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TOWARDS AN ENERGY
CONSERVATION POLICY FOR
EGYPTIAN INDUSTRY*

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- * The views expressed in this paper are those of the author and do not necessarily reflect the views of the Secretariat of UNIDO. This document has not been edited.
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ENERGY IN EGYPT..... BACKGROUND

In recent years, energy consumption in Egypt has been growing rapidly at an average annual rate of 15 percent over the last 10 years. Although the growth in energy demand has slowed recently, the electricity demand is projected to grow at almost 10 percent per year. The distribution of the different load types shows that the industrial sector consumes 54% of the available energy, the public utilities consumes 11% while the residential and commercial sector consumes 30% and the rest is consumed by the agriculture and other sectors.

Energy production in Egypt is dramatically increased during the last five-year plan 1982-1987. For example, oil production is increased by 40 percent from 30 million to 42 million Tonne/year, while the investment in this sector is three times increased from 2459 million to 6225 million Egyptian pounds. Also, the electricity production is increased at the same period from 18 milliard KWH to 45 milliard KWH per year, which represents 150% increase.

Most available forecasts of Egypt's energy demand seem to indicate that fuel requirements will grow substantially in future, even considering the possibility of setting up significant conservation policies in the different end-use sectors. Although the country can rely on alternative energy sources, oil will probably continue to expand its role in fuelling the Egyptian economy thus increasing competition between exports and domestic uses.

The development of oil production and the objective of achieving and maintaining a stable production level of about 1 million bbl/day for the next 20 years will in turn imply considerable and increasing annual expenditure on exploration and development activities. Even assuming it were possible to meet these production targets, prospects for economic growth and related domestic requirements seem to indicate that Egypt may become NET IMPORTER of crude in the second half of the 90 s.

NATIONAL AND INDUSTRIAL ENERGY POLICIES

Bearing all these previous considerations in mind, major and important energy policy options for a country like Egypt as well as for other developing nations with similar characteristics should be aimed to:

- increase the investment effort in the oil sector allowing for the future optimal exploitation of available resources as well as an appropriate balance between external and domestic uses;
- foster energy conservation programmes in the different end-use sectors through appropriate pricing policies;
- develop all the alternative energy sources such as hydro, nuclear, gas and coal and to some extent renewable energy technologies;
- Strengthen international economic and technical cooperation with particular reference to technology transfer and acquisition aspects.

In a country like Egypt, where 54% of energy consumption is used in industrial sector, an industrial energy policy within the frame of the national energy policy is a vital argument.

The acceleration of industrial wheel in the country is closely linked with the increase of energy demand in industrial sector. Only, in the last five year plan, the investment in this sector increased from 10 milliard L.E. to 17 milliard L.E., the number of factories was doubled from 4105 to 10064 factories, the number of locally manufactured products increased from 6590 to 14546 products and the number of industrial communities increased from 4 to 18 community.

Considering the previous factors the stand point of the attack of energy problem in industry is to establish an INDUSTRIAL ENERGY POLICY (IEP) which will be the most important instrument to face the dimensions of the growth of energy demand in industry. This IEP should included the following main issues:

- to prepare the industrial economy to the stage of non-subsidized energy prices;
- to promote energy conservation programmes in industry;
- to support the industrial energy production projects to increase the self generated power to a sizeable fraction from the total demand;
- to redesign the salary system in industry to include incentive and punitive items related to the norms of energy use;
- to develop the institutional capabilities to identify, evaluate, finance, procure, instal, operate, monitor and maintain advanced energy conservation technologies in industry;
- to establish an ENERGY DATA BANK (EDB) for industrial services;
- to direct a sizeable part of the international cooperation and the technology transfer technical assistances to serve the main issues of IEP.

Here in the following some active steps which were be taken by the MINISTRY OF INDUSTRY (MOI) on the way to the establishment of the above IEP.

MINISTRY OF INDUSTRY AND IEP

Since 1980 the following energy related activities were taken by MOI:

- On Aug. 1981, the Ministerial Decret No 929 was issued including 5 checklists for energy consumptions, self generated power, water consumption, industrial waste data and energy consumption norms to be quarterly fulfilled by the related industrial enterprises;
- The Decret of H.E. Prime Minister, No. 1093, 1979 concerning the establishment of the Supreme council of energy.
- Ministerial Decret No. 90, 1985 including the establishment of the supreme committee for Energy Conservation in Industry and the establishment of the executive organization for this committee.
- the establishment of an Industrial Energy Conservation Centre in Tabbin Institute for Metallurgical Studies (TIMS), 1983-1987;
- the formation of energy conservation groups and the appointment of an energy manager for each industrial company;
- carry out hundreds of energy audit to identify the modes of energy consumption of units and processes;
- training of hundreds of energy managers and industrial specialists on the advanced energy conservation technologies;
- the implementation of housekeeping measures for energy saving and the low/medium investment energy conservation projects, which will be explained in detail later on;

- the cooperation with the international technical assistance organization, in particular: UNIDO/UNDP USAID and BITS, to develop the country energy conservation activities.

