

EASTERN AFRICA POWER POOL



Presentation at IGAD Investment Conference Status of Developments in EAPP Region

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EAPP OBJECTIVES

- 1. Secure power supply for the EAPP member countries**
- 2. Optimize energy resources availability in the EAPP Region by working out EAPP Regional investment schemes in Generation, Transmission and Distribution taking into account the socio-economic and environmental aspects.**
- 3. Coordinate and co-operate in the planning, development and operation of the power systems and minimize costs**
- 4. Increase power supply in the EAPP Region in order to increase access rate of the population to electricity**



EAPP OBJECTIVES Cont

- 5. Reduce electricity cost in the EAPP Region by using power systems interconnection and increasing power exchanges between countries**
- 6. Play its role for coordination between various initiatives taken in the fields of power production, transmission as well as exchanges between countries**
- 7. Create in the framework of NEPAD, a conducive environment for investment in order to facilitate financing of the integration projects in the fields of power generation and transmission in the EAPP Region**



EAPP OBJECTIVES Cont

8. Facilitate the development of a competitive electricity market in the EAPP Region based on cooperation among the countries, transparency and respect for the environment



ACTIVITIES, PLANS & ACHIEVEMENTS



- Overview of Coordinating Activities**
- Overview of Achievements**

COORDINATING ACTIVITIES



- To ensure efficiency of the outputs and use of funds for the above projects**
- Benefits of Synergy**
- Harmonizing the project timeliness**
- Ensuring building on each other**
- Helping to identify gaps and overlaps**
- Helping identify risks**
- Helping identify future needs**
- Timely execution of the Roadmap (Strategic Plan)**

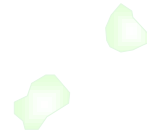
OVERVIEW OF ACHIEVEMENTS



- ❑ Drafted a Governance structure for EAPP**
- ❑ Developed the regional market development Road Map up to 2025.**
- ❑ Drafted a Master Plan for development of power Systems within the region 25 yr span**
- ❑ Developed Market Design to start Electricity Market in the region. Market Rules under review**
- ❑ Developed a Regional Interconnection Code (in collaboration with EAC)**
- ❑ Recruited key staff for the (CC) and IRB**
- ❑ Capacity Building for utilities and EAPP organs**
- ❑ Drafted Transmission Tariff Setting Methodology**



MASTER PLAN & REGIONAL INVESTMENT PLAN



COORDINATION FOR MASTER PLANS



□ Harmonization

- **A tripartite agreement reached between EAC, SADC, and COMESA during the 2008 summit to harmonize Master Plans. EAPP is a specialized institution of COMESA for Power issues.**
- **EAPP encourages coordination and harmonization of national Master Plans with the EAPP Master Plan. E.g. Rwanda is already doing so.**



The Regional Investment Plan

- ❑ **Priority interconnectors and generation plants are identified**
- ❑ **Priority set on the basis of lead-time and cost**
- ❑ **Master Plan justifies all ongoing interconnection projects**

a/ Interconnection Projects. Justified for implementation in 2012-2017

Connecting	Voltage (kV)	Capacity (MW)	Expected Date
Ethiopia-Kenya	DC 500	2000	2016
Tanzania-Kenya	400 AC	1520	2015
Ethiopia-Sudan	500 AC	2 x 1600	2016
Egypt-Sudan	600 DC	2000	2016
Rusumo HPP Transmission system	220 AC		2015

The Regional Investment Plan



b/ Identified Regional Generation Projects – NGP_RIP

Country	Plant Name	Type	Inst. Cap (MW)
Eastern DRC	Ruzizi III	Hydro	145
	Ruzizi IV	Hydro	287
Ethiopia	Mandaya	Hydro	2000
	Gibe III	Hydro	1870
	Border	Hydro	1200
	Gibe IV	Hydro	1468
	Karadobi	Hydro	1600
Rwanda	Kivul	Methane	100
	Kivu II	Methane	200
Tanzania	Stieglers Gorge (I, II, III)	Hydro	1200
Uganda	Karuma	Hydro	700
	Ayago	Hydro	550
	Murchison Falls	Hydro	750



