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Report on
Preparation of ECA Paper on
"ENERGY FOR LIFE IN AFRICA: TECHNOLOGIES AND FINANCE"

For presentation to the
Fifteenth Congress of the World Energy Council
to be held in September 1992 in Spain

April 1991

REPORT ON PREPARATION OF ECA PAPER ON
"ENERGY FOR LIFE IN AFRICA: TECHNOLOGIES AND FINANCE"
FOR PRESENTATION AT THE
FIFTEENTH CONGRESS OF THE WORLD ENERGY CONGRESS
IN SEPTEMBER 1992 IN SPAIN

Introduction

The Secretary General of the World Energy Council (WEC), in his letter of 17 January 1991, invited the ECA to propose a paper related to "ENERGY AND LIFE", the theme of the fifteenth Congress of the WEC to be held in Spain in September 1992. The secretariat was required to forward for consideration, an abstract of its proposal to reach the host Technical Programme Committee (TPC) in Spain by 1 April 1991.

Background of the Congress theme

In its call for papers, the TPC explains that "Life needs energy"... and elaborates "the impact that energy uses have on so many aspects of life means that the production, transmission and use of energy lies at the core of present and future quality of human life".

The Congress theme is further interpreted to specifically mean "the contribution of energy to a meaningful quality of life for everyone, for the present and future generations". The main purpose of the Congress discussion is then specified as drawing attention to the need for "recognition of the interrelationship and importance of:

"An ENVIRONMENT belonging to all and respected by all".

"An appropriate ECONOMIC context".

"A continuing DEVELOPMENT effort".

"Fuller and wider INTERNATIONAL COOPERATION."

Rationale for ECA's topic

In much of Sub-Saharan Africa and particularly in its 28 LDCs, per capita access to all forms of traditional and modern energy has recently been declining steadily. Access to energy for efficient utilization must however increase faster than population growth if quality of life is to improve. Declining energy access therefore entails deepening hardship and deprivation already prevalent in the disadvantaged social strata and deteriorating future prospects for survival and development for all. The adverse environmental and socio-economic impacts of survival and development efforts under these circumstances moreover irreversibly degrade the life support capacity of generally fragile African ecosystems and cripple the potential for socio-economic growth. In short, the energy patterns now prevailing in most African countries are not sustainable economically, environmentally and socially.

In view of the above-cited annotations to the Congress theme, the secretariat therefore elected to seek in its paper to address two of the major factors constraining African access to energy essential for sustainably improving African quality of life namely, inadequate access to energy technology and to energy finance. The paper would then highlight the urgent need for new forms of international cooperation to overcome the two constraining factors in order to improve African quality of life through improvement in access to energy for survival and for development purposes.

Energy resources in Africa

Decline of access to energy rapidly spreading in Africa can by no means be attributed to lack of primary energy resource endowments. The continent is richly though unevenly endowed with a variety of substantial fossil fuel reserves. The large and readily accessible ones are being exploited with the bulk of production exported abroad. Its geothermal and hydro-energy potentials are high though unevenly distributed also. High levels of solar radiation prevail year round over the continent. Biomass resources are also widespread except in the Sahara, the Kalahari and a few lesser deserts as well as in the arid lands fringing the deserts. Steady windspeeds prevail through much of the year in Africa's extensive coastal belts.

This range of resource endowments are providing the energy basis for high levels of quality of life in other regions. What is lacking in Africa is adequate access to the chain of technologies indispensable for producing from energy resources and commodities, the energy supplies needed for survival and development purposes and providing these supplies affordably to users.

Energy waste in Africa

Energy wastage is common at all stage of production, transport and utilisation of modern and traditional supplies. This excessive energy waste continues to persist moreover, even while acute energy scarcity is becoming widespread. Rapidly spreading soil erosion and desertification is conventionally attributed to highly wasteful traditional uses of biomass energy. It is also paradoxical that imported petroleum fuels which most African countries pay for out of very meagre foreign currency earnings to furnish the major share

of commercial energy supplies, are used with excessive and readily avoidable waste.

The key to substantial cost-effective reduction of energy wastage lies in the application of more efficient energy technologies. African access to these energy efficient technologies is also grossly inadequate however.

Declining African access to energy technology and finance

Three of the main causes of declining African access to energy and to energy services in general and in sub-Saharan Africa in particular are:

1. Almost total lack of substantial indigenous capacity to self-reliantly innovate, produce and furnish efficient technology components of energy systems essential for survival and endogenous development;
2. The lack of national foreign exchange resources adequate for importing such technologies out of which to cover the costs which continue to escalate while international prices stagnate or continue to decline for African exports.
3. Diminishing African access to external commercial loans and at the same time to multilateral development finance for acquisition of energy efficient technologies, coupled with the high cost and stringent conditions of all loan finance when it is available.

