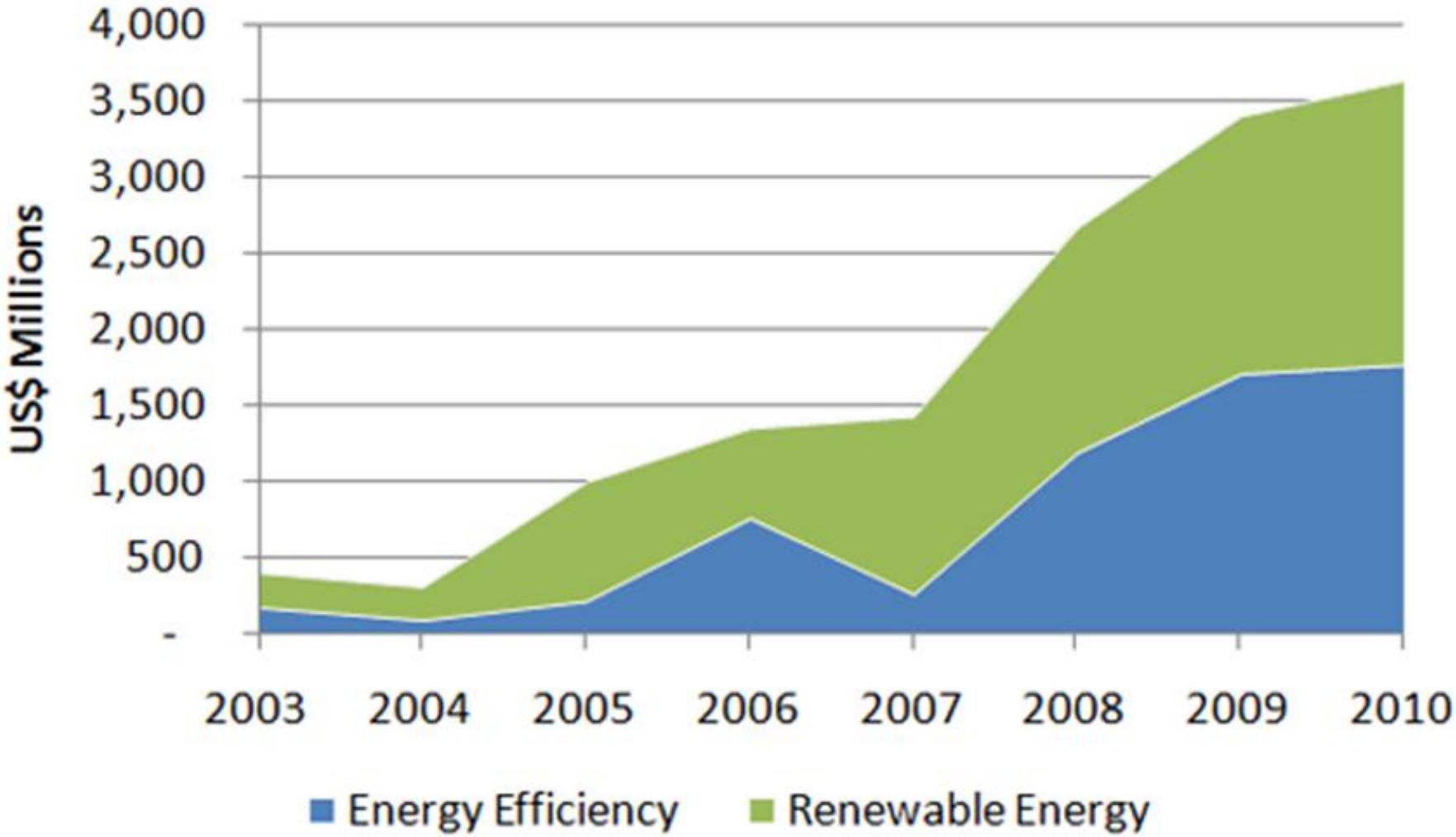
The WBG has committed more than US$11 billion to renewable energy and energy efficiency in developing countries since 1990



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- The numbers in this table were drawn from a review of WBG energy financing undertaken in 2011

Table 1: World Bank Group Energy Portfolio by Financing Source, FY2007-FY2011 (US$ Millions)

Institution	FY2007	FY2008	FY2009	FY2010	FY2011
World Bank	2,137	4,778	6,648	10,367	6,064
IBRD[1]	552	2,427	3,569	8,140	4,755
IDA[2]	1173	1,932	2,155	1,356	1,200
GEF[3]	142	125	84	19	31
CTF[4]	-	-	100	500	50
Others[5]	270	294	740	353	27
IFC[6]	1,308	2,782	1,650	2,354	1,998
MIGA[7]	417	110	33	225	119
Total Energy Financing	2,862	7,670	8,322	12,947	8,181

