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## The Imperative of Overcoming Energy Poverty in Africa

Executive Summary	2
I. Energy access and supply in Africa	3
II. Benefits of increased access	6
III. Clean energy, climate change and sustainable development	8
IV. Responding to the challenge of energy access: mobilising resources	9
V. Responding to the challenge of energy access: a plan of action	12
VI. Sector governance	13
VII. Towards a monitoring framework	13
Reference documents	15

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# The Imperative of Overcoming Energy Poverty in Africa

## Executive summary

### **Background**

1. In Africa, more than 500 million people lack access to electricity and nearly 650 million rely on traditional biomass for cooking and heating<sup>1</sup>. No modern economy has achieved sustained long-run economic growth – critical for significant poverty reduction – without significantly increasing access to modern energy services. There is now a consensus that achieving the Millennium Development Goals (MDGs) in Africa will require a significant expansion of access to modern energy.

2. The APF Progress Report on infrastructure points to mixed progress in implementing commitments in the energy sector. With population growth currently outpacing electricity access expansion and an estimated 400,000 sub-Saharan Africans dying every year from indoor air pollution, a great deal more must be done. In particular, investment in the energy sector must be scaled up significantly and rapidly if it is to contribute to meeting the MDGs. According to the International Energy Agency (IEA), electricity generation capacity, in particular, must approximately double by 2015 if there is to be hope for Africa in achieving its MDGs.

3. There is an emerging consensus that if sustained economic growth and poverty alleviation is to take hold in Africa, access to modern energy services must be improved. Yet energy issues are only recently starting to be addressed as a central component of development and poverty alleviation (*UN Millennium Project et al, 2005*).

### **Establishing commitments and/or targets**

4. The Final document on Global Energy Security of the G8 Summit in St. Petersburg highlights that it is impossible to drastically reduce general poverty, support health services, provide clean drinking water and sanitation, promote more productive agriculture and food yields, and secure investment in job-creating enterprises in developing countries without addressing the challenge of energy poverty. *The Gleneagles Plan of Action on Climate Change, Clean Energy and Sustainable Development* with the section on *Financing the Transition to Cleaner Energy* being of particular relevance and *The St. Petersburg Plan of Action Global Energy Security* set forth a plan of action for the G8.

5. At the First Conference of the African Ministries Responsible for Electrical Energy in March of this year, on the other hand, a number of commitments were made, for example; i) to include energy as a sector of focus in the priorities and national integrated energy programs, with special emphasis on universal access to modern energy, and; ii) to highlight the importance of integrating regional projects including the interconnection of electric networks, the establishment of gas and oil pipelines as well as trans-border rural electrification, and give them priority in African governments.

### **Key bottlenecks and next steps**

6. It is clear that if the energy financing gap in Africa is to be closed, all stakeholders must commit to mobilizing investment from all available sources. Whether it is public or private sources,

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<sup>1</sup> The total population of Africa is over 904 million people. (Source: United Nations, Department of Economic and Social Affairs, Population Division. *World Population Prospects, The 2004 Revision*)

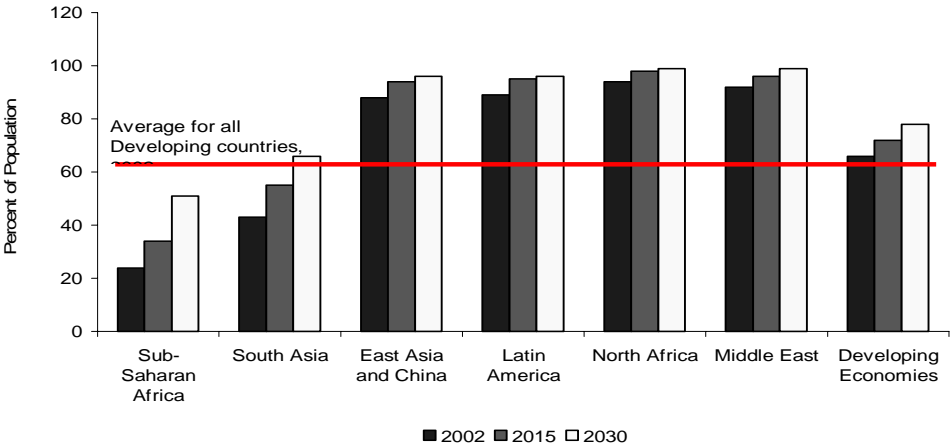
mobilizing investment will require African governments and donors to take concrete steps aimed at improving financial viability in the sector, lowering investment risks, reducing regulatory and institutional barriers to the entrance of private investors, and improving regional coordination. Donors should make commitments which recognize both emerging best practices, as well as the critical role of development assistance in speeding up project implementation, mobilizing additional investment and building local capacity in Africa. Other bottlenecks related to improving regional cooperation and governance and transparency must also be addressed by African States and regional bodies.

7. While the monitoring framework in the APF’s Progress Report on Infrastructure also applies to the energy sector, the importance and particular challenges in this sector suggest a need for specific monitoring efforts. A summary table of the suggested monitoring framework for measuring progress in overcoming some of the most critical bottlenecks is presented at the end of this document.

## I. Energy access and supply in Africa

8. More than 550 millions Africans lack access to electricity. As shown in Figure 1.1, while North Africa has achieved the highest rate of access to electricity among developing countries, the rate for sub-Saharan Africa was only 24% in 2004. In 21 sub-Saharan African (SSA) nations, less than 10% of the population can access electricity. Most striking is the fact that for the same level of average per capita income, SSA has only about 60 % of the level of electricity access of South Asia (see Figure 1.1). Access in rural areas is significantly lower.

