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Economic Commission for Latin America



REPORT OF THE MEETING ON ENERGY AND  
DEVELOPMENT IN LATIN AMERICA \*/  
(Santiago, Chile, 18-20 April 1983)

\*/ This meeting was organized by the Economic Commission for Latin America (ECLA) and the Latin American Energy Organization (OLADE), with the sponsorship of the International Development Research Centre (IDRC).

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## INTRODUCTION

1. This meeting was conceived as a regional follow-up to the IDRC meeting on energy research,\* / to examine how the activities (research, technical co-operation training and financing) of international and bilateral agencies, concerned primarily with development policy, might better support Latin American national efforts to grapple with energy/development policy issues. The IDRC meeting examined the premise that donor agencies have given little attention to the framework within which they undertake or support energy research in developing countries; in consequence such research is ad hoc, inadequate in coverage and frequently of poor quality and duplicative. Building on this premise and on the results of the IDRC discussions, the OLADE/ECLA meeting took as a point of departure the view that the activities of international and bilateral assistance agencies in support of government efforts in the planning and execution of energy policy, within the context of economic development, could be: i) improved in quality; ii) made more relevant to perceived country needs; iii) become more effective through better programming so as to avoid duplication and enable systematic consideration of a wider range of energy/development-related issues.

2. The meeting was informal, so that although most of the participants were from government, international or regional agencies all were invited in their personal capacity: six were from institutions in Latin American countries (Argentina, Chile, Colombia, Costa Rica, Dominican Republic and Ecuador) and represented "users" of international and bilateral assistance; five international and regional organizations were represented (ECLA, IDB, IEA, OLADE and UNDP), together with two agencies engaged in bilateral activities (IDRC and the Ministry of Industry and Energy of Spain), and one independent research institution concerned with international energy policy (RFF) also participated (see Annex I). The meeting was partially funded by IDRC.

3. The meeting was conducted in six sessions involving the following items:

- a) Introductory statements were delivered by the Executive Secretaries of the co-sponsoring organizations;
- b) Interpretations of the world energy situation and outlook were made by four participants;
- c) Reviews of country energy/development issues and technical assistance experience in the energy field were made by participants from five national institutions, all of which also submitted specially prepared written statements (see Annex II);
- d) Presentations of on-going programmes of research, technical or financial assistance in energy and indications of priority areas for future work were given by participants from the international and bilateral agencies and two national research institutions;
- e) A general debate took place on the issues raised;

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\* / "Report of the Informal Meeting of Energy Research Donors", International Development Research Centre (IDRC), Ottawa, 20-21 April 1982.

- f) Two discussion groups were formed to develop ideas on follow-up activities:
  - i) Priority areas for strengthening energy planning and policy;
  - ii) Programme for regional co-operation in analysis of energy/development issues.
- g) A review was made of the recommendations of the discussion groups.

#### I. THE WORLD ENERGY SITUATION AND OUTLOOK

4. The initial discussion was dominated by speculation on the short and medium-term outlook for petroleum prices in view of late 1982 and early 1983 events in the oil market. Two scenarios were presented: i) prevalence of a free market in internationally traded oil where prices could rise or fall sharply -but with a tendency to move towards the marginal supply cost of perhaps US\$ 15 (1983)/bbl- and where the major importers, particularly OECD countries, fix prices to consumers and use taxes to regulate the difference between border and consumer prices; and ii) international co-operation in search of more stable prices, and market and supply security. The fundamental issue arising from these scenarios was confrontation versus co-operation in oil trade and their respective effects on the relative stability of prices and security of supply and demand. There was general agreement that the route of co-operation was to be preferred. Further, this process would be enhanced by the analysis and exchange of information to facilitate "transparency" in the supply, demand and institutional aspects which govern the behaviour of the market.

5. It was recognized that the oil price shocks have served to make governments, entrepreneurs and householders much more aware of the importance of achieving more rational use of energy through improved efficiency, conservation, and substitution between a wider range of sources and end uses. However, while rising prices would seem to be advantageous to exporters and prejudicial to importers (and vice versa for declining prices), the experience of the last 10 years has indicated that the price fluctuations have, in fact, been beneficial neither to oil exporters or importers. This experience reinforces the point that co-operation rather than confrontation is preferable.

6. Oil-importing countries have shown a very substantial and flexible response capacity to oil price increases -on the supply side through technology transfer and investment in exploration and development of domestic oil and other energy sources, and on the demand side through price, subsidy, tax and promotion policies aimed at conservation, efficiency and substitution among energy sources. However, there is still considerable uncertainty which leaves a number of questions outstanding such as: to what extent are changes in energy consumption patterns cyclical or structural? to what extent have the easy adjustments already been made? with the inherent uncertainties in prices and technology, what are the risks of over-investing in back-up energy systems or energy security? will conservation and energy efficiency be forgotten if oil prices fall?

