

## **Implementing the Action Plan for Energy Access Scale –Up in Africa**

### **ESMAP Activity P103456**

#### **Final Report – June 2009**

### **Introduction**

1. As instructed by the Development Committee in September 2005, the Bank developed a Clean Energy Investment Framework (CEIF) that comprised three pillars: access to energy, accelerating the transition to a low carbon economy, and adaptation to climate change. The World Bank Board paper *An Investment Framework for Clean Energy and Development – a Progress Report* in September '06 formally presented an *Action Plan for Energy Access in Sub-Saharan Africa* (incorporated as Pillar I of the Framework). The document was discussed by the Development Committee in April 2007 and endorsed by the Committee at the World Bank / IMF Annual Meetings in Singapore September '06 Discussion and endorsement by the Development Committee. The Action Plan has the target of increasing the percentage of households with electricity access in sub-Saharan Africa from 25% in 2005 to 35% in 2015 and 47% by 2030. The Plan noted that this target is feasible if countries improve their sector policies and implementation capacity and concessional financing doubles from US\$2 billion to US\$4 billion annually.

2. The Action Plan emphasizes the importance of country leadership in developing national energy sector strategies, as well as the need for harmonization, alignment and coordination of donor support in line with the principles of partnership set out in the 2005 Paris Declaration on Aid Effectiveness. The Plan notes that enhancement of government's oversight and regulatory role will be key and it emphasizes the role of the private sector both as a source of investment and for its technical and managerial know-how. Improved governance and private sector participation are both needed in bringing about efficiency improvements in the energy sector.

3. The Plan identifies five parallel tracks of implementation:
- (a) scaled-up programs of household electrification
  - (b) generation capacity addition (including regional interconnection);
  - (c) electrification of public facilities such as schools and clinics;
  - (d) off-grid lighting for poor households;
  - (e) cleaner cooking and heating fuels.

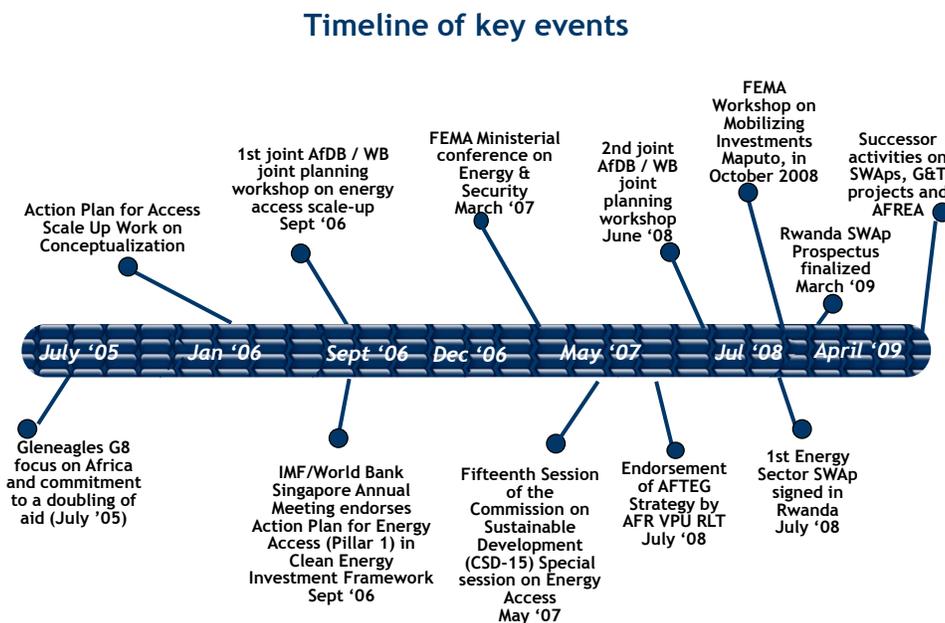
### **Scope of the ESMAP activity (and list of sub-activities )**

4. The ESMAP activity *Implementing the Action Plan for Energy Access Scale –Up in Africa* (P103456) was designed to provide impetus in operationalization and was composed of the following sub-activities:

- develop and communicate the conceptual framework for energy access scale up;
- support the outreach efforts of Africa’s energy policy makers through the Forum of Energy Ministers in Africa (FEMA);
- inception of preparation of “transformative” regional generation and transmission projects
- development of Sector-Wide Approach (SWAs)
- pilot use of spatial geo reference analysis (GIS) tools for electrification in Kenya and Senegal.