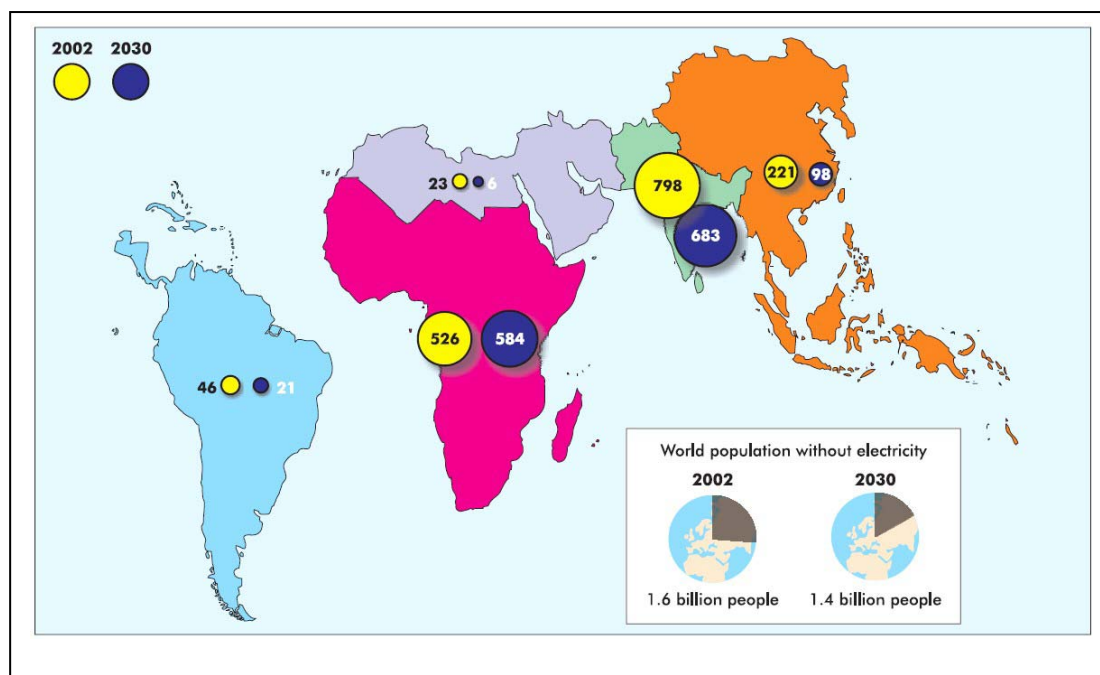
**Figure 1.1 Electrification Rates by Region**  
(%)



Source: IEA World Energy Outlook 2004, reference scenario

9. The proportion of households without electricity access is growing in SSA as the rate of new connections, currently less than 1%, lags behind the rate of new household formation at 1.9% per annum. The challenge in reversing this trend is enormous. In addition, fast population growth and rapid urbanization over the next three decades will intensify the challenge of providing electricity access.

**Figure 1.2 Global Electricity Deprivation (millions of people)**



Source: IEA, World Energy Outlook, 2004

10. Low rates of electricity access can be attributed to several factors, most notably the lack of long term power sector planning, lack of investment, low operational performance of public owned utilities, high costs and interference in the commercial operation of utilities. In most countries there are no realistic programs for improving energy services; only one-third of poverty reduction strategy papers (PRSPs) discuss energy explicitly.

11. The unit cost of producing power in many SSA countries is high, due to suboptimal system planning, low operating efficiencies and reliance on high-cost small generating units. High unit costs in generation are compounded by high unit costs in electricity distribution. Design standards for rural electrification programs have often not been optimized for areas where demand is low. As a result, service connection costs are high. Transmission and distribution technical losses experienced by electricity utilities often exceed 10%. With commercial losses (unpaid consumption) also often in excess of 10% of electricity distributed, total losses of utilities can amount to 30% or more in some cases.

12. Utilities in many SSA countries are in poor financial health. In many cases, pricing regimes are unsustainable; utilities are required to charge consumers prices that do not even recover operating and maintenance (O&M) costs, let alone the cost of capital for new investments. With every new customer further weakening their financial position, loss-making utilities are reluctant to connect additional customers. The poor financial performance of utilities means that little funding is generated from within the energy sector for electricity access.

13. On the supply side of power, while extending access to grid electricity is the overall goal, in many instances promoting more appropriate solutions can provide significant benefits at a lower cost. Examples include isolated mini-grid networks, stand-alone solar photovoltaic (PV) systems and modern liquefied petroleum gas (LPG) cooking stoves. Promoting development within the constraints of limited capital will require matching exploitable energy sources with the immediate needs of specific consumers.

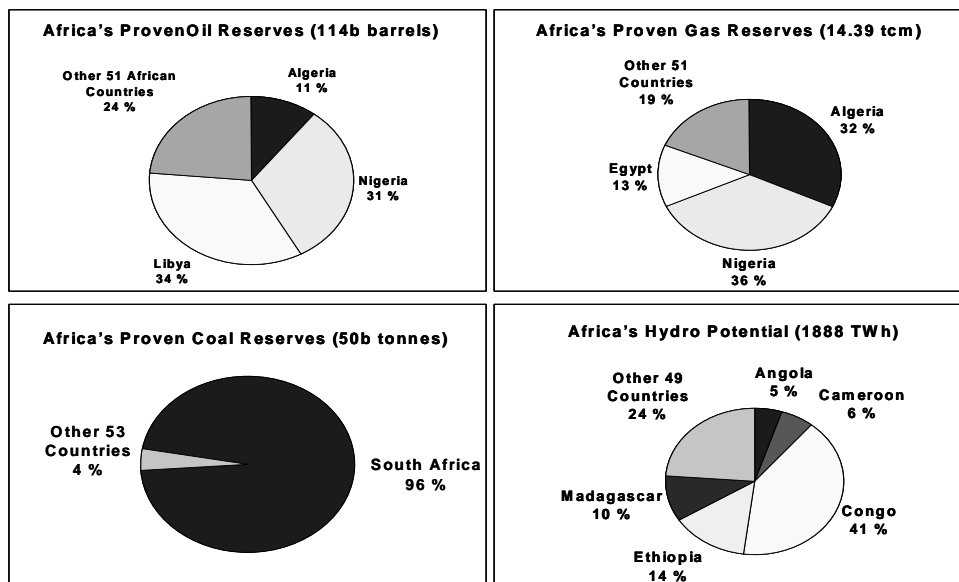
14. Although Africa's energy resource potential is vast, it is unevenly distributed across countries implying a critical role for regional cooperation and trade, especially if badly needed large scale hydro-generation is to be developed.