World Bank Group Financing for Clean Energy

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WBG Energy Portfolio by Region, FY2007-FY2011 (US$ Millions)

Region	FY2007	FY2008	FY2009	FY2010	FY2011
Sub-Saharan Africa	1,224	1,261	1,754	5,281	1,156
East Asia and the Pacific	251	1,505	1,229	990	2,116
Europe and Central Asia	518	1,194	2,295	1,182	2,384
Latin America and the Caribbean	489	1,157	801	1,948	1,331
Middle East and North Africa	368	360	806	1,050	67
South Asia	947	2,158	1,446	2,495	1,062
Multi-Region Projects[8]	65	35	-	-	64
Total Energy Financing	3,862	7,670	8,332	12,947	8,181

World Bank Group Financing for Clean Energy

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WBG Energy Portfolio by Sector, FY2007-FY2011 (US$ Millions)

Sector	FY2007	FY2008	FY2009	FY2010	FY2011
Energy Efficiency	753	1,521	1,685	1,802	1,551
Renewable Energy[9]	840	1,471	1,678	1,905	2,977
New Thermal Generation[10]	364	1,087	987	4,287	290
Other Energy[11]	717	1,015	1,702	2,019	1,783
Transmission and Distribution	458	1,650	1,204	2,208	1,397
Upstream Oil, Gas, Coal	729	972	1,076	725	182
Total Energy Financing	3,862	7,670	8,332	12,947	8,181
Total Low Carbon[12]	1,761	3,338	3,363	5,584	5,937

World Bank Group Financing for Clean Energy

- Since 2003, the Bank Group has invested about $17 billion in low-carbon projects, of which $14.2 billion have been in renewable energy and energy efficiency.
- Excluding large hydropower, renewable energy investments alone contributed $4.9 billion.
- Currently, the WBG is supporting a number of RE initiatives in cities including urban EE improvement and Lighting Africa programmes.

African Development Bank Financing for Clean Energy

- The African Development Bank (AfDB) has supported its member countries in their energy development initiatives for more than five decades.
- With growing concerns about climate change, AfDB is supporting a strong project pipeline comprised of:
  - small to large-scale wind-power projects,
  - mini, small and large hydro-power projects,
  - cogeneration power projects,
  - geothermal power projects and
  - bioenergy projects.

African Development Bank Financing for Clean Energy

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- The major priorities for the Bank include expanding the supply of low-cost environmentally clean energy and developing renewable energy to diversify power generation sources in Africa.
- The Bank supports its member countries towards developing renewable energy projects in three ways:
  - By encouraging countries to mainstream clean energy options into national development plans and energy planning.
  - By promoting investment in clean energy and energy efficiency ventures
  - By supporting the sustainable exploitation of the huge clean energy potential of the continent, while supporting the growth of a low-carbon economy.

African Development Bank Financing for Clean Energy

- In 2008, Members of the Boards of Directors review and adopted a draft of the African Development Bank Group's Clean Energy Investment Framework for Africa (CEIF)
- The Clean Energy Investment Framework aims to:
  - Increasing Access to Clean Energy
  - Support Member countries to feed the financing requirement for Clean Energy Access in Africa
  - Establish Financing Framework for Clean Energy Access

African Development Bank Financing for Clean Energy

- The African Development Bank, through its public and private sector departments, is currently implementing several clean energy projects and programs to address these priorities particularly in the energy and forestry sectors.
- The Bank's energy portfolio currently stands at about USD 2 billion.
- The AfDB provides two lending windows.
  - The first is a public window, with mostly concessional funds available to governments.
  - The second is a private window, which offers debt and equity on commercial terms.

African Development Bank Financing for Clean Energy

- Currently, the AfDB is implementing the Climate Investment Funds (CIF – 625 M USD), a pair of funds designed to help developing countries pilot transformations in clean technology, sustainable management of forests, increased energy access through renewable energy, and climate-resilient development.
- Selected examples of the CIF interventions are outlined below:
  - Burkina Faso's Investment Plan under CIFs' Forest Investment Program (FIP)
  - DRC's Investment Plan under CIFs' Forest Investment Program (FIP)
  - Egypt's Investment Plan under the CIFs' Clean Technology Fund (CTF)
  - Ethiopia's Investment Plan under CIFs' Scaling Up Renewable Energy Program in Low Income Countries (SREP)
  - Ghana's Investment Plan under CIFs' Forest Investment Program (FIP)
  - Morocco's Investment Plan under CIF's Clean Technology Fund (CTF)
  - South Africa's Investment Plan under CIFs' Clean Technology Fund (CTF)