5. The activity was initiated commenced in September 2006 and concluded on June 19, 2009 (c.f. Annex 1). The timeline presented in Figure 1 provides a schematic of key outputs. The various sub-activities undertaken as part of the umbrella ESMAP activity are presented in greater detail in the following pages.

**Fig. 1 Implementing the Action Plan for Energy Access Scale -up**



**Sub-activity 1: Develop & communicate the conceptual framework for energy access scale up (incl. consultation with partners)**

6. Strategy formulation involved: a stocktaking of experience to date of power sector development in Africa; estimation of trends in energy supply and demand and of the financing gap to meet electrification targets for households and for economic growth; diagnosis of individual countries policy and institutional environment to undertake large system expansion; an assessment of the World Bank’s comparative advantage to increase its involvement allied with a staffing plan for implementation. The results of this analytical work<sup>1</sup> are detailed in Annex 1 of the fore referenced *An Investment Framework for Clean Energy and Development – A Progress Report, September 2006*.

7. The Bank has engaged with donors and partner government to build support for the Action Plan and in particular to mobilize additional financial resources from donors for specific investment projects. The Bank’s Africa Energy group (AFTEG) has consulted widely on the Action Plan - both internally (IFC, MIGA, PREM) & externally (Regional Economic Commissions, regional Power Pools, AU/NEPAD, Infrastructure Consortium for Africa (ICA), donors and new financiers).

8. Key fora at which the Action Plan was presented, discussed and inputs received are set out in Table 1.

<b>Table 1</b>	
World Bank internal discussions July '06 – August '06	Internal World Bank consensus building around the conceptual approach for new strategic framework for donor cooperation in the energy sector in Africa. Outputs included briefings and presentations for senior World Bank staff.
Joint World Bank AfDB staff retreats September '06 and June 2008	A seven member Africa energy unit (AFTEG) team visited Tunis in September '06 for a joint World Bank/AfDB planning exercise based on the framework of the Action Plan, and on AfDB’s own parallel Clean Energy Investment Framework. An AfDB team visited Washington in June '08. The focus of these joint retreats has been on strategy alignment of the two institutions in energy sector development and operational convergence at the level of task teams, including for project preparation and supervision. Between formal joint retreats, the individual task managers and the sector managers of the two institutions have followed-up on implementation.
World Bank / IMF Annual Meetings in Singapore September '06	Discussion and endorsement of the Action Plan for Energy Access in Africa (incorporated as Pillar I of the <i>Investment Framework for Clean Energy and Development: A Progress Report</i> ) by the Development Committee
Intensive consultation with donors following Singapore	Workshops and discussions with regional organizations such as NEPAD, ADB and with development partners such as EU, DFID,

<sup>1</sup> c.f. Annex 1 of the report for calculations of access rates, financing trends and needs, etc.

meetings October- December '06	NORAD, AfDB, Germany, the Netherlands, Denmark, Japan, WHO, UNICEF and UNDP during September – December '06.  Outcome achieved is buy-in to the approach among development partners
AFREC African Union Summit , Algiers, 16 & 17 February, '08	Presentation based on the action plan was developed and presented by the country director for Algeria, Morocco and Tunisia.
OPEC Fund for International Development (OFID) Workshop on Energy Poverty in Africa June 9-10, '08 Abuja, Nigeria	Presentations were developed setting out Action Plan. This was one of a number of workshops with Arab and Islamic Funds that led to enhanced cooperation including increased cofinancing in investment projects.
G8 Meeting of Energy Ministers, Rome, Italy May 24-25, 2009	Background paper was prepared setting out action plan. Paper was presented by the Chair of Energy Sector Board
World Economic Forum on Africa Cape Town, South Africa 10-12 June 2009	Presentation based on the Action plan was prepared and presented by the VP, AFRVP.
<b>Other Selected Fora</b>	
International forum “Towards a Europe-Africa Energy Partnership”, Berlin; March '07	Outreach effort at these events helped:  (i) shape the agenda so that there is focus on pertinent and critical issues of the Action Plan  (ii) ensure that Africa’s voice was heard by identifying and facilitating strong Africa participation  (iii) Ensure that the harmonized and aligned approach promoted via the SWAp approach was given concrete expression through external presentations.
Tokyo International Conference on African Development Nairobi, March 2007	
Fifteenth Session of the Commission on Sustainable Development (CSD-15) New York, 30 April -11 May, 2007	