**Box 1.1 Africa's huge energy potential**

- Africa holds 9.5% of the world's proven oil reserves, yet contains less than 4% of its refining capacity. A large portion of new oil discoveries are in Africa. (BP 2006)
- In Western and Southern Africa, only 9% of oil production is consumed domestically, the rest is exported.
- The production to reserves ratio of coal and natural gas in Africa are the lowest in the world.
- The Democratic Republic of Congo currently utilizes less than 1% of its massive hydro potential. The corresponding figure is 4% for Angola.
- Africa produces around 7% of the world's commercial energy, but consumes only 3%.
- North and East Africa have considerable but largely untapped geothermal resources. In the Rift Valley, for example high temperatures produce an estimated potential of 9,000 MW.
- Africa's relatively un-tapped solar potential (per square meter) is surpassed only on the Arabian Peninsula, in northern Australia and northern Chile.

Source: BP (2006), African Development Bank/OECD (2004)

**Figure 1.3 Africa's uneven distribution of energy resources**



Source: BP (2006); Hydro potential from FEMA (2006)

15. Recent increases in the price of oil are expected to have particularly significant impacts on many countries in Africa (Box 1.2). Oil-importing countries in SSA are highly vulnerable to oil-price increases. They also have the highest debt/GDP ratios of all developing regions, the lowest per capita incomes, weak fiscal and current account balance positions and little or no access to global capital markets. Thus, while they are the most exposed, they also have the least resources to cope with an oil

price (supply) shock. The international community should explore their options for scaling up support during times of high energy prices.<sup>2</sup>

16. High fuel prices not only put a strain on household expenditures but can also effectively put the consumption of more efficient fuels out of reach of many poor people, thus effectively denying them access. In a sample of 43 countries<sup>3</sup>, it was found that despite much lower incomes, Africans paid an average gasoline retail price which was 20% higher than the rest of the sample. In the same sample, diesel prices were nearly 50% higher in Africa, with costly consequences for rural populations for whom diesel generators are the only viable source of electricity. (ESMAP, ECON)

#### **Box 1.2 African Economies to be hit hardest by increasing oil prices**

- ESMAP (2005) estimates that over the two year period beginning with the second half of 2003, oil price increases had led to a reduction in the GDP of net-oil-importing sub-Saharan economies by 3.5% - compared with 1% for OECD countries.
- High oil prices constitute a major hindrance to African countries achieving the annual GDP growth of 7%, which is required for halving extreme poverty by 2015.
- The AfDB estimates that if oil prices were to remain at the 2005 level instead of the 2002 average, debt relief for 14 out of 19 African HIPC oil importing countries will be smaller than the increase in the oil bill.

Source: African Development Bank (2006), IMF and OECD

## **II. Benefits of increased access**

17. There is a consensus that improving access to modern energy sources and services is a necessary (but not sufficient) condition for achieving sustained and diversified economic growth, improving livelihoods in developing countries and achieving the MDGs. Although no MDG was explicitly assigned to the issue of access to modern energy, it is of utmost importance that all stakeholders recognize its critical role in *all* aspects of Africa's economic development.

### **A. Economic growth and poverty alleviation**

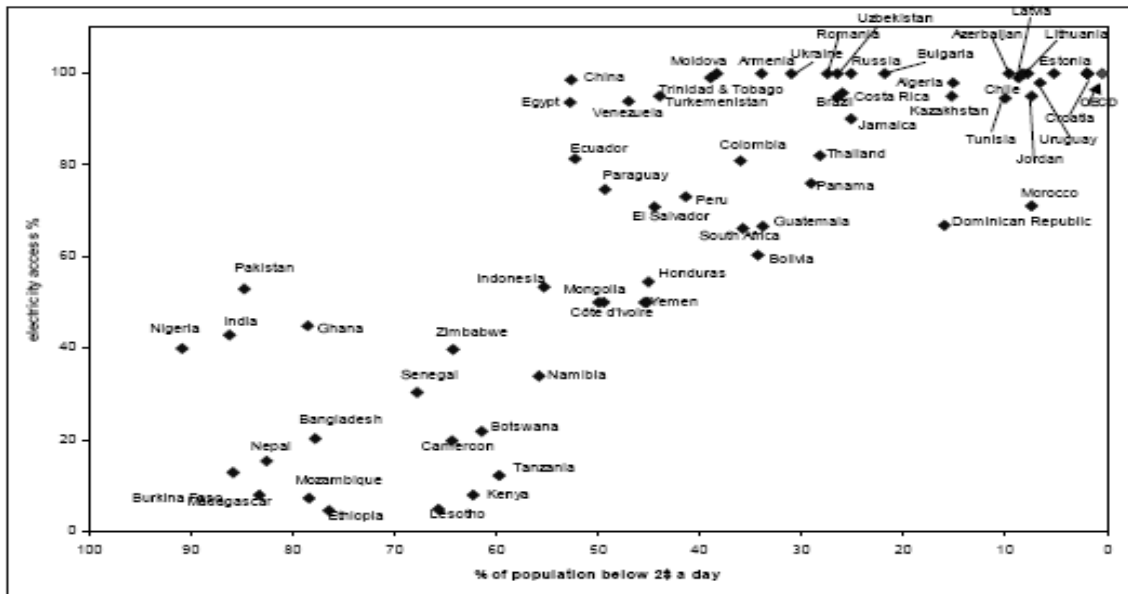
18. Improving access to modern energy is first and foremost about promoting productivity increases and broad economic development. The experiences of developed economies have demonstrated the critical role access to modern energy plays in transforming an economy, dramatically improving well-being, and increasing productivity and incomes. Indeed, no modern economy has achieved sustained long-run economic growth without significantly increasing energy consumption. This is significant, as historically, long-run economic growth has proven to be the main driver of poverty reduction in the developing world (World Bank, 2005a), explaining between 60% and 90% of cross-country variation (OECD, 2004).