African Development Bank Financing for Clean Energy

- Other financing mechanisms includes:
- **Sustainable Energy Fund for Africa (400 million USD)**
  - Enhancing the SME value chain for the provision of energy efficiency products and services;
  - Increasing investment in renewable energy production and distribution;
  - Increasing investment in SMEs aimed at proliferating technology, techniques and capacity for energy efficiency;
  - Increasing rural access to clean electricity in order to support the increase of employment levels;
  - Providing technical assistance and preparation costs (feasibility studies) to bring sustainable/renewable

ACP/EU Energy Facility

- **The Energy Facility is a co-financing instrument established in 2005 in order to support projects aiming to increase access to sustainable and affordable energy services for the poor living in rural and peri-urban areas in African, Caribbean and Pacific (ACP) countries.**
- **The total Energy Facility commitment of EUR420 million for the period 2006-2013 has already been partially deployed through four different implementation modalities and breaks down as follows:**
  - EUR 348 million for 3 Call for Proposals (2006, 2009, 2012);
  - EUR 40 million for the Pooling Mechanism;
  - EUR 10 million for activities in preparation of the Africa – EU Infrastructure Partnership;
  - EUR 3.5 million for the Partnership Dialogue Facility,

ACP Sustainable Energy Facility (EIB)

- EIB and IFC are cooperating to establish the ACP Sustainable Energy Facility.
- The objective of the ACP Sustainable Energy Facility is to increase the role of the private sector in financing climate change activities.
- More specifically, it aims to promote climate finance through local financial intermediaries in order to increase the financing for smaller renewable energy and energy efficiency projects.
- **Currently** the Facility is developing a portfolio of projects on a pilot basis, initially targeting Kenya, Tanzania Uganda and Rwanda.

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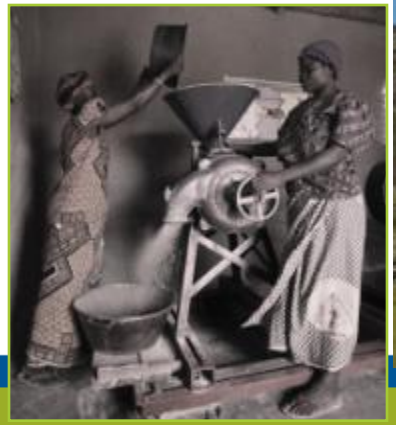
4. Climate Change Funds as a Mean for Financing Clean Energy



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Other sources of financing for RE

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CLIMATE CHANGE FUNDS available for financing renewable energy and energy efficiency initiatives are presented below:

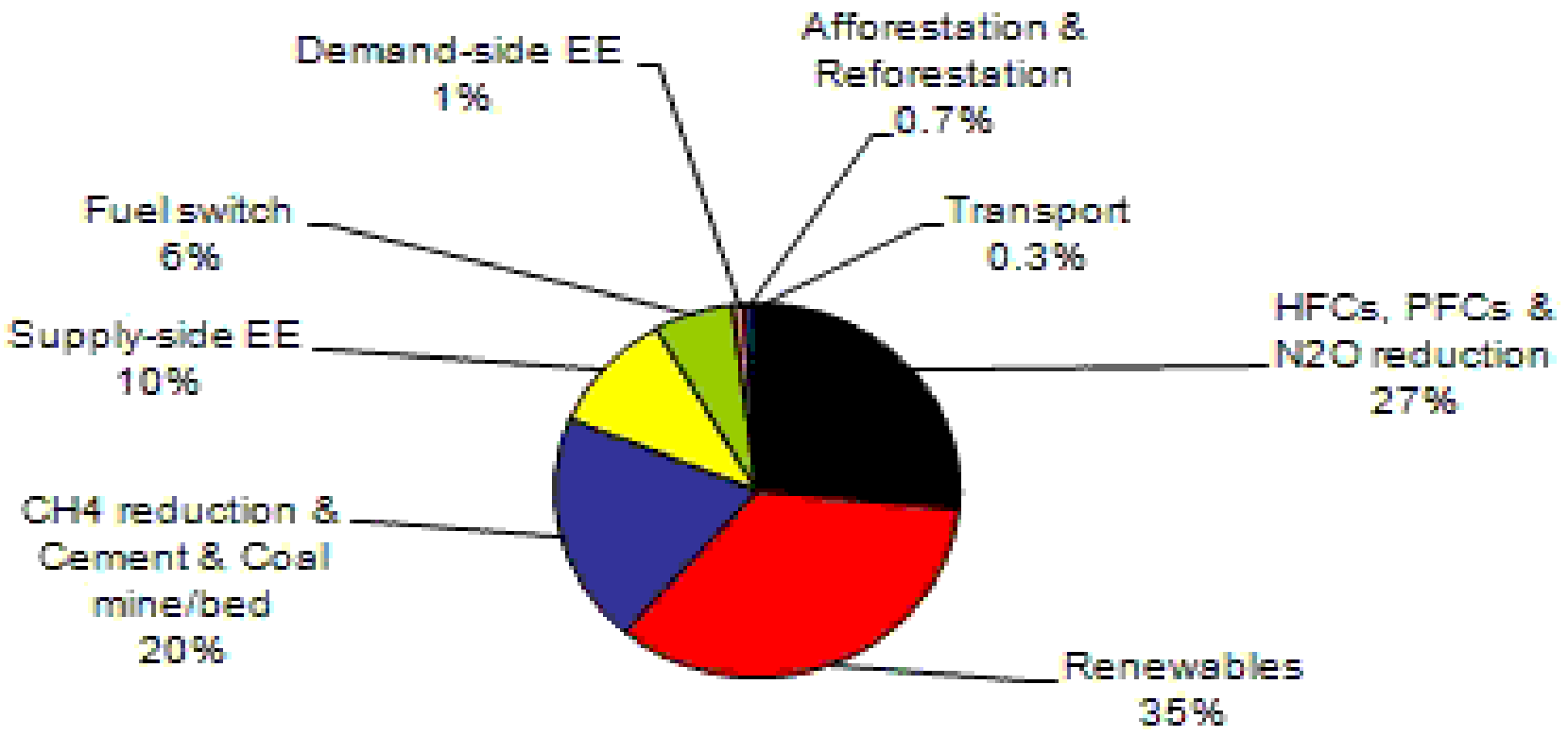
Fund name	Size of funds	Type of funding
Adaptation Fund	USD 300 - 500 mln by end 2012	Grant
Forest Carbon Partnership Facility	USD 447 mln - USD 232 mln for readiness fund and USD 215 mln for the Carbon fund	Carbon financing, Grants
Global Environment Facility Trust Fund	USD 4.2 bln incl. 1.1 bln for climate change	Grants
EU Global Climate Change Alliance	140 Euros in 2010	Grant, ODA*, Technical assistance
Hatoyama Initiative - now Japan's fast start finance	USD 15 bln	USD 11 bln – public; USD 4 bln - private fundings Grants, loans, ODA, TA, also equity financing , etc.

