3rd African Seminar for the Establishment of the African Energy Information System and Database

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Training Course on Energy Databases for the AFREC's Focal Points, RECs, RPPs and Specialized Institutions

(AFREC & AUC in Association with ENC-WEC and IEA)

<u>CONCEPT NOTE</u>

Cairo -Egypt
14-16 November 2011

African Energy Commission
(AFREC)

3rd African Seminar for the Creation of the African Energy Information System and Database & Training Course for the AFREC's Focal Points, RECs, RPPs and Specialized Institutions

CONCEPT NOTE

Context

Energy is essential for human development and reliable energy information is imperative for formulating sound energy policies and designing strategic development and investment plans. However, the quality and depth of energy information and statistical databanks available in Africa are either absent or fall below the required level of international standards. Therefore, one of the prime responsibilities of the African Energy Commission (AFREC) is to create and manage a comprehensive energy database and Information System for Africa through the establishment of the "African Energy Information System and Database" (AEIS) and make it available for use by the end-users in the African Member States and world energy community. AFREC has to demonstrate this task in most effective manner in order to be recognized and supported by the highest levels of African governments and specialized institutions. It is evident from the daily practices that reliable information is fundamental to decision making process associated with all energy activities. No policies can be developed without careful analysis of the situation under consideration and that requires information and perfect data. The implication though is that data and information must be collected and prepared in a usable format, continually updated and disseminated through various channels to the end users. AFREC has to undertake such a task through a framework of networking and partnership with various African and international partners and stakeholders.

On the other hand, while data and information is but one piece of the larger range of energy development process, provision of adequate training and capacity building to energy experts and energy statisticians in the African Member States remains essential to the overall development practices.

It is within this context that AFREC has taken all measures to establish and manage the AEIS and to provide training on data collection and energy balances to its Focal Points and energy statisticians in the African ministries in charge of energy. The information and inter-linkages with good training in data energy collection, refinement and delivery to a central databank at the AFREC's Headquarters represent a central issue in the establishment of the energy databank upon which the Information System will be structured around.

Background

The convention of the AFREC mandated the AFREC's Secretariat to create and manage an African Energy Database and Information System and make them available to users of the Member States and Regional Economic Communities (RECs) in addition to the whole world energy community. Paragraph (b) of Article 4 (Functions of AFREC) of the AFREC's Convention states that AFREC shall: "Design, create and update an energy continental data base and facilitate rapid dissemination of information and exchange of information among Member States, as well as among the Regional Economic Communities (RECs)".

In order to undertake such a task, AFREC, in association with the Ministry of Energy and Mines of Algeria, organized the 1st International Seminar for the Establishment of the AEIS in April 2003 in Algiers, Algeria, which was attended by all international energy database developers. It identified the parties and stakeholders of the system, recommended the

required system infrastructure, specified human resources requirements, proposed the required financial support and sources of funding and suggested the concept and framework of the system.

Furthermore, the AFREC's Secretariat organized the 2nd International Seminar for the Creation of the System in May 2005 in Algiers which was attended by numerous international energy database developers in addition to African energy-related institutions and UN System. The agenda of the seminar were built upon the recommendations of the 1st international Seminar and produced a Road Map for the establishment of the system which consisted of three phases including short-term, medium-term and long-term targets of achievement. However, due to the slowness associated with the establishment of AFREC and the lack of specialized staff only limited parts of those recommendations of the 2nd Seminar were implemented. The most important feature of the energy database is that once it is established it has to be managed and updated indefinitely which requires sustained efforts of manpower and adequate funding. It is only now that the African Union has decided to staff AFREC with several professional posts including a Senior Officer for the African Energy Database and Information System. With such provision and available funding AFREC is now ready to establish and manage this long awaited project.

To date, there have been few attempts aimed at establishing an African energy database but none has been successful to come up with a comprehensive and complete system. The most notable attempts are the Hydrocarbons Database which was established by the African Petroleum Producers Association (APPA) and the Electric Utilities Database created by the Union of Producers, Conveyors and Distributers of Electrical Energy in Africa (UPDEA). However, these databases are beset by structural shortages and dimensional shortfalls which resulted in incomplete contents. The APPA system is limited to hydrocarbons resources of the APPA 18 member states while the UPDEA database is limited to electricity sector. The Egyptian Ministry of Electricity and Energy has developed, through its subsidiary the Egyptian National Committee of the World energy Council (ENC-WEC), a historical energy database of some African countries but was not updated for recent years. However, both the AFREC's 1st and 2nd International Seminars have recommended that AFREC should use the Egyptian historical database for some African countries as a base for the creation of the AEIS.