19. There is evidence that investment in African energy infrastructure positively influences growth. A recent study by Moss et al (2004) in three East African countries (Uganda, Tanzania and Kenya) reveals that foreign investors are systematically more concerned with electricity than domestic investors. In addition, United Nations' Economic Commission for Africa (UNECA) (2004) found that export diversification is positively associated with per capita electricity consumption and electricity production per worker. Figure 2.1 illustrates the particularly robust linkage between electricity access and poverty rates.

<sup>2</sup> For example, in response to a call by the IMF and G8, Norway has committed more than US\$ 40 million for loans to LDCs during such periods.

<sup>3</sup> The sample included 13 sub-Saharan countries, 25 additional developing countries, and 5 developed countries.

Figure 2.1 Poverty and electricity access are robustly correlated



Source: IEA (2002)

## B. Energy and the MDGs

20. The Department for International Development (DFID) notes that “energy services can play a variety of direct and indirect roles in helping to achieve the MDGs”:

- **To halve extreme poverty** – access to energy services facilitates economic development micro-enterprise, livelihood activities beyond daylight hours, locally owned businesses, which will create employment – and assists in bridging the ‘digital divide’.
- **To reduce hunger and improve access to safe drinking water** – energy services can improve access to pumped drinking water and 95% of staple foods need cooking before they can be eaten.
- **To reduce child and maternal mortality; and to reduce diseases** – energy is a key component of a functioning health system, for example, refrigeration of vaccines and other medicines, sterilization of equipment and transport to health clinics.
- **To achieve universal primary education; and to promote gender equality and empowerment of women** – energy services reduce the time spent by women and children (especially girls) on basic survival activities (gathering firewood, fetching water, cooking, etc.); lighting permits home study, increases security and enables the use of educational media and communications in schools, including information and communication technologies.
- **Environmental sustainability** – improved energy efficiency and use of cleaner alternatives can help to achieve sustainable use of natural resources, as well as reducing emissions, which protects the local and global environment.

21. In particular, households need energy for cooking, heating and electricity for illumination and appliances. The direct health benefits of cleaner cooking and heating fuels are particularly obvious, with the WHO estimating that as many as 400,000 people die prematurely each year in SSA from the health impact of indoor air pollution. Access to electricity and lighting supports income generating activities and helps improve the quality of service delivery in schools and health clinics.

### III. Clean energy, climate change and sustainable development

22. Meeting energy needs in Africa in an environmentally sustainable manner presents an additional challenge centered primarily around 3 themes: i) access to clean cooking, heating and lighting fuels combined with sustainable forest management; ii) sustainable development of generation, and iii) adaptation to climate change.

#### A. Clean cooking fuels and forest management

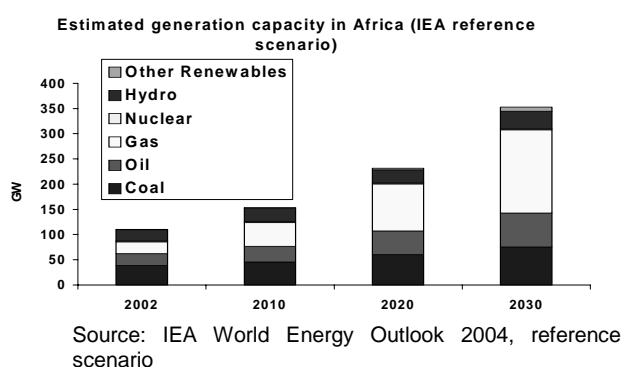
23. One key “immediate challenge” is to eliminate the negative health impacts that inadequate use of biomass fuels imposes on poor people. For the more than 600 million Africans currently relying on traditional biomass for cooking and heating, switching to kerosene, LPG or biogas will, in many cases, offer a low cost solution to reducing indoor air pollution. In addition, there are significant negative environmental consequences of an unsustainable reliance on biomass, the most severe being forest depletion. Botswana offers a number of lessons learned, where evidence points to large scale substitution from firewood to LPG<sup>4</sup>.

24. In addressing this challenge, some countries in Africa could rely on potentially important bio-fuel sources. Successful programs include those undertaken in Zimbabwe and Mauritius, where very large sugar production provides the inputs (bagasse) for 20% of electricity production. Given continuing high oil prices, bio-fuels could become much more financially attractive.