Fund name	Size of funds	Type of funding
International Climate Initiative	- Total of 120 mEUR per year	Grants and loans
MDG Achievement Fund	USD 89.5 mln - climate change funds	Grant, ODA
Least Developed Countries Fund	USD 10 -12 mln per LDC – incl. 48 countries	Grants, Cofinancing
Special Climate Change Fund	USD 200 mln, USD 50 mln available under Technology transfer funds	Grants, Cofinancing
Clean Technology Fund	>USD 625 mln - channeled through AfDB, total size of USD 1.9 bln	Concessional loans, limited grant, equity and subordinate debt
Strategic Climate Fund	USD 180 mln for each pilot country	Mainly loans

HIGHLIGHTS: CARBON FINANCE & RE

- Another financing mechanism for renewable energy is carbon finance.
- In Africa, particularly in SSA, the carbon market is only emerging and is still fragmented
- The market is expected to grow if NAMA projects as well as CDM programmatic approach are promoted
- EE and RE dominate number of CDM projects but are more limited on carbon credits and carbon finance can help make EE & RE projects for clean energy access financially viable
- Market value for CDM during 2008 –2012 estimated to be between $5 and $10 billion annually, potentially leveraging 5 to 10 times in core investment

CDM CREDITS EXPECTED UNTIL 2012 FROM CDM PROJECTS IN EACH SECTOR



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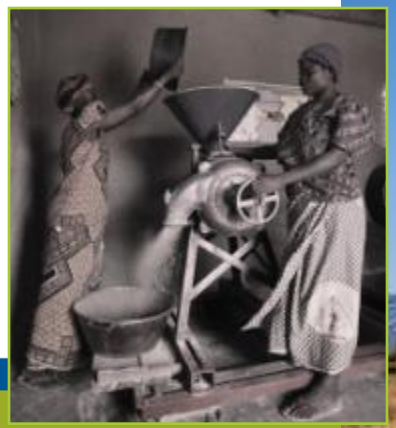

5. CONCLUSION

CONCLUSION AND RECOMMENDATIONS

- Many financing sources exist that should be used to promote universal access to modern energy services in African cities
- There is a need for IRENA and UN-Habitat, through the Roadmap, to seek political commitment for mobilizing funds for RE projects
- The Roadmap should include a specific component to develop countries' internal capacity to raise international funding
- This includes carbon financing under NAMA and other innovative financing mechanisms
- Credit lines for clean energy (RE and EE) should be reinforced at the regional level by bilateral and multilateral agencies.
- Successful credit lines for RE in SSA are the following:
  - French AFD and German KfW credit lines in Africa

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Thank you for your kind attention