## **Sub-Activity 2: Support the outreach efforts of Africa’s energy policy makers through the Forum of Energy Ministers in Africa (FEMA)**

9. Africa’s energy policy makers are key partners of the Bank in advancing implementation of the Action Plan. Given the range of important issues that compete for policymakers’ attention, both in Africa and in the donor community, there is need for the

voice of Africa’s energy policy makers to make itself heard if adequate resources are to be channeled for the sector’s development.

10. FEMA was established in 2005 with objectives as follows:

- (a) Serve as an advocacy group to raise the profile of the energy sector in achieving economic growth and attainment of the Millennium Development Goals (MDGs);
- (b) Speak with a common voice and collectively advocate for the financing of regional projects;
- (c) Act as an informal mechanism to support national governments in scaling-up energy access; and
- (d) Promote regional cooperation in developing regional energy markets and common standards.

11. The present ESMAP project supported conferences sponsored by FEMA with participation of policy makers. Networking and peer learning at these events has aimed create greater understanding of successful energy sector strategies among decision makers, via information-sharing and the cross-fertilization of ideas.

12. FEMA achievements in 2007 and 2008. The focus of FEMA was on advocacy to improve awareness in the donor community of the gravity of the energy crisis in Africa.

13. Selected events include the following:

- Sixth Meeting of the Global Forum on Sustainable Energy (GFSE-6) from 29 November through 1 December 2006, Vienna, Austria. FEMA was represented by Daudi Migereko, Minister of Energy of Uganda.
- The Ministerial Conference on Energy Security and Sustainability, Maputo, Mozambique was held in Maputo from 28 to 30 March, 2007. The objective of the conference was to have a high level forum for discussion on how to ensure a reliable, cost effective and sustainable energy supply on the African continent, and to facilitate the articulation of an African position on energy security and sustainability for the CSD-15. The Conference brought together more than 100 participants to discuss the development of regional electricity trade (and in particular the status of the regional power pools), oil and gas security, and the state of art in biomass and rural access development. The Conference ended with the adoption by FEMA members of the “Maputo Declaration on Energy Security and Sustainability in Africa”, the first joint declaration by senior African decision-makers on the seriousness of the energy crisis and proposed responses. The declaration was the basis for FEMA’s activities and submission to the CSD-15 meeting. The meeting deliberated key actions and policy ideas relating to three major areas: the power sector; the oil and gas sector; and access to modern energy. The main outcomes of the meeting included: articulation and adoption of FEMA’s work plan for 2007-2008 and agreement on FEMA governance.

- Participation of FEMA in Fifteenth Session of the Commission on Sustainable Development (CSD-15) 30 April -11 May, 2007. H.E. Daudi Migereko, FEMA Chair and Minister of Energy and Minerals Development, Uganda, represented FEMA at CSD-15.
- The FEMA Workshop on Mobilizing Investments for African Power Infrastructure was held in Maputo, in October 2008 with participation of policymakers from fifteen African countries as well as donors (incl. AfDB and EIB).

### **Sub-Activity 3: Inception of preparation of “transformative” regional generation and transmission (G&T) projects.**

14. This sub-activity was to identify G&T projects that can be developed within a relatively short period of time and that can have a transformational impact by meeting regional (multi-country) needs. Large regional projects are typically long in gestation and, in the case of hydro projects, include complex and multi-faceted sustainable development interventions. At the same time, some of these projects have ‘transformative’ potential in their contribution to addressing Africa’s energy crisis, in that they can capture the economies of scale available from Africa’s large energy resources that are often geographically distant from major demand centers. Yet some of these generation and transmission (G&T) projects in sub-Saharan Africa are not being actively developed because the necessary preparatory work has not been carried out. This preparatory work can include the complete range of pre-investment studies that are needed to bring a project to financial close and encompasses technical feasibility studies, environmental and social impact studies and mitigation plans, financial analysis and financial structuring including options for private investment in the project, engagement of transaction advisors for government agencies charged with project development and policy studies on issues such as power tariffs and structure. For some such “inactive” projects, it may be that just one or two of these critical preparatory studies has not been carried out, whereas for others a considerable amount of the preparatory work remains to be carried out.