#### B. Hydro power expansion

25. As illustrated in Figure 3.1, on current trends, the IEA (2004) expects fuels and coal to account for the bulk of Africa’s increase in generation capacity and the role of hydro power to steadily decline from 20% of installed capacity in 2002 to 10% in 2030. Developing Africa’s huge hydro-power potential, of which less than 4% is currently utilized, will thus present a unique set of challenges and opportunities. Key factors inhibiting the further development of Africa’s hydro potential include: large variations in endowments across countries coupled with weak regional arrangements; insufficient financing instruments, including a reluctance by donors to back large hydro projects; lack of substantial market size (e.g. interconnection) which would allow for the exploitation of the associated economies of scale; and rigid tariff regimes which prevent the development of small-scale hydro-schemes which would otherwise be profitable.

Figure 3.1 Development of Africa’s generation mix



26. It is expected that currently available international financial instruments are not sufficient to lead to a meaningful transition to a low carbon economy<sup>5</sup>. Given that reducing the carbon intensity of African economies would provide a global benefit, the international community must play an

<sup>4</sup> The UNDP’s Rural LPG Challenge represents an initiative to overcome institutional, infrastructural and technological constraints in pilot countries, aiming to attain sustainable markets, which will prove critical for the success of the current rollout program to other African countries.

<sup>5</sup> The World Bank. “Progress Report of an Investment Framework for Clean Energy and Development” (2006).

important role in providing financing and economic incentives, as well as buying down the incremental costs associated with this transition.

## **C. Adapting to climate change**

27. The Intergovernmental Panel on Climate Change (IPCC) predicts that, “the effects of climate change are expected to be greatest in developing countries in terms of loss of life and relative effects on investment and economy.” Estimates as to the expected economic impact vary widely, but the IPCC describes Africa, as “the continent most vulnerable to the impacts of projected change because widespread poverty limits adaptation capabilities”. The failure to effectively address increasingly severe weather patterns and climate variability in development assistance strategies and programs is a major threat to poverty alleviation, and calls for additional ODA to compensate for increased development costs.

## **IV. Responding to the challenge of energy access: mobilizing resources**

28. The International Energy Agency’s (IEA) Reference Scenario estimates that energy sector investment needs in SSA would need to average US\$20 billion per annum if access rates are to increase from 24% in 2004 to 51% by 2030. However, this scenario assumes that 600 million people in sub-Saharan Africa will still lack electricity access in 2030, a slight increase from the number of people currently deprived of energy.

29. In addition to new investment, there is a growing need for rehabilitation, operation and maintenance financing in order to ensure more efficient and effective use of existing infrastructure. Estimates of annual operation and maintenance (O&M) costs for Africa’s entire infrastructure stock will account for 40 – 50% of total investment needs. In particular, in extreme cases of technical losses--up to 40-50% in countries such as Angola and Nigeria--, the lack of O&M resources significantly increases the cost of electricity, resulting in higher prices and weak or no incentives for new investment, both having negative effects on the poor.

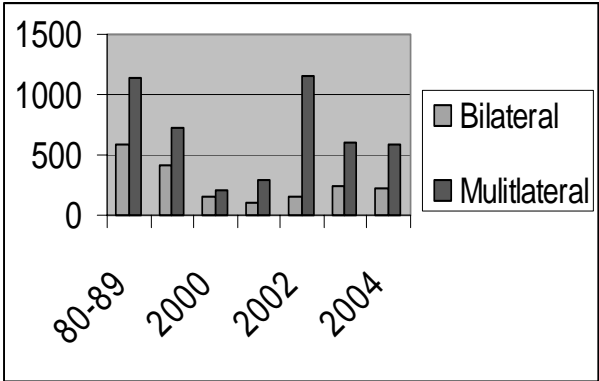
30. Filling the financing gap in Africa will be particularly challenging. The World Bank (2006a) estimates that annual investment needs over the next two decades in the energy sector in Africa will total approximately 50% of the continent’s total domestic annual savings, implying an important role for external sources from both private and public sources. However, this would clearly require that all stakeholders commit to mobilizing all available sources. The enormous challenge of energy access in sub-Saharan Africa and other low-income countries with very low access rates requires a range of financing mechanisms – combining public-sector financing, private-sector financing (equity, debt, and self-financing from revenues), and community and end users’ contributions – in order to ensure that electrification programs become viable and can result in large increases in household access.

31. Given the very large financing gap, mobilizing additional resources can only partially address the problem of low energy access in sub-Saharan Africa. Other complementary measures will be needed. First, getting the sector policy framework right, as will be discussed in section VII of this paper under sector governance, is critical in attracting foreign and domestic investors who could play an important role in reducing the electricity financing gap. Second, increasing support for energy efficiency is essential to meet growing demand while keeping the financing gap manageable. Third, joint investments in regional projects that generate trade across countries can significantly reduce the volume of incremental investment needs at individual country levels. Fourth, subsidies will likely be necessary in order to reach the poor in low-income countries, particularly those residing in remote rural areas will most likely need subsidies. If subsidies are needed, they should be transparent, targeted and focused on the demand side. A clear accountability system will be important to attract private investment.

### A. Development assistance

32. In most countries in sub-Saharan Africa, donor assistance will continue to play a critical role in mobilizing greater investment in energy. Resource flows from official sources for the energy sector averaged just under US\$645 million per annum since 1990 or about only 3 percent of total development aid. Multilateral development agencies provided the bulk of the flows but both bilateral and multilateral support experienced significant volatility in resources flows, resulting in a “stop and go” pattern. Average ODA flows to the sector since 2000 are only a little more than half of average flows in the 1980s, but there has been a substantial increase compared to the lows of the early 2000s.