REGIONAL MARKET ROAD MAP



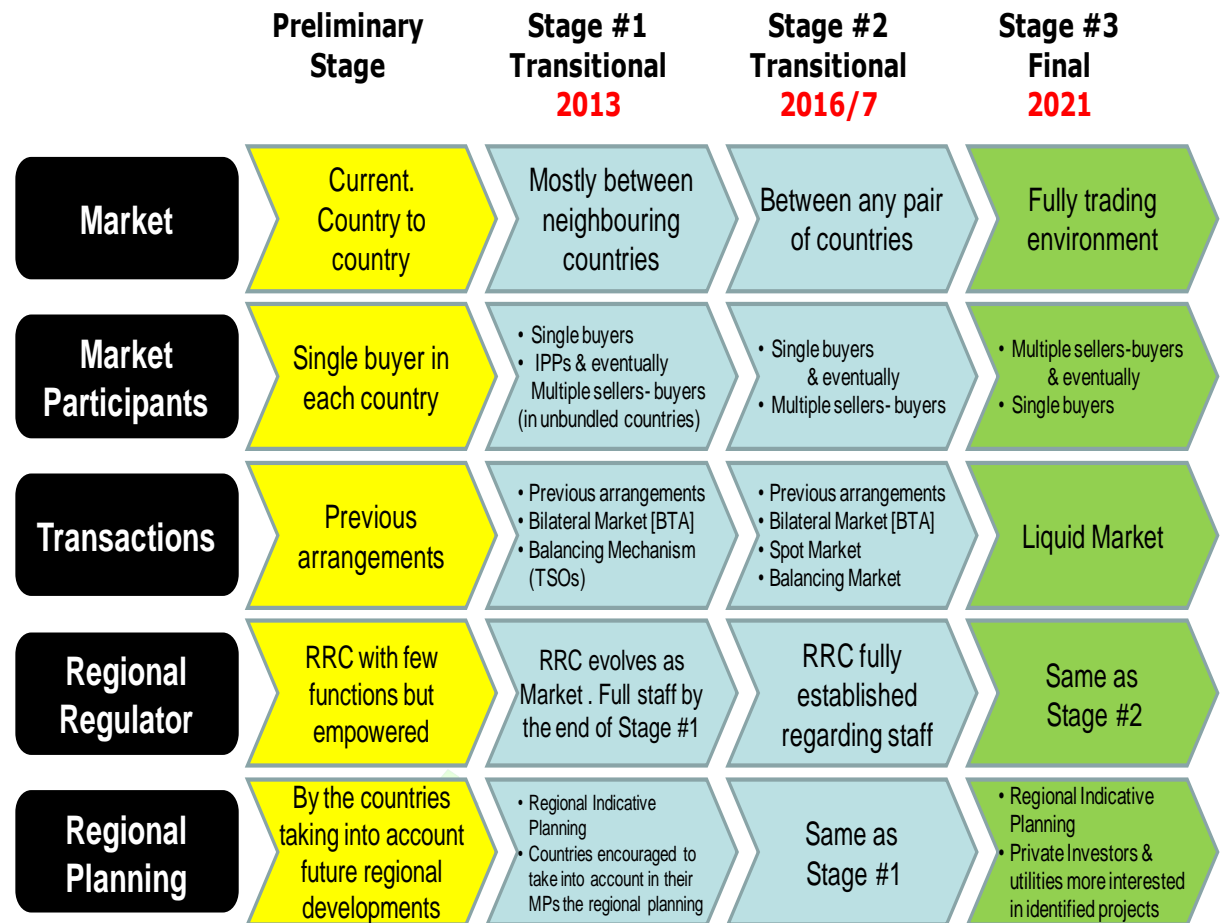
Regional Power Market: The Road Map



□ EAPP plans to attain full fledged power market in four stages.

□ Institutional development in progress

□ Interconnection and generation projects also progressing





STATUS OF ONGOING PROJECTS



ONGOING PROJECTS



EC Technical Assistance & Capacity Building Project. 2.7m EUROS

- Objective is to strengthen the capability of the EAPP Permanent Secretariat**
- Project constitute the following components**
 - Preparation of the Eastern Africa Power Market Development**
 - Preparation of a strategic plan and a 5 year business plan**
 - Preparation of power market rules and agreements for cross-border trade**
 - Horizontal Activities**



ONGOING PROJECTS

EC Tech. Assistance & Cap. Bld Project Completed Deliverables

- ❑ **Deliverable 1: Review of Existing Studies ,**
- ❑ **Deliverable 2: Power System Current Status,**
- ❑ **Deliverable 3: Power System Regulatory and Financial Assessment,**
- ❑ **Deliverable 4: Electricity Demand Forecast,**
- ❑ **Deliverable 5: Infrastructure Investment Appraisals,**
- ❑ **Deliverable 6: Regional Trade Forecast,**
- ❑ **Deliverable 7: Strategic Road Map to 2025 and Action Plan,**
- ❑ **Deliverable 8: Development of Action Plan,**
- ❑ **Deliverable 9: % year Business Plan**
- ❑ **Deliverable 10: Implementation Assistance,**
- ❑ **Deliverable 11: Design of Regional Power Trading Market,**



ONGOING PROJECTS

EC Tech. Assistance & Cap. Bld Project Cont..