15. In the context of the study, projects with transformative potential were defined as national or regional projects that (i) fit into the strategies and priorities set forth by existing national or regional power system expansion plans; (ii) need to mobilize a substantial amount of financial resources (expected total investment cost per project is above US\$ 100 million); and (iii) will facilitate directly or indirectly an increase in available generation capacity and thus substantially boost electricity supply within the near to medium term (project could be structured and possibly reach financial close before the 2013). Projects include large hydropower rehabilitation projects, new large hydropower or thermal generation projects, but also key national or regional transmission

interconnections that enhance the provision of power to national or regional power markets with an important number of electricity consumers.

16. The study was designed to be catalytic – i.e. to identify a shortlist of projects with transformational potential and then, in follow-up phase, to identify the critical preparatory work needed to move each project forward. The feasibility studies and detailed project preparation identified for each individual project will be financed out of more traditional project development instruments like PPIAF, the newly created IFC facility InfraVentures and by private capital available to developers.

17. The activity has been a reconnaissance-level (desk study) exercise. The methodology for identification of projects was developed by staff of the Africa energy department and consultants. Two workshops were held (in February and April '08) and the outcome of the study – the candidate projects (or so called “Flagship Packages”) were presented at an Africa energy staff retreat in Washington over the period 15 - 22 April 2008.

18. In total one hundred and seven (107) candidate projects were identified, and through the process of pre-feasibility evaluation these were narrowed down to forty-nine (49) recommended Priority Projects. These in turn were narrowed down to twenty-five (25) projects in sixteen (16) Flagship Packages, four in each regional power pool (western, eastern, central and south). The study proposes a few sets of projects that are ready or close to being implemented and thus would particularly benefit from an engagement by the World Bank. The report identifies those projects as “Catalytic G&T Packages”. For each candidate Catalytic G&T Package the analysis included key technical data, estimated costs, estimated period for project structuring and implementation, preliminary financial analysis and financing options, and preliminary assessment of social and environmental risks.

19. The output of the activity has been made available to partners (African Development Bank, Infrastructure Preparation Facility of NEPAD and the Africa Infrastructure Consortium) with whom the World Bank Africa energy group (AFTEG) is working on development of regional projects.

20. A successor activity is planned in which more comprehensive analysis will be carried out on each of the 16 shortlisted flagship projects that will:

- identify all outstanding feasibility studies (incl. environmental impact assessment, economic analysis, technical feasibility, financial analysis, national and regional demand forecasts etc.

- address regional Framework Agreements and Policy Protocol issues (incl. amendments to political protocols that may be needed for the implementation of these projects).
- address regulatory and institutional issues: (including any enhancements needed to encourage private sector involvement).
- include financial and economic analysis: (incl. including tariffs and subsidies and customer affordability as well as analysis of the financial health of the utility and the ability of the power off taker (in case of a generation project) or grid operator (in case of a transmission project) to ensure the necessary cash-inflow to the project entity).

21. The 2<sup>nd</sup> phase will require broader consultations with the Governments, Utilities, Stakeholders in-country and outside and with development partners/potential sponsors and financiers.

#### **Sub-activity 4. Development of Sector-Wide Approach (SWAp)**

22. In this sub-activity, Bank task managers worked with key counterparts in several countries – notably in Rwanda – to advance the preparation of a SWAp.

23. Advancing a SWAp approach to energy access scale-up in an initial set of approximately five countries by 2010 is a cornerstone of the Action Plan. A sector wide approach encompasses a process and framework that is government-led, and aims to align and harmonize the participation – including investments, capacity building and analytical work - of all stakeholders around a common national development policy and sector investment *program*. A SWAp is also intended to be results-driven, essential for rallying donor support and in order to catalyze concessional and private financing for a scaled up program of national electrification.

24. The platform document for a coordinated sector-wide framework for the *country's national coverage scale up program* is a credible and comprehensive “Sector Investment and Policy Prospectus” (the “Prospectus”). This key information document for the national electricity access scale up program of the Government, will provide the anchor for potential financiers – donors, private sector and others – to align and harmonize their respective engagement and participation in a systematic manner, with the objective of raising financing for the scale-up program, after taking into account Government contributions and sector revenues.