7. A number of participants expressed the view that some governments had been under the illusion that new and renewable sources of energy (NRSE) would offer a panacea in dealing with mounting balance-of-payments deficits. In many instances these sources have turned out to be of high cost or of only limited application as substitutes for oil.

8. It was pointed out that, in considering the effects of the 1973/1974 and 1979/1980 rises and the 1982/1983 fall in oil prices on such indicators of economic performance as per capita GNP, balance of payments or foreign indebtedness, other factors such as the availability of funds for financing external deficits, real interest rates, and the volume of world trade also need to be taken into account. In the years after 1973/1974, the adverse effects of higher oil prices were, in many countries, offset by the availability of funds for financing external deficits at low, even negative, rates of interest and the strong performance of the OECD countries. In contrast, in 1979/1980 many developing countries had to face very high real interest rates, a high dollar exchange rate, low levels of international trade and depressed prices for most primary commodities. In consequence, the effects of the 1979/1980 rise were much more prejudicial to developing countries than the 1973/1974 rise. Similarly, the benefits of the moderate fall in oil prices in 1982/1983 may be offset or intensified by developments in exchange rates, interest rates and global trade.

9. Accepting that petroleum prices and security of supply will dominate the world energy picture for the next two or three decades, there was discussion of opportunities for evolving imaginative approaches towards a global energy policy (within the constraints imposed by the current economic crisis) which may lead to identification of concrete areas of co-operation. It was suggested that it may be opportune to promote a more active dialogue between OPEC, new oil-exporting countries, OECD, and developing country oil importers. Such a move could offer a real opportunity for a more constructive North-South dialogue. Aside from developing criteria for global energy policy, the point was made that effort and imagination should be applied to developing concrete areas of co-operation between two or more countries or at the subregional, regional or interregional levels. One participant indicated that the frequent response to such proposals was that they are "politically impossible", but electrical interconnection in Central America could be cited as case where dedication to the principle of co-operation had paid off.

10. It was concluded that although energy is only one of many elements which impinge of the economic development process, it is nevertheless critical to public investment, capital goods industries, the balance of payments and foreign indebtedness. In the modern sector the supply and price of energy, particularly from conventional sources, will be a matter of increasing concern. Since hydrocarbons are exhaustible resources, the marginal cost of supply is likely to rise exponentially as energy demand increases with economic growth and population expansion. Thus, although in the short run NRSE may be of limited significance to the modern sector, it will be important to keep their development in view for the medium and long-term energy transition. In contrast, for the traditional sector (particularly rural) the development of NRSE and the incorporation of hydrocarbons as energy sources constitute major development issues in the short run.

11. Given the uncertainty regarding prices, technology and the ways in which energy policies are translated into the indicators of real economic development performance, it was argued that governments should guard against taking long-run decisions on the basis of short-run signals such as market price fluctuations or untested technology.

## II. NATIONAL CONCERNS IN THE AREA OF ENERGY AND DEVELOPMENT

12. The principal concerns of participants centred on: the consequences of petroleum price instability; the importance of energy price and subsidy policy; the tendency for energy planning to be disassociated both from national development policy and from decisions on energy policy and its implementation; the need for a broad view on the diversification and expansion of domestic energy supply; disappointment with the results of NRSE programmes; the key role of information in planning, policy and technology transfer; the question of inadequate technical and administrative capability (particularly in governmental institutions) for making effective use of information and technical assistance; and dissatisfaction with international and bilateral technical assistance, which has often not addressed the issue of building domestic, technical and administrative capacity nor taken full advantage of existing installed capacity which would have been of mutual benefit in achieving assistance goals.