Against this background, AFREC in conjunction with the Egyptian National Committee of the World Energy Council (ENC-WEC) and the International Energy Agency (IEA) will organize a seminar for the establishment of the African Energy Information System and Database with training in energy database to the AFREC's Focal Points and energy experts of the African Member States and specialized energy institutions, to be held in Cairo, Egypt, on 14-16 November 2011. The seminar will mark the 3rd AFREC's International Seminar on this issue and the commencement of establishing the AEIS.

Objectives

The main objective of this training seminar is to elaborate ways and means for the establishment of a comprehensive energy database and information system for Africa taking into consideration the considerable experience generated by different international and regional energy information operators and energy database providers such as the International Energy Agency (IEA), World Energy Council (WEC), Egyptian National Committee of the World Energy Council (ENC-WEC), Energy Information Administration (EIA), International Energy Forum (IEF) and Energy Organization of Latin America (OLADE) and seeking their guidance and technical support in establishing the African system.

Specifically, the objectives include the following:

- Bring all stakeholders and interest parties to a seminar which will provide strategies for the creation of the African Energy Information System and recommend suitable mechanisms for implementation and management.

- Review international experience and best practices in establishing, managing and updating an Africa Energy Information System and Database.

- Suggest mechanisms to facilitate for rapid collection, processing and dissemination of energy data and information to final users of the Member States, RECs and RPPs as well as other regional and international communities.

- Develop plans for regular publishing of periodic reports of Africa's energy data.

- Investigate the best ways for creating and managing a website to host the energy databank and Information System.

- Provide training for the benefit of the AFREC's Focal Points in the Member States along with the experts of RECs, RPPs and specialized institutions.

The seminar will also address the following three concerns:

- Development of internal and external capacity, skills, equipment and operational environment conducive to sound achievements.

- Establishment of a continental network of public and private energy database providers including AUC, NEPAD, UPDEA, APPA, AFUR, AFSEC, UN System, AfDB-PIDA in addition to other energy-related institutions.

- Liaise with international agencies specialized in the energy information system to gain experience, develop capacity building and get access to technical assistance and guidance.

Framework for the Establishment of the AEIS

In the establishment of the energy database and information system, AFREC would consider the following framework of activities:

- Create Focal Points in the ministries in-charge of energy in the African member states to feed the system with continuing and data and information.

- Liaise with regional energy-related institutions to undertake close review of energy databases on regional levels and evaluate the available skills, systems and training needs.

- Evaluate and prioritize the desired African energy information requirements.

- Organize a continental training and capacity building course to provide adequate guidance to the Focal Points in the African member states and enable them to acquire the essential skills for collecting and transmitting the energy data.

- Develop appropriate budgetary requirements for conducting periodic meetings at state, regional and continental levels to review and update the implementation of the system and provide focused training sessions in the most possible cost-effective manner.

- Prepare adequate technology infrastructure, including offices, computers, software, server, communication tools, etc, to serve the system operation and management.

- Ensure the system operation and management by competent energy database and information system specialists.

- Establish appropriate mechanisms for data collection, management, dissemination and transmission to end-users.

- Establish a network of regional and international energy database providers and design strategy for cooperation and exchange of information and experiences.

Components of the Energy Database

Databases are at the heart of applications and developments of energy policies, decision making and strategic planning. Their use extends beyond these applications to wider environments where large amounts of data must be stored for efficient update and easy retrieval. They also represent the frameworks for the development of Information Systems. Basic and standard components of an energy database include the following:

- **Supply-side:** include deliveries of energy products and electricity for consumption by different energy consuming sectors. These include commercial and traditional products, electricity, refined fuels, solid fuels, fossil fuels, renewable energies, nuclear feedstock, energy imports, etc.