25. This sub-activity assisted with preparation of a SWAp in Rwanda. A SWAp MOU document was signed in Kigali on July 3, 2008 by the major Donors active in the

energy sector. The program has the goal of increasing electricity access from 5% today to at least 16% of households by 2012 with a 100% coverage of health and educational facilities. The investment cost of this program (2009-2012), is of the order of \$125-150 million (excluding grid generation). In this context, the following milestones may be noted:

- A Rwanda SWAp Investment and Policy Prospectus was completed and endorsed by the Government in March 2009. It presents a five year plan for extending electricity access that achieves Rwanda's EDPRS targets and integrates technical, financing and implementation planning components. The Prospectus seeks to raise US\$250 million from development partners to fund access program investments.
- The Rwanda SWAp Investment and Policy Prospectus is a foundation stone for the IDA financed *Electricity Access Scale-up and Sector Wide Approach (SWAp) Development Project* that will be presented to the World Bank Board in FY10

26. A follow-up activity (that is funded separately) is the preparation of Investment and Policy Prospectuses in a number of other countries. For example an Investment Prospectus is well advanced in Kenya and will be completed by September '09 and presented at a donor conference there.

### **Sub-Activity 5: Pilot use of spatial geo reference analysis (GIS) tools for electrification in Kenya and Senegal**

27. In this sub-activity the use of spatial geo reference analysis (GIS) tools for electrification was piloted in Kenya and Senegal. A key analytical building block of the Prospectus that underpins a SWAp (c.f. sub-activity 4 above) is the development of a spatially-based analytical framework that enables the roll-out of an integrated program of grid and off-grid investments.

28. In this sub-activity, the Earth Institute (EI) of Columbia University was contracted to test GIS planning methodology in Kenya and Senegal in collaboration with the respective implementation agencies (in Kenya the Kenya Power and Lighting Company and in Senegal the *Agence Sénégalaise d'Electrification Rurale*) responsible for planning electrification. The EI framework is comprised of an interlinked Excel-GIS-Java tool running from an Excel interface, with some GIS-based pre- and post-processing options. In collaboration with counterparts, the tools and data collection procedures were field tested and a spatial least-cost electrification roll-out plan was developed for each country. In the case of Kenya, a very high level delegation of officials and principals led by the permanent Secretary, visited Washington at which time the outputs and results were discussed in depth over a several day period, followed by a subsequent visit to EI and the

Bank team to Nairobi for finalization of the methodology and tools. The methodology, framework, and results format were endorsed enthusiastically.

29. The main innovation of the EI method is the incorporation of detailed spatial information – and particularly population distribution with projected demand – when developing a national plan for electricity distribution. Spatial data are used to better characterize the total area over which it is cost-effective to extend the grid to improve the estimation of total costs of grid rollout, and to plan for upgrades based on how new branches of the grid will connect to the existing backbone. A spatial approach improves identification of the most cost-effective opportunities for rapid expansion and simplifies short-term planning – which may be constrained by particular national or regional priorities – given long-term goals. Using a spatial algorithm, the approach considers where available technologies – e.g. grid, solar PV, diesel mini-grid – are most appropriate given projected demand, costs and location.

30. The spatial planning framework and methodology allows in-country teams to make investment estimates for a range of electrification scenarios given various technology options, coverage targets, fuel costs, etc. The tool provides reasonable cost estimates that can be rapidly fed into planning and financing documents. An ability to create multiple what-if scenarios and easily test sensitivity to demand and other assumptions provides decision-support for policy-makers evaluating rural electrification scenarios and costs.

31. The tools and outputs from the work in Kenya and Senegal were used to introduce the approach to electrification planning agencies from a number of SSA countries, including Tanzania, Rwanda, Uganda and Zambia, in a Workshop that took place from June 11 to June 16, 2007 at Columbia University, New York with participation by a large number of AFTEG TTLs and the Sector Manager.

32. The goal of the workshop was twofold: (a) to familiarize the technical teams with the methodology utilized for preparing cost estimates; and (b) to critically review the experience in use of the tool thus far and to identify issues critical to its further development and its more widespread deployment. The outputs of the pilot development and testing of the spatial investment and rollout planning in Kenya and Senegal are being used as key inputs to the ongoing electrification programs in both countries.