Failure of African countries to build technological capacity has historical roots. But adverse terms and conditions of transfer of technology that continue to prevail internationally are probably a key factor.

The lack of adequate foreign exchange resources is clearly a consequence of persisting deterioration of terms of trade for African countries.

Declining African access to external investment finance is a symptom of the rapid recent rise of world wide demand for investment capital. Deterioration of credit worthiness of African countries is also a major factor for declining access to loan finance.

The improvement of African quality of life in the immediate future by improvement of energy access is therefore clearly dependent on the improvement of African access to energy technologies and to energy finance.

This situation presents a challenge and an opportunity for devising new forms of international cooperation in transfer of energy efficient technologies to African countries. It also provides a challenge and an opportunity for provision of international loan finance for investment in sustainable energy systems based largely on indigenous energy resources.

The abstract of the ECA paper

The abstract of the ECA paper presenting in outline the above considerations and arguments, prepared in compliance with the TPC instructions to authors is reproduced hereunder. It was submitted to the TPC with the secretariat facsimile letter of 19 March 1991.

"Energy must be used to perform any act, make any product, render any service, consume or utilize any thing, and to maintain or alter any process including life itself. The requisite form and quantum of energy must be expended by the organism performing the action, or in the technology with which it is performed. Access to

and use of a mix of energy forms and of certain technologies are hence essential for sustainable human survival and development.

Severely adverse social and economic impacts of energy scarcities now plague most of the 41 oil importing African countries, while excessive wastages of commercial and non-commercial energy persist alongside, in their traditional and modern economic and social sectors. The energy crisis affecting these countries must therefore be ranked second only to the food crisis and the attainment of energy security deserves top-priority ranking next only to food security.

"The energy crisis is spreading though there exist small and large endowments of renewable and or fossil energy resources, that elsewhere in the world are providing the energy basis for the attainment of social and economic development goals and steady improvement of human quality of life.

"The crisis is most acute, where technologies for supply and for efficient uses of energy are unaffordable. The cost of imports of energy and of energy technologies are escalating beyond the reach of the African countries experiencing rapid decline of export earnings and deterioration of terms of trade. The combined import costs of petroleum and of energy technologies for the 41 oil importing African countries have become heavy burdens especially intolerable for the 28 least developing countries among these.

"As energy supplies and uses predominant in these circumstances are not sustainable, a transition to sustainable patterns is inevitable. If business-as-usual continues the transition is bound to unleash chaotic economic and social breakdown. Deprivation and suffering already acute would then aggravate for the most vulnerable sections of society, particularly

for women and children who must in African cultures, labour daily to provide and use household energy.

"This situation presents a challenge and an opportunity for designing and implementing rapid and orderly transitions to sustainable energy supply and use that would help stem and reverse recent precipitous deterioration of survival and development prospects in the African countries experiencing acute energy crisis.

"An orderly transition must be based on and serve self-reliance, and on cooperation with African and other nations at bilateral, subregional, regional and international levels for mutual benefit and for rational management and utilization of energy resources while protecting the environment. It would require new mechanisms of intra-African and international cooperation among partners in the transfer and financing of efficient technologies proven environmentally sound and socio-economically appropriate for sustainable supply and use of energy for life in Africa".

Acceptance of the ECA proposal

The TPC of the fifteenth Congress of the WEC has with its letter of 12 July 1991, confirmed its acceptance of an ECA paper on "Energy for life in Africa: Technologies and Finance" as proposed in the abstract. It has requested that the completed paper be forwarded to reach the TPC by the final deadline of 1 February 1992.

References

- Miguel Schloss "Sub-Saharan Energy Financing" World Bank Division Note 8 prepared in the Africa Technical Dept.

and used as a basis for a presentation to a "Conference on Energy Perspectives for the 90's" sponsored by the World Energy Council in November 1990 in Harare. World Bank, December 1990.

- A.A. Churchill and R.J. Saunders "Financing of the Energy Sector in Developing Countries". Paper presented at the Fourteenth Congress of the World Energy Conference, Montreal 1989.
- World Bank, "Sub-Saharan Africa" From Crisis to Sustainable Growth", 1989.
- Goldemberg et al "Energy for a Sustainable World", Wiley Eastern, New Delhi 1988.
- Goldember et al "Energy for Development", World Resources Institute, Washington D.C. 1988.
- The World Commission on Environment and Development "OUR COMMON FUTURE", Earthscan, 1987.
- H.T. Odum "Environment Power and Society", Wiley Inter-Science, 1971.