Figure 4.1 ODA Resources for Energy Sector (US\$ millions)



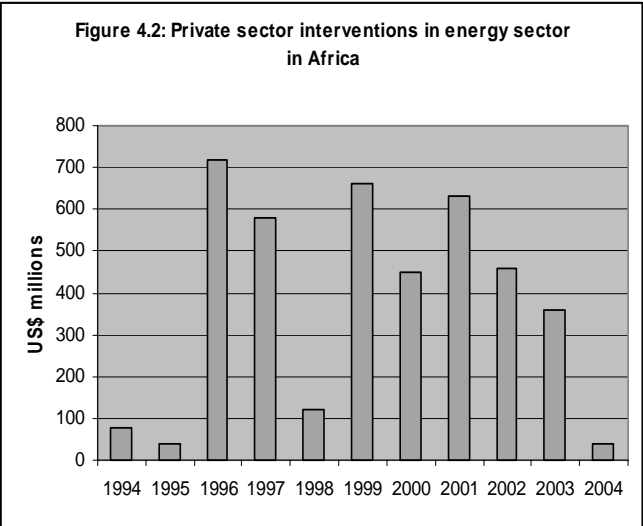
Source: OECD-DAC and World Bank.

33. Substantial increases in grant and concessional funding will be required to achieve significantly enhanced energy access in low-income countries of Africa. In these countries, high risk factors and a weak policy framework effectively limit private funding, while governments’ low resource mobilization capacity and utilities’ weak financial performance constrains other sources of domestic funding. The World Bank will work jointly with the African Development Bank and the Africa Infrastructure Consortium to mobilize additional concessional resources.

34. Alongside traditional donors, the Chinese government has emerged as a major new financier of infrastructure in sub-Saharan Africa, providing loans amounting to around US\$2 billion per annum in 2004/5 and increasing rapidly. This is substantial when compared with ODA and PPI commitments over the same time period. Chinese support is highly concentrated in five countries: Angola, Nigeria, Mozambique, Sudan and Zimbabwe, with support to the power sector making up about 40 percent of total commitments.

### B. Private investment

35. Attracting greater private sector investment is of critical importance if the future energy financing gap is to be closed. The private sector’s financial contribution to improved energy access in SSA, both in terms of capital invested and payments made to governments (such as divestiture and concession fees) has been disappointing. Private investment in Africa is much lower than any other region, accounting for a mere 3 percent of global investment in new private energy projects since 1990 and has averaged just under US\$360 million per annum from 1994 to 2004 (Figure 4.2). This investment has been for 5,000 MW of new installed capacity (of which 45% gas fired, 35% coal fired and 10% hydro power). However, half of this investment went to just five countries: Nigeria, Ghana, Tanzania, Mali and Cote d’Ivoire and in recent years private sector investment has fallen. Nevertheless, according to preliminary figures from the World Bank Private Participation in Infrastructure (PPI),



Source : World Bank PPI Database

there has been a major rebound of PPI volumes in 2005 with the bulk of the resources flowing into the telecom and energy sectors.

36. The key bottlenecks identified to promote private investments in the energy sector in Africa include: (i) significant transaction costs facing private sector looking to invest in the sector; ii) inadequate up-stream start-up capital; and (iii) lack of dissemination of project information to investors. To address these bottlenecks, some of the steps for consideration include: moving towards a more flexible regulatory framework, which is conducive to greater small-scale private sector involvement; grant financing for project preparation and risk guarantees; producing investment ‘guidebooks’ for prospective private investors; and promoting project packages to private sector through updated project databases and active dissemination to private investors in donor countries.

### C. Domestic public resources

37. Experiences with successful access expansion, especially in Asia, point to a critical role for the state in terms of planning and policies – and also for financing. Further, there is now a consensus that mobilizing investment and increasing access in Africa will require drawing on a growing number of successful experiences with innovative public-private partnerships. Irrespective of the form of these partnerships, arresting and/or reversing the downward trend in the percentage of GDP spent on infrastructure<sup>6</sup> is critical if governments are to mobilize additional investment, demonstrate local ownership of reforms and projects, and achieve social objectives (e.g. rural electrification).

38. A number of countries are already realizing the benefits of and/or currently implementing a so-called Rural Electrification Fund – a locally managed unit aimed at co-ordinating public and private funds in the electricity sector. In addition, in a handful of countries high commodity prices offer the potential for significant investment in infrastructure. Algeria, for example has committed to use revenue from oil and gas to expand transport infrastructure. Pilot studies in East Africa, done in the context of the on-going Africa Infrastructure Country Diagnostic (AICD) implemented by the World Bank in collaboration with AU/NEPAD, AfDB and RECs, suggest that (domestic) public spending on infrastructure is quite substantial when budget, state-owned enterprises, special funds, and sub-national resources are fully accounted for.

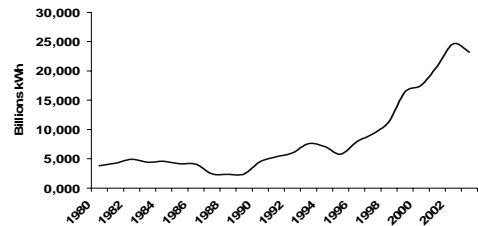
### D. Regional cooperation and trade

39. Given the huge infrastructure needs in Africa, particularly in generation, and the uneven distribution of resources in Africa, regional cooperation and trade offers the potential for reducing the unit costs of improving access to energy, thereby diminishing the financing gap. Energy trade allows for the benefits of economies of scale and risk sharing, both of which represent critical steps towards greater utilization of hydropower in Africa. In fact, energy trade through regional cooperation has become increasingly important in Africa (Figure 4.3). In fact, all RECs have established or are in the process of establishing regional power-pools, with those of Western Africa (WAPP) and Southern Africa (SAPP) being most advanced. In addition, there are emerging examples of cross-border oil and gas pipeline projects (e.g. South Africa-Mozambique, Chad-Cameroon and West African Gas Pipeline) from which lessons can be drawn.