13. Energy pricing: Both oil exporters and importers have suffered from price instability. On the basis of exaggerated revenue expectations, exporters have tended to embark on large indivisible investment projects with high foreign exchange components, to subsidize energy to consumers (particularly in the transport sector), and to neglect investment in exploration for petroleum and other energy sources to diversify either domestic supply or exports. The basing of public investment policy on inflated price expectations has resulted in serious balance-of-payments problems and costly delays in completion of some capital-intensive projects. Importers, for their part, are clearly faced with the problem of balance of payments and mounting foreign debt. Petroleum prices in the range of US\$ 20-30/bbl still represent a major drain on foreign exchange for many countries. In both cases domestic price policy has presented a dilemma to planners and policy makers. Managing the interrelationship between taxes, prices and subsidies in an attempt to adjust patterns of energy demand so as to be consistent with multiple economic development goals has been an elusive process, which has been compounded by uncertainty on exchange rates, inflation and interest rates. In the absence of sound analysis and adequate institutional mechanisms for co-ordinating decisions, energy tariffs are frequently set in an arbitrary manner. Political pressures to subsidize petroleum prices internally, particularly in the case of oil producers (whether exporters or importers), has prejudiced development of alternative sources of energy. In the case of Chile, mention was made of the use of border prices for imported fuels and marginal cost pricing for energy supplied exclusively from domestic sources, and of the effectiveness of this policy in forcing shifts in the pattern of energy demand.

14. Wide differences in the price of fuels between neighbouring countries may produce considerable stress in the functioning of the market. The view was expressed that where potential exists for uncontrolled or only partially controlled trade in fuels, neighbouring countries should seek to co-ordinate their domestic price policies.

/15. Information:

15. Information: There was general consensus that access to information is a critical element in energy planning and policy within the broader context of economic development policy. It was recognized that governments frequently do not have an energy data base which is sufficiently reliable and disaggregated to permit the preparation of useful energy balances and their effective integration with sectoral and macroeconomic data for both design and evaluation of policy. It was suggested that systematic evaluation of domestic conventional and NRSE energy potential should be given high priority. In addition, mention was made of the need for systematic collection of data for analysis to assist decisions at various levels, e.g., short-term energy supply, price regulation and public investment, or incentives to private investment in energy research and development, exploration, production, distribution and substitution. There was general agreement that more should be known about the structure of energy demand. It was stressed that such information is not difficult to obtain and update through household surveys and audits of major energy users in such areas as transport, thermal electric generation, smelting, pulp and paper, cement, etc. The issue of technology transfer was also debated, focussing on: transmission of technical information from data banks, national research institutions, etc., with regard to NRSE, energy conservation and energy substitution; lack of capacity on the part of national technicians to evaluate and adapt such technical information to local conditions; and lack of understanding by technical assistance agencies of the institutional and socio-cultural barriers to technology transfer.

16. Energy planning and policy: A number of participants suggested that the fundamental weakness of energy planning was lack of "backward linkages" to enable systematic integration with national planning and policy, and absence of mechanisms ("forward linkages") whereby plans are effectively taken into account by government policy makers and by those who implement policies, particularly public enterprises which are either major energy users or engaged in the production and distribution of energy. It was suggested that one method of strengthening the process of policy formulation and implementation would be to build on OLADE's experience in developing and implementing energy balance methodology. A need was seen for on-going assessment of national energy-related policies which, through regional co-operation, would make possible transfer of experience, standardization of selected proven procedures, identification and treatment of concrete operational questions and comparative analysis. The proposed OLADE/IDB/UNDP programme to support energy planning in Central America was cited as an example of such an approach.

17. External assistance and national technical and administrative capacity: Two basic concerns were expressed with respect to technical assistance or studies at the national level undertaken by international or bilateral agencies. First, in some instances countries have neither the institutions nor a sufficient cadre of professionals to make effective use of technical assistance. The same situation also applies to the technical and administrative capacity needed to use information in the form of analytical studies, technical specifications of technology options for increasing energy supply or efficiency, or international statistics on energy production, use, trade, price, etc. Second, bilateral and international agencies sometimes use external consultants unnecessarily, thereby losing a golden opportunity to:

/a) Improve

- a) Improve the relevance of the exercise through better access to local information;
- b) Facilitate more effective follow-up through involvement of those who will ultimately be responsible for implementation;
- c) Upgrade domestic technical and administrative capacity.

This suggests that external agencies which engage in studies or technical assistance at the national level should, from the outset, pay greater attention to the question of how recommendations may be put into practice and to the importance of training and participation of domestic "installed capacity" in the process.

### III. THE ROLE OF INTERNATIONAL, REGIONAL AND BILATERAL AGENCIES

18. The view was widely expressed that most Latin American countries now possess a reasonable number of well-trained professionals capable of providing the analytical basis for policy formulation. This is a situation which has evolved over the past 10-15 years and external agencies should recognize that, in many cases, programmes of research and technical co-operation of the type provided in the 1960s and early 1970s are no longer relevant. A variety of suggestions were made on how such programmes might be reoriented to:

- a) Focus technical co-operation on concrete problems where national talent lacks experience or needs a broader international perspective;
- b) Address the issue of experience by engaging in action-oriented research or policy assessment together with those responsible for planning, policy formulation and the implementation