- **Demand-side:** include demand and consumption of energy products. Demand is the actual volume, quantity or capacity need by all energy consuming sectors for normal operation while consumption is the actual amount of energy provided and consumed by the sectors.

- **Energy Balance:** it is the contrast between energy supply and demand and usually represented in table format. They reflect the deficiencies or surpluses in energy provisions and often used for modeling future energy developments.

- **Energy Prices:** these are domestic prices of energy products to final consumers. For policy purposes, the size of subsidies assigned y local authorities for each product or electricity should also be reflected.

- **Energy Trades:** including cross-border, regional and international imports and exports of energy products and electricity. Crude oil, natural gas, coal and electricity are the main products in this sense. Biofuels products, such as bio-ethanol and bio-diesel, have started to play a growing role in this business.

- **Energy Efficiency and Environment:** this reflects the linkages between economic, demographic, environment and energy consumption parameters for a country or region. It produces indicators through which growth trends and impact of these parameters could be assessed. These parameters include population growth rate, real GDP growth, per capita real income, electricity consumption, energy intensity, carbon intensity, carbon dioxide emissions rates, etc.

Components of the Energy Information System

In a broad sense, the term Information System is frequently used to refer to the interaction between people, processes, data and technology. It is an integrated set of components and a collection of methods, practices, algorithms and methodologies that transforms data into information and knowledge desired by, and useful for, individual and group users in organizations and other entities. This system can involve a combination of work practices, information, people, and technologies structured to accomplish goals in an organization. The following components remain the basic features of an Information System:

- **People:** There are many roles for people in information systems. Common ones include: Systems Analysts, Programmers, Technicians, Engineers, Network Managers, MIS (Manager of Information Systems) and Data Entry Operators.

- **Equipment:** These are Hardware and Software information technologies.

- **Procedures:** A procedure is a series of documented actions taken to achieve something. It is more than a single or simple task and can be quite complex. It involves certain actions such as performing a backup, shutting down a system, patching software, etc.

- **Information:** These are the raw, unorganized, discrete (separate, isolated) potentially-useful facts and figures that are later processed (manipulated) to produce description of a situation. This proves the notion that databases are prerequisites and essential for the creation of information systems.

Challenges to Create Sustainable Energy Databases & Information Systems in Africa

The energy data deficiency in Africa results from several difficulties which can be highlighted in the following:

- Shortage of knowledge and awareness about the importance of reliable data and good information for making energy policies and strategic planning at national and regional levels.

- Energy and statistical matters are often not addressed adequately or taken seriously in the institutional policies within the circles of energy sector and therefore they get little attention and low priority.

- Limited capacities, human resources and financial support. Establishing, updating and managing an energy database or information system requires long-term commitment, training and institutional support.

- Often institutional structures and coordination are lacking. Few countries maintain low standard and poor quality energy databases limited only for minor uses.

- There are often insufficient people with the relevant statistical and analytical capacities to create and correlate the data in the first place.

- The institutional and capacity building to resolve these difficulties is a long-term task, but without it Africa will not have the information needed to support its development.

The Seminar & Training Description

This seminar and the training course will be held in a period of three days and will consist of two parts. The first part will last for two days and include the seminar which comprises eight

sessions of presentations which will reflect experiences of the African and international institutions in energy databases and Information Systems. It will also review and discuss the AFREC's approach for the establishment of the African Energy Information System and Database along with the report of Consultants Mercados/SOFRECO which was recruited by the AUC to provide technical support for the establishment of the system under the Hydropower-2020 initiative, a project sponsored by the Department of Infrastructure and Energy of the AUC..

The second part of the seminar is a one-day training course in energy databases to enhance the understanding of the AFREC's Focal Points and energy experts of the African Member States in serving the system since they represent the first source of energy data and other information. The training will consist of four sessions in a mix of lecturing and interactive discussions between instructors, presenters and participants with a special focus on the questionnaire generated by the WEC for data collection. Participants, especially the AFREC's Focal Points, will be able to express their concerns about the questionnaire format and problems associated with data collection, refining and transmission to the AFREC's Headquarters.

Venue and Dates

The seminar will be held at the Sonesta Hotel in Cairo, Egypt, between Monday 14th and Wednesday 16th November 2011 under the auspices of H.E. the Minister of Electricity and Energy of Egypt.