40. To facilitate the development of regional projects, continued progress must be made on four fronts:

- i. clarify and formalize regional protocols and division of responsibilities and further increase in funding and technical support for project preparation activities (e.g. feasibility studies and state-to-state coordination/negotiations);

**Figure 4.3: Twenty-five years of electricity trade in Africa (total regional imports)**



Source: IEA World Energy Outlook 2004, reference scenario

<sup>6</sup> According to a FEMA (2006) analysis, public expenditures on infrastructure in Africa have steadily declined from 4,2% of total outlays in the early 80's to less than 2% in recent years.

- i. strengthen regional capacity and resources for project preparation and negotiations;
- ii. cooperation and planning among the various regional organizations or RECs; and
- iii. enhance government ownership of regional initiatives/projects.

## **E. Funding from within the sector**

41. Lessons from the experience of other countries show that internal generation of cash (after meeting all operational expenses and debt service) that are adequate to meet at least 30 percent of the investment requirements of the system expansion has usually led to utilities generally managing to meet the remaining investment needs through debt financing or through the purchase of services from private suppliers. In many African countries, revenues fall well short of cost, severely limiting utilities' new investments. Steps taken towards greater cost recovery in the sector are critical in mobilizing both public and private investment. South Africa and Thailand are two examples where significant steps towards greater cost recovery have been decisive in generating investment consistent with a long term, sustainable increase in electricity access with a strong role for the state but without draining public budgets.

## **V. Responding to the challenge of energy access: a plan of action**

42. While top-down macroeconomic estimates of the type discussed above by the IEA and other institutions provide a useful reference point as a gauge of investment needs, they do not constitute an investment plan of the region. At present, there is no comprehensive bottom-up assessment of investment requirements in each of the main infrastructure sectors, including energy. A major research project financed by donors and implemented by the World Bank aims to fill this information gap by more systematically estimating investment needs for infrastructure with country information (available in mid-2007).

43. In view of the urgent challenge to increase energy access to low-income countries of Africa, concrete country-specific actions are needed. The World Bank, the African Development Bank, the Infrastructure Consortium for Africa and bilateral donors are in the process of elaborating a plan of action to support countries. By "unbundling" energy needs, including the need to have access to clean cooking, heating and lighting fuels, support to countries will follow a five track approach including:

- i. scaled-up programs of household electrification (with better integration of mini-grid and off-grid electricity options to complement grid-based approaches);
- ii. additional generation capacity (including regional projects) to serve newly connected households and demand from enterprises, public facilities and other users;
- iii. provision of energy services for key public facilities such as schools and clinics;
- iv. provision of stand-alone lighting packages for households without electricity service;
- v. access to clean cooking, heating and lighting fuels.

44. Depending on country readiness in terms of key building blocks (most importantly the availability of overall planning and programming for energy sector development, institutional capacity, and past policy and regulatory reforms), the interventions will range from a comprehensive coverage of the five tracks mentioned above for about eight to ten most prepared countries to partial intervention covering selected tracks for others. Where all building blocks are still missing, helping countries to acquire them will be a priority for development partner assistance. Progress in moving forward with ambitious and well-conceived plans for the energy sector across Africa are important: a key challenge now is for African countries and development partners to commit additional resources for critical energy projects.

## **VI. Sector governance**

45. Financing of energy needs will require the political will to undertake sector reform, and to support good governance, the rule of law, and effective pricing. Efficiency improvements (both on the supply and demand-sides), demand management, improved planning and operation, and increased electricity trade could be used to help bridge the supply-demand gap. Several African countries, however, face important challenges in improving sector governance because of institutional capacity constraints, weak policy agendas, pricing anomalies or barriers to entry. Lessons accumulated from developing countries experiences learned are summarized below.

- Demonstrable country ownership and harmonized efforts through Poverty Reduction Strategy Papers (PRSPs) will be key to scaling-up energy access programs;
- The rule of law and enforcement of property and contract rights needs to be established;
- Good governance and transparency are necessary to make the sector financially sound and attract foreign and domestic investors to meet sector investment needs;
- Advocacy and reform forces (such as World Trade Organisation accession, European Union trade relations, development partners, and the local press) can stimulate reforming countries to pursue further sector reforms;
- Demand management through electricity trade across countries and joint investments can significantly reduce the volume of investment needs.
- Increased support for energy efficiency is essential to meet growing demands in a sustainable manner. Electricity trade can reduce the high cost of electricity in small systems;
- Increased private sector participation can increase demand for good sector governance. Private investor participation in the electricity sector often positively influences the quality and sophistication of governance (e.g., demand for contractual and legal rights, etc.).

46. A scorecard of country performance, drawing on the lessons learned, could facilitate investment and help guide the use of risk mitigation instruments. The lessons and examples should be accompanied by a toolkit to help guide countries seeking to implement reforms. A reporting system that identifies well-performing countries or sub national entities could be designed to facilitate private sector participation.

## **VII. Toward a monitoring framework**

47. Table 7.1 builds on the monitoring framework already established for infrastructure development in Africa and provides a summary of some additional bottlenecks and next steps which are particularly critical to expanding access to modern energy in Africa. The table also presents preliminary suggestions as to potential indicators.

