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CONCLUSIONS OF THE REGIONAL

TECHNICAL MEETING

ON HYDROENERGY

Held February 2-6-, 1981
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CONCLUSIONS OF THE REGIONAL TECHNICAL MEETING ON HYDROENERGY: ACTIONS FOR REGIONAL HYDRO POWER DEVELOPMENT.

Hydroenergy is one of the major energy resources available to Latin America and the Caribbean, and its importance is even greater with respect to the energy resources utilizable for the generation of electricity. The hydro power potential that is technically and economically installable in the region, is on the order of 620.000 MW of which only 7% is utilized.

If historical tendencies are projected for the development of the electric sector until the year 2000-assuming that for this same year 70% of the installed capacity for generation will be of hydraulic origin-it would be necessary to install more than 260 000 additional megawatts in hydro power stations, during the next twenty years. This means a six-fold increase in the current installed capacity.

This frame of reference gives rise to a tremendous financial, industrial-technological, and training challenge for the remainder of this century.

The objectives herein are to make some recommendations for defining joint regional proposals for the upcoming World Conference on New and Renewable Sources of Energy and to set forth some national and regional actions for confronting the challenge of intensive hydro power development.

This document was elaborated within the framework of the activities of the Regional Technical Meeting on Hydroenergy, held in the city of Quito during February 2-6 , 1981, under the auspices of ECLA and OLADE.

1. RECOMMENDATIONS FOR DEFINING A JOINT POSITION

a) That hydroenergy constitutes the energy source with the greatest availability for development in Latin America, due to its abundance, its well-known and proven technology and the ample regional experience with respect to its

utilization. Since hydro power is the main renewable energy source adaptable to the generation of electricity, it is necessary for its development to have the highest priority among the regional energy alternatives.

b) Although it is useful to foster research activities and the application of other renewable energy sources, it is nevertheless necessary to avoid our countries, int fields for experimentation and the broadening of markets for unproven technologies, where these same countries would lack major opportunities for contributing to development due to limited prospects for the industrial production, in the region of the necessary equipment , whose costs and efficiency do not lend themselves to more or less immediate prospects for the massive development of the energy sector.

c) The principal problem for massive hydroenergy development in the region is the financial one. Consequently, it is necessary to conceive innovative, creative activities to capture financial resources from abroad. These could be set forth during the upcoming World Conference, as a joint demand from the countries of the region before the developed countries, in the context of the necessities of establishing links for North-South cooperation in the field of energy and of promoting cooperation among the developing countries which are oil consumers and those which are oil producers. In this context, the following is put forth:

1) The massive development of hydroenergy, defined so as to maintain the historical growth rate for the electrical sector while increasing hydroenergy participation, will demand investments above 260×10^9 dollars (1980\$) during the next 20 years.

Considering the facts that most of the developed countries are close to saturating their hydroenergy potential and that, except for nuclear power development, electrical development will continue feeding on fossil fuels principally derived from oil, it is evident that these countries aspire to the maximization of the developing countries, use of their renewable energy resources, for the purpose of increasing the availability of oil by-products. Hydroenergy

development presented in the proposed scenario implies a cumulative substitution equivalent to more than 19×10^9 barrels of oil by the year 2000. At current prices, this would have a value on the order of 770×10^9 dollars, i.e. 3 times the value of the additional investments required in hydro power stations, without considering the additional investments which would be necessary for the installation of thermal plants as an alternative to hydroenergy development.

As an illustration, this situation would imply that if the developed countries in the framework of North-South relations were willing to finance 130×10^9 dollars for hydro power development, equivalent to 50% of the investments required, they would thereby assure an availability of oil with a value at current prices, six times greater than the financing made available for hydroenergy development.

A proposal of this kind can serve as a yardstick for the willingness to cooperate, by the developed countries, on the basis of reciprocal advantages.

2) The Mexican-Venezuelan agreement with the countries of Central America and the Caribbean, with regard to the concession of financial assistance provided in proportion to the oil acquisitions bill, constitutes a valid model of support, which should be expanded to other oil-producing and oil-consuming countries of the Latin American area.

If, in the allocation of these financial resources, priority is given to the support of hydroenergy development, an important complementary financial contribution will have been made towards the massive development of hydro power.

2. NATIONAL AND REGIONAL ACTIONS

As a complement to the concepts contained in the document "Hydro Power Potential: Energy Alternative and Industrial and Financial Challenge for Latin America, prepared by OLADE under the auspices of ECLA, the following actions are proposed to contribute to the promotion of accelerated hydroenergy development in the region.

a) It is necessary for the countries of the region to undertake the integral evaluation of their hydroenergy resources, by means of the preparation of the respective national inventories, for which it will be necessary:

- for OLADE: in conjunction with the countries of the region, to elaborate a methodology for the preparation of the inventories, to elaborate a methodology for the exchange of information to the other countries, for their adaptation to the respective situation, in order to permit the later preparation of a consolidated regional inventory.