Topics Outline

The seminar and training sessions will include in-depth analysis of various components and dimensions of energy Information Systems, databases and networking activities among energy database providers and end users. Numerous case studies of global and regional energy databases will be presented and discussed. Strategies for the creation of an African Energy Information System will be presented and debated. The training is important to upgrade the skills of the AFREC's Focal Points and will be based on lecturing and interactive dialogue between instructors, presenters and participants. All participants will benefit from this training especially those of the RECs, RPPs and specialized institutions in their quest to establish their systems. In general, the following topics will be addressed:

- Principles and components of energy databases
- Principles and components of energy Information Systems
- The questionnaire and data collection
- Delivery of data and information through appropriate hardware
- Training and technical support for Focal Points and energy statisticians
- Publication of regular energy bulletins and modalities of data dissemination
- Designing an energy database and Information System
- Development of Network of Stakeholders
- Required resources to build an AFREC Energy Information System
- Harmonization of African energy database providers

Target Groups

The participants will primarily be the AFREC's Focal Points in the African ministries in-charge of energy in addition to energy statisticians, database technicians, and senior energy policy

experts of the African governments. Energy experts of RECs, RPPs, private sector, NGOs and relevant specialized institutions will also be invited to attend.

Training Requirements

All AFREC's Focal Points in the African ministries in-charge of energy are expected to collect the energy data of their countries of the last 20 years (1990-2009) using the interactive questionnaire prepared by the WEC and transmit them to the AFREC Secretariat by 15 October 2011 at latest in order to be processed and presented in the seminar. This requirement is mandatory for participation as the data will be used during the training and for setting up the first version of the database.

In addition to the data collection, participants as encouraged to collect and submit the following items upon their arrival:

- General summary description of the current situation of the energy database in the country including fresh and up-dated information about the situation of each energy sub-sector (biomass, hydrocarbons, electricity, etc.)

- Any publications, reports, papers, magazines photos of the energy sector. This is required to support the AFREC's office library in which each African country will be having a private section.

Resource Persons

Moderators and presenters will be invited from the AFREC's AEIS partners. In addition to the experts of the ENC-WEC, AFREC will invite resource persons from some leading institutions as moderators and discussers including IEA, WEC, IEF, OLADE, APEC, OPEC, UNSD and DOE-EIA.

Expected Impacts/Outcomes

The main expected outcome of the Seminar would include:

- Analysis of the AFREC's program for the creation and managing of the AEIS and Database and make available for the benefit of the African energy sector.

- Comprehensive understanding about the present situation of energy Information System in the Africa and the need for coordination and harmonization of activities of different institutions.

- Adoption of guidelines for a continental strategy suitable for the development of a comprehensive AEIS to serve the African energy sector and the world energy community.

- Creation of a continental network of Energy Information System providers and users and to bring about all active public and private institutions.

- Elaboration of a joint vision and recommend synergies between all energy Information System providers and to create an advisory forum to be hosted by AFREC.

- Identification of Centers of Excellence and training facilities around the continent for providing energy Information System and energy statistics training.

- Elaboration of durability criteria for the sustainability of the energy Information System in the African continent.

- Definition of the role of AFREC and other African institutions and what other national, regional and international organizations can do in order to set up an effective mechanism to coordinate energy Information System activities and ensure the production of quality outcomes.

- Recommended financial donors along with the mechanisms and modalities on how to support different activities related to the AEIS.

Resource Materials

Participants will receive a number of resource materials for the training course, including:

- Training guide and manual.
- Summary of the 1st and 2nd AFREC's International Seminars for the Establishment of the AEIS.
- Copies of the IEA publications.
- Different AFREC's publications and newsletters.

Training Languages

The training will be conducted in English with simultaneous interpretation into French.

Accommodation and Local Logistics

AFREC and the AUC will fully cover the expenses of participation of one Focal Point of each Member State including round-trip air tickets, full accommodation, training, local logistics, interpretation, resource materials, meals and refreshment during the seminar. Other participants from the Member States, regional and international institutions have to pay for their travel and accommodation.

Training Certificates

Upon completion of the training course, participants will receive certificates acknowledging their successful participation.