ENERGY CONSERVATION AND INTERNATIONAL COOPERATION

Solving the energy problems for most developing nations become increasingly difficult and there should be no doubt that international cooperation, aimed at strengthening long-term relationships among the developing and the developed world and based on the principle of a mutually convenient interdependence is one of the most important instrument to face the dimensions of the overall energy problem.

The international cooperation is often related with technology transfer and acquisition concepts, not only restricted to engineering and design but concerned with development of skills, knowhow, technical services and subcontracting activities through the promotion and development of an efficient net work of local institutions.

In other words, a key issue in developing cooperation in the industrial energy field is the question of how should the transfer of the relevant technology take place, i.e. by importing the technology, by fostering a domestic capability in this specific field or by an appropriate combination of these strategies.

In Egypt, the international cooperation for energy conservation in industry has been started since May, 1983 when the first project in this field was approved by the UNDP/UNIDO and the Ministry of industry. The development objective of this project were the reduction and the rationalization of the energy consumption in industry through

conservation and efficient management. The project's immediate objectives were the establishment and the operation of an Industrial Energy Conservation Centre (IECC) in the Tabbin Institute for Metallurgical Studies (TMS) responsible for assistance to public and private industries in the efficient use of energy. The Centre is now equipped with a mobile diagnostic unit "Energy Bus" for in-plant measurements and it is still continuing its activities in training, auditing, collecting data, identifying of energy conservation opportunities and maintaining technical assistance links with national and international energy conservation organizations.

A second project with UNDP/UNIDO titled "Energy Conservation in Metallurgical, Glass & Other Industries" was started in 1985 and aimed at implementation of a number of energy conservation applications in industry. The cost share in hardware required for these application was found as an accepted formula for the projects finance. Now, two projects in Egyptian Copper Works in Alexandria and in El-Nasr Glass & Crystal Company have been completed and achieved their pre-set goals. Another project is being implemented at Egyptian Iron & Steel Co and two more projects are under consideration.

Energy Conservation and Efficiency project (ECEP) - USAID Project was signed in September, 1988 of 50 million US\$ grant. The project's purposes are to; promote and accelerate the adoption of improved commercial technologies, processes, and practices in order to save energy and increase energy efficiency; and improve Egyptian institutional capabilities at promoting and implementing energy-saving technologies that enhance productivity. To achieve its purposes, the project will

carry out during the estimated 8 years life of the project, two types of activities:

a. Energy Technology Applications:

This activity will be directed at selecting, designing, installing, operating, and monitoring energy efficient technologies that are economically, financially and technically viable in both private and public sector companies, and replicable in other facilities. Approximately 60 applications will be undertaken during the life of the project.

Ten technologies were initially selected for this project, among which are:

micro-computer and micro-processor based process controls; electronic energy management systems; automatic combustion controls; and waste heat recovery systems.

Additional technologies may be added during the project.

b. Technology Investment Promotion:

This activity will be aimed at promoting replication by other enterprises of the technologies that have been successfully applied.

This will be accomplished by:

- developing institutional capabilities of the Egyptian institutions, the Development Research and Technology Planning Center (DRTPC) of Cairo University, the Tabbin Institute of Metallurgical Studies (TIMS) of the Ministry of Industry and the Federation of Egyptian Industries (FEI), to identify, evaluate, finance, procure, install, operate, monitor and maintain advanced energy conservation technologies.

- increasing awareness of energy conservation technologies to promote replications through activities such as information dissemination, workshops, seminars, advertisements, publications and special studies.
- reducing policy and regulatory barriers that effect project implementation and technology adoption.

The project is divided into two components; one for the private sector and the other for the public sector, with a management and technical assistance contractor providing services to both sectors.

The implementing agency for the project's private sector component will be Cairo University's Development Research and Technological Planning Center (DRIPC). This component is managed by full-time Executive Director and a technical secretariat .

The Ministry of Industry, through the Tabbin Institute for Metallurgical Studies, will be the implementing agency of the public sector component. The Minister of Industry issued a decree establishing the Energy Conservation and Efficiency project steering committee, and a project secretariat under the umbrella of the Ministry of Industry.

The project Secretariat will carry out all activities with assistance from, and close collaboration with the Management/Technical Assistance (MTA) contractor.

The Federation of Egyptian industries (FEI) will be responsible for promotion of project's activities and achievements.

Finally, International Cooperation is now essential and it will be essential for the next 10 years to accelerate the achievement of the goals of Industrial Energy Policy in Egypt. This fact is coming from the gradual treatment of the energy prices problem, the gradual development of the national capabilities in solving the energy conservation problems and the time required to complete the innovation of the industrial enterprises.

The evaluation of the results of the international Cooperation in the field of energy conservation is seemed to be promising, which will give a big help to the Ministry of Industry towards the achievements of the goal of its Industrial Energy conservation Policy.

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