**Table 7.1 Possible monitoring framework for improving energy provision and access**

<b>KEY MONITORING ISSUE</b>	<b>BOTTLENECK</b>	<b>NEXT STEPS</b>	<b>RESPONSIBILITY</b>	<b>SUGGESTED INDICATORS</b>
Clean energy, climate change and sustainable development	Present instruments and financing are not adequate for addressing needs.	Explore options to make various existing instruments such as CDM and GEF more accessible to small-scale projects; scale up relevant funding; and clarify the post 2012 carbon finance framework.	Development partners	Share of hydro power in overall generation. Implementation of small-scale projects using carbon financing.
	Lack access to clean cooking, heating and lighting fuels	Integrate issues related to access to cleaner fuels and more particularly hydro power where applicable (and sustainable forest management) into energy development strategies and PRSPs. Scale up concessional financing.	African States	Assessment of energy development strategies/PRSPs. Assessment of development partner commitments.
	Weak electricity sector framework	Implement reforms and programs needed to encourage system expansion by both public and private sectors.	African States	Profitability of utility
	Significant transaction costs facing private sector looking to invest in sector	Commit to flexible regulatory framework, especially vis-à-vis small-scale providers. Produce 'guidebooks' for potential investors in energy sector.	African States (with development partner assistance)	Trend in private participation in infrastructure (World Bank PPI database).
Mobilizing investment and expanding access to electricity	Lack of strong country ownership of scaled-up energy access programs	Fully integrate energy access programs in PRSPs; establish ambitious but realistic national energy plans; increase use of domestic financing.	African States	Review of PRSPs and national energy plans.
	Lack of up-stream/start-up resources and weak capacity for project preparation	Increase financing for project preparation and risk guarantees. Particular focus on regional projects; strengthen capacity of national/regional organizations.	African States/ Development partners	Financing of IPPF and RECs; capacity support activities.
	Lack of predictability and harmonization of aid	Transition from project-based energy support to coordinated country and regional investment programs.	Development partners	Qualitative assessment by RECs
	Lack of dissemination of project information to investors	Promote project packages to private sector through updated project databases and active dissemination to private investors in donor countries.	RECs, NEPAD, Development partners	Utilization of NEPAD and new databases/forums
Regional Cooperation	Insufficient attention to energy efficiency	Emphasize energy efficiency and demand management measures.	African States	Technical losses.
	Lack of government ownership/follow-up of regional projects	Develop protocols for regional project development which assigns greater responsibility to REC member states.	NEPAD, RECs	Review of REC protocols
	Lack of regional capacity and resources	Enhance national ownership of regional initiatives.	African States	Review of country programs
Governance and Transparency	Not sufficient attention to energy trade	Encourage cross-border trade of energy where applicable.	African States	Energy trade data
	Mixed progress on carrying out needed sector reforms	Promote enabling policy environment conducive to private investment. Implement monitoring systems for agreed principles (under APRM).	African States	WB "Doing Business" monitoring system
	Mixed progress in sustainable use of windfall gains from high energy prices.	Commit to the principles of the Extractive Industries Transparency Initiative and integrate the management of resource revenues into the APRM.	African States, NEPAD	Signatories of EITI; APRM qualitative assessment

## Reference documents

- African Development Bank (2006): "High Oil Prices and the African Economy." Concept Paper.
- African Development Bank and OECD Development Centre (2006): African Economic Outlook 2005/2006.
- BP (2006): Global Statistical Review of World Energy. June. Online.  
<http://www.bp.com/sectiongenericarticle.do?categoryId=9009492&contentId=7017959>
- DFID (2002): *Energy for the poor: Underpinning the Millennium Development Goals*.  
Online.<http://www.dfid.gov.uk/pubs/files/energyforthepeer.pdf#search=%22dfid%2C%20energy%2C%20poor%22>
- ESMAP (2005) "The Vulnerability of African Countries to Oil Price Shocks: Major Factors and Policy Options: The Case of Oil Importing Countries." Report 308/05.
- Estache, A. (2005): "What do we know about Sub-Saharan Africa Infrastructure and the Impact of its 1990's Reform." Working Paper. World Bank.
- Final Document on Global Energy Security, G8 St. Petersburg Summit, July 16, 2006.
- Forum of Energy Ministers of Africa (2006): "Energy and the Millenium Development Goals in Africa."
- G8 Finance Ministers Statement on Access to Energy Services for the Millenium Development Goals. St. Petersburg, June 9-10, 2006.
- IEA (2004): *World Energy Outlook 2004*, OECD/IEA, Paris.
- IEA (2002): World Energy Outlook. Chapter 13; Energy and Poverty. Online.  
<http://www.iea.org/textbase/nppdf/free/2000/weo2002.pdf>
- Kauffmann C., N.Pinaud and L.Wegner (2006): *African Economic Outlook 2006. A two-speed Continent?*, OECD Development Centre Policy Insight #22.
- Moss, T.J., V. Ramachandran and M.K. Shah (2004), "Is Africa's skepticism of Foreign Capital Justified? Evidence form East African Firm Survey Data", Center for Global Development, Working Paper Number 41
- NEPAD's *Infrastructure Short-term Action Plan*:  
<http://www.nepad.org/2005/files/documents/112.pdf>
- OECD (2004): *Accelerating Pro-Poor Growth through Support for Private Sector Development*. OECD, Paris.
- UNDP (2005a): "Energizing the Millennium Development Goals: A Guide to Energy's Role in Reducing Poverty." Online. [http://www.undp.org/energy/docs2/ENRG-MDG\\_Guide\\_all.pdf](http://www.undp.org/energy/docs2/ENRG-MDG_Guide_all.pdf).

United Nations Economic Commission for Africa (2004). Economic Report on Africa: Unlocking Africa's Trade Potential. Chapter 4: Poor Energy Infrastructure Hobbles Export Diversification. Online.

UN Millennium Project, UNDP, World Bank and ESMAP (2005) *Energy Services for the Millennium Development Goals*,

World Bank (2005a): *World Development Report 2006: Equity and Development*. Washington, DC.

World Bank (2006a): "Energy Poverty Issues." Presented in Moscow February 2nd.

World Bank (2006b): "An Investment Framework for Clean Energy and Development: A Progress Report."