- ❑ **Deliverable 12: Drafting of Commercial Agreements,**
- ❑ **Deliverable 13: EAPP Regional Market Rules.**
- ❑ **Deliverable 14: Legal and Technical Support, On-going**
- ❑ **Deliverable 15: Draft MOU and Treaty- Draft Treaty to support Cross Border Trading in EAPP region,**
- ❑ **Deliverable 16: Institutional Support to The Regional Regulatory Institution,**
- ❑ **Deliverable 17: Institutional Support to The Regional Market Operation Center(RMOC),**
- ❑ **Deliverable 18: Transmission Tariff Setting Methodology**
- ❑ **Deliverable 19: Design, Development and Installation of a Database,**



EC Tech. Assistance & Cap. Bld Project Completed Deliverables Contd

- **Deliverable 20: Assessment of the Training requirements of EAPP, sub-committees and other parties,**
- **Deliverable 21: Training Program for EAPP-PS, Sub Committees and other Parties,**
- **Deliverable 22: South to South Co-operation,**
- Deliverable 23: Developing twinning/coaching arrangements,**
- Deliverable 24: Support to the organization of stakeholder Meetings**
- Deliverable 25: Implementation of two Study Tours and Post Event Reports : Two study tours, SAPP and NORAD**
- Deliverable 26: Technical Advise.**

MFA NORWAY PROJECT: USD 2.2M



- Recruitment of staff for the CC and IRB completed**
- Installation and operationalization of the data base in progress**
- Installation and operationalization of the Communications Infrastructure postponed**
- Facilitation of Institutional set up of the CC and the IRB**
- Recruitment of Data Base Consultant completed**
- Recruitment of Training Consultant completed**
- Recruitment of Management Consultant completed**
- 30 days Training of Over 60 experts (Secretariat Staff and utility representatives) on issues of regional power trade**



USAID 2.4mUSD : POWERING PROGRESS PROJECT

- ❑ Market development workshop held on 1-5 February 2009**
- ❑ Renewable and Energy Efficiency Workshop held in March 2010**
- ❑ Additional support to EAPP and EAC to prepare for Power Market and Power Trade.**
- ❑ To ensure at least 3 PPAs are concluded**
- ❑ Draft Transmission Interconnection Standards being considered by the Technical Committees and REC;**
- ❑ Gap Analysis is in progress**



USAID 2.4 MUSD : POWERING PROGRESS PROJECT *Cont..*

- Approval and implementation of Harmonized Transmission Standards as identified by the Grid Code**
- Study tours to PJM and WAPP being planned**
- Implementation of Regulatory Regime in line with MFA, AfDB and EC Projects.**
- Development of IDS**
- Consultant is Nexant of USA.**

PROJECTS BEING UNDERTAKEN BY NBI



- Project Components - Interconnections:**
- Kenya (Lessos) – Uganda (Tororo) 220 KV, 256 km**
- Uganda (Mbarara) – Rwanda (Mirama) 220 KV, 172km**
- Burundi-Rwanda-DRC (B-R-C):**
 - Kibuye-Gisenyi-Goma-Kigali 220 KV, 200 km**
 - Ruzizi-Bujumbura-Kiliba, 220 KV, 131 km**
 - Ruzizi-Goma, 220 KV, 150 km**
 - Rwegura - Kigoma/Gitega, 220, 120 km.**

PROJECTS BEING UNDERTAKEN BY NBI



- ❑ **Project for the Interconnection of Electric Grids of Nile Equatorial Lakes Countries:**
- ❑ **Feasibility Study funded by AfDB was completed in 2007**
- ❑ **NBI/NELSAP has mobilized funding environs 363 million.**
- ❑ **The procurement of consultants completed in Burundi, Kenya, Rwanda and Uganda**
- ❑ **Procurement of EPC contractors in progress in Rwanda and Uganda**
- ❑ **220 KV studies in progress for Ruzizi III – Bujumbura (Burundi Scope)**
- ❑ **Project expected to be completed end Dec 2014.**
- ❑ **Thus DRC-Burundi-Rwanda-Uganda-Kenya by 2014!**