- to promote technical assistance and training among the countries of the region with respect to the preparation of national inventories, which will be coordinated by OLADE.

- To strengthen or constitute national technical units in charge of the inventory elaboration.

- To designate national resources and to establish priorities for the capturing of foreign contributions to the elaboration of national inventories.

b) To promote massive action for the protection of basins, as a guarantee for the permanency of the hydroenergy resource; the protection of the soil and of the environment in general.

c) To establish priorities for the development of multi-purpose projects, considering the adequate distribution of investments among the different sectors benefitted.

d) It is necessary to maintain and expand the engineering capacities developed in the region, by virtue of policies for the promotion of technical teams, the sharing of experiences and the diffusion of already developed projects, as well as by means of the utilization of professionals with experience in training activities.

e) To exchange information on the modalities and conditions of contracts for studies, projects, and their financing, with a view to improving the countries negotiating capacities. A subsequent prospect would be the development of models, with reference to contracting, for the countries of the region. These activities would be coordinated by OLADE.

f) It is necessary for each country to define its industrial and technological policy in explicit terms, with respect to equipment and materials for hydroenergy utilization. The goal of self-sufficiency should be defined as a function of the prospects for industrial development and the magnitude of the market. Technological policy should adequately combine development activities, assimilation, and the transfer of technology in conjunction with development prospects for the electromechanical industry.

The major development prospects for the electromechanical industry should be framed within regional specialization and integration, thereby permitting the utilization of the existing capacities on the basis of an expanded market and the designation of production to the countries, with a view to supplying the region as a whole. This panorama of integration can be conceived within the framework of OLADE.

h) Planned and continuous development of the electrical sector constitute the basis for impelling the electromechanical industry to supply materials and equipment.

i) To promote the development of regional and sub-regional studies for the identification of prospects and alternatives for regional interconnection, be it between national systems or in border areas. Regional interconnection constitutes one of the principal instruments for optimizing the utilization of the available hydroenergy resources while considering the uneven geographical distribution of the resources and of the demand for electricity.

j) To promote development of a "pilot" nature through a number of binational and subregional interconnection feasibility projects with a view to the diffusion of these experiences among the other countries of the region.

k) The prospects for the regional standardization of frequencies, voltages, protection systems and materials present enormous difficulties to be overcome; notwithstanding, this standardization constitutes one of the principal factors in making regional interconnection viable, consequently it is necessary to elaborate studies and to develop negotiations at the regional level, in order to generate favorable conditions for this undertaking.

l) In most of the countries of the region, the state controls the electrical systems; nevertheless, in those countries which do not have a unique state company but rather various independent enterprises, be these public or private, it is necessary to create a central entity to plan hydroenergy development in an integral way, with a view to optimizing resource utilization.

m) It is necessary to exchange information and experiences related to the application of legislation in each country with respect to the use of water and "rights of way" for transmission lines.

n) It is useful to propose as an ideal objective, the attainment of a rates system to permit the overall economic feasibility of the electrical sector, but maintaining a system of differential tariffs which would make possible the development of the less favored sectors and increase the tariffs of the sectors with the largest consumption capacity.

In some countries it is necessary to maintain a system of subsidized tariffs in order to develop electrification in this case, it is important to define which economic sectors are going to contribute the subsidies and to develop a system so as to avoid the subsidies, affecting the power companies financially.

o) It is necessary to create national funds to financial the local contributions required to sustain the hydroenergy development programs; to assure the national counterpart, in order to complement the external financing; and to contribute to the financial basis for the expansion of national supplies of materials and equipment.

- p) To promote technical meetings at the regional level, in which the projects executed are presented in an integral way. Experts from the electrification institutions and consultants involved in the projects should participate in these meetings, for the purpose of sharing and assimilating experiences. The organization of such events would be left to the countries presenting their projects, with support from OLADÉ.
- q) To expand technical cooperation among the countries of the region by granting training scholarships to professionals for specific projects.
- r) The training in the countries should not be limited to courses and specialization for professionals, but it should also integrally cover the development of the human resources necessary to foster hydroenergy, principally with regard to middle-level technicians and laborers in the various aspects of construction, operation, and maintenance.
- s) It is important to train managerial and administrative personnel in order to achieve greater competence and efficiency in the management of the power companies.
- t) At the regional level, it is necessary to promote and coordinate orientation and diffusion activities directed to consumers, in order to achieve the efficient and rational use of electricity.