33. Technical description of GIS costing tool

- a. The Columbia Earth Institute’s Energy Planning and Investment Costing Model is a set of inter-linked tools including a Microsoft Excel spreadsheet model, ArcGIS/ArcInfo for spatial processing and analysis, and Java programs to algorithmically generate an extended grid and

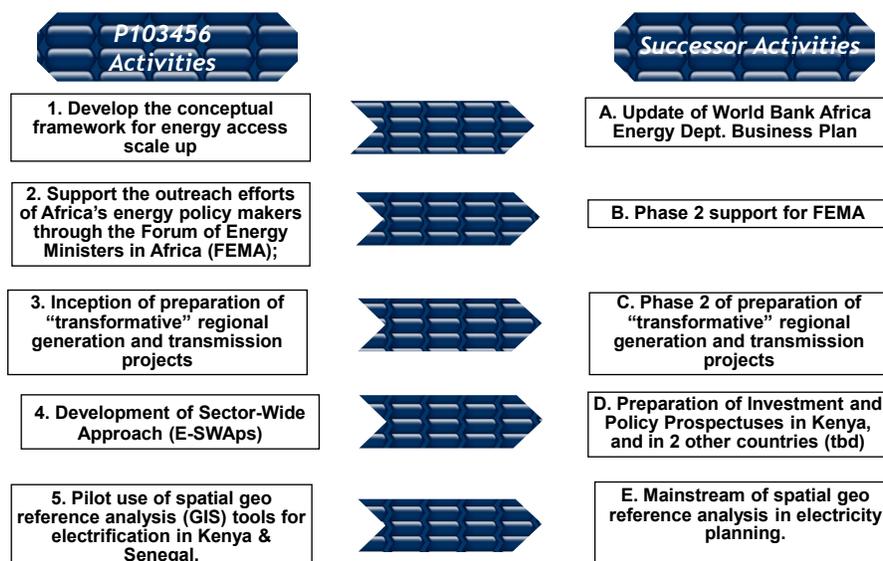
process results. The model allows country teams to input financial and socio-economic data along with policy criteria to evaluate the feasibility and costs of electrification scenarios and quickly compare alternatives.

- b. The Excel tool compares available technologies (e.g. grid, diesel, PV) given costs and anticipated demand. The net present value of the discounted cash flow is the metric used to compare the options. ArcGIS and Java are then used to generate an extended grid based on the spatial distribution of population centers, the location of existing medium voltage distribution lines, and policy requirements (e.g. target electrification rate).
- c. Finally, the model computes the required investment for each scenario summarized as capital and recurring costs, on-grid and off-grid, and, when appropriate, urban and rural. Detailed output for each location can be joined to GIS data for spatial visualization and post-processing (e.g. exploring and summarizing results for particular regions, technologies, types of institution, etc).

## Successor Activities

Successor activities are planned as set out in figure 2 below.

**Fig 2: Successor Activities to ESMAP Activity P103456: Implementing the Action Plan for Energy Access Scale -up**



**A. Update of World Bank Africa Energy Dept. Business Plan:** Work has begun to update the business plan of the World Bank Energy Unit for Africa (AFTEG) to ensure

its alignment with the Action Plan. The Business Plan will map output and outcome targets and the operational and organizational strategies to be employed including resource allocation.

**B. Phase 2 support for FEMA.** In Phase 2 FEMA intends to be more active in engaging on financing of large power project financing through exchange and dissemination of its lessons learned from successful projects and outlining the challenges.

**C. Phase 2 of preparation of “transformative” regional generation and transmission projects.** This phase will investigate further the overall readiness and bottlenecks to development of those transformative G&T packages, in cases where the WBG is not yet currently involved.

**D. Preparation of Investment and Policy Prospectuses in up to five countries.** In the next phase of work on SWAp preparation, the experience gained in its successful launch in Rwanda (c.f. above) will be applied in up to four other countries (as well as convening a donor/investor conference in Rwanda with the Prospectus as its centerpiece)

**E. Mainstream of spatial geo reference analysis in electricity planning.** “Mainstream” in this context is (a) sensitization of key groups of stakeholders to the usefulness (even the necessity) of spatial planning; (b) the testing and production of a GIS spatial planning tool for electrification with accompanying User Guide; and (c) training or workshops for stakeholders that could include consulting industry, utility personnel and policy makers.