RUSUMO FALLS HEP PROJECT



- ❑ **The project will generate around 90 MW to be shared between Burundi, Rwanda and Tanzania**
 - ❑ **Gitega in Burundi (161 km)**
 - ❑ **Birembo near Kigali in Rwanda (109 km) and**
 - ❑ **Biharamulo / Nyakanazi in Tanzania (98 km).**





RUSUMO FALLS HEP STATION

Project status:

- ❑ **Studies related to the Feasibility studies of the Power Generation Plant and Transmission Lines are expected to be completed end of October 2011. Studies took long time due to detailed RAP that is being carried out.**
- ❑ **Project cost is estimated to USD 450 million**
- ❑ **Financing of the project will be public with private management of the power generation plant**
- ❑ **Financial closure expected in Mid 2012**
- ❑ **Commissioning the Project expected end 2016.**



TANZANIA:IRINGA-MBEYA TRANSMISSION LINE STUDY

Project objective

- To reinforce Tanzania grid and extend 400 KV Tanzania Backbone Iringa – Shinyanga (Northern West) and Kenya – Tanzania Interconnection towards Zambia. The Project is part of the main Kenya – Tanzania – Zambia regional backbone linking EAPP/NBI grid to SAPP.

Scope of preparation activities to be done:

- Feasibility, detailed design and tender documents
- ESIA RAP study

Status

- Studies to start end of December 2011 and be completed in **October 2012**

TANZANIA-KENYA INTERCONNECTOR



- ❑ **Project description**
 - ❑ **The interconnection will be a 400 KV transmission line starting from Isinya substation, 40 km south of Nairobi to Singida in Tanzania through Arusha.**
- ❑ **Financing of the study: Government of Norway.**
- ❑ **Study is composed of two separate consultancies:**
 - ❑ **Design study up to tender documents: is at advanced stage with the draft feasibility report submitted.**
 - ❑ **environmental and social impact assessment & resettlement action plan (ESIA/RAP) also advanced.**
 - ❑ **Completion of the studies in May 2012.**
 - ❑ **Commissioning the interconnection expected in 2015.**
 - ❑ **Thus DRC-Burundi-Rwanda-Uganda-Kenya-Tanzania would be inter-connected by 2015**

UGANDA- DRC INTERCONNECTOR STUDY



Objective

- To build a high voltage transmission line from Nkenda in Western Region of Uganda up to Bunia via Beni in the North Eastern region of the D R Congo
- Status Grant agreement to finance the study to be signed in December 2011.
- Study expected to start in May 2012 and be completed in August 2013.



OTHER INTER-CONNECTION PROJECTS

- **Ethiopia-Djibouti 220 KV line has been Commissioned**
- **Ethiopia-Sudan 230 KV line under commissioning**
- **Sudan-Egypt 220 KV line to be completed by 2013**
- **Ethiopia-Kenya 500HVDC line to be completed in 2015/2016**
- **Ethiopia-Sudan 500HVAC and Sudan-Egypt 600HVDC lines by 2022**



OTHER PROPOSED INTERCONNECTION PROJECTS

- **Uganda – Sudan Interconnection Line**
- **Sudan – Eriteria Interconnection Line**
- **Ethiopia - South Sudan Interconnection Line**





CRUCIAL PENDING TASKS 1

- ❑ **Harmonization of transmission standards is required to expand trade**
- ❑ **Implementation of the Regional Grid Code**
- ❑ **Cooperation from development partners, and participation of private and public utilities required to realize master plan (Through PPP, IPP?).**
- ❑ **Progressing capacity Building until commencement of power market**
- ❑ **Supporting EAPP Secretariat until its self sustaining**





CRUCIAL PENDING TASKS 2

- Gap Analysis and filling the Gaps on ability to trade in each Countries**
- Full Establishment of the Coordination Centre (Regional Market Operations Centre)**
- Full Establishment of an Independent Regulatory board (IRB)**
- Staff attraction and retention (after the current training by EC & MFA) Golden handcuffs**
- Full commitment by Regional Players**





THANK YOU

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**Olkaria Geothermal
PP, Kenya**

**Ubungu Gas PP,
Tanzania**



Zafarana Wind Farm, Egypt

**Merowe Hydro PP,
Sudan**