## Annex 1 – Outputs

### Sub Activity 1.

- “Electricity for Africa’s Development” AFTEG Presentation to the Regional Leadership Team (RLT), September 2007
- “Underpowered” Africa’s Power Supply Crisis- Unraveling the Paradoxes, Storm van Leeuwen, Africa Energy Forum, Nice, July 2008
- Background Paper - Africa Energy Poverty G8 Energy Ministers Meeting 2009 Rome May 24-25, 2009
- Policy recommendations in “Underpowered” - The State of the Power Sector in Sub-Saharan Africa (Eberhard, Foster, Briceño-Garmendia, Ouedraogo, Camos, Shkaratan) AICD Background Paper May 2008

### Sub Activity 2.

- The Ministerial Conference on Energy Security and Sustainability, Maputo, Mozambique 28 to 30 March, 2007.
- The FEMA Workshop on Mobilizing Investments for African Power Infrastructure in Maputo, October 2008.
- Participation of FEMA in various international fora e.g.
  - Participation of H.E. Migereko, Minister of Energy of Uganda at 15<sup>th</sup> Session of the Commission on Sustainable Development (CSD-15) 30 April -11 May, 2007.
  - Participation of H.E. Butare, Minister of Energy Rwanda, in G8 Meeting of Energy Minister, May 24-25, 2009, Rome, Italy

### Sub Activity 3.

- Project Development Strategy for Transformative Generation and Transmission Projects in Sub-Sahara African Countries (Restricted Use - Internal World Bank Use) Identification of Priority Projects Final Report by Chris Head and Jabesh Amisah-Arthur, June 2008

### Sub Activity 4.

- Rwanda Electricity Sector Access Programme March 2009, Volume 1, Investment Prospectus and Volume II Technical Annex

### Sub Activity 5.

- Costing for National Electricity Interventions to Increase Access to Energy, Health Services, and Education; Senegal Final Report A Report to the World Bank by the *Agence Sénégalaise d'Electrification Rurale* (ASER) and the Energy Group, Columbia Earth Institute; August 15, 2007
- National Electrification Coverage Planning - Investment Costing Estimation Model Kenya Final Report; A Report to the World Bank by the Energy Group, Columbia Earth Institute with input from the Kenya Power and Lighting Company (KPLC), November 14, 2007

## Annex 2: Use of Funds '07-'09

Activity Initiation Sheet Sign-off 13 September 2006

Activity Completion Sheet 19 June 2009

<b>Table A.1</b>	
<b>Sub Activities</b>	<b>Expenditures</b>
1. Develop the conceptual framework for energy access scale up;	\$290k
2. Support the outreach efforts of Africa's energy policy makers through the Forum of Energy Ministers in Africa (FEMA);	\$600k
3. Inception of preparation of "transformative" regional generation and transmission projects	\$40k
4. Development of Sector-Wide Approach (SWAs)	\$300k
5. Pilot use of spatial geo reference analysis (GIS) tools for electrification in Kenya and Senegal.	\$150k
<b>Total</b>	<b>\$1.4 million</b>

<b>Table A.2</b>	
<b>TF</b>	<b>Expenditures</b>
TF052057	\$371k
TF054847	\$274k
TF092066	\$189k
TF058066 (FEMA)	\$577k
<b>Total</b>	<b>\$1.4 million</b>

<b>Disbursements: Table A.3</b>	
World Bank staff <sup>4</sup> costs	US\$ 193k
Travel	US\$ 397k
Consultant <sup>11</sup> & conference costs	US\$ 821k
of which:	
Castalia	US\$ 94k
Earth Institute Columbia	US\$ 129k
FEMA	US\$ 470k
Individual consultants	US\$ 110
<b>Total</b>	<b>US\$ 1.4 million</b>

<sup>i</sup> **Bank Staff who worked on the project included:** Koffi Ekouvei, Rohit Khanna, Rob Mills, Kyran O’Sullivan, Dana Rysankova, Robert Schloterer and Boris Utria.

<sup>ii</sup> **Individual Consultants who worked on the project included:** Jabesh Amisshah-Arthur, Ian Davies, Chris Head, John Nellis, Domingos Periera, Arun Sanghvi, Hal Wackman, Bernie Tenebaum and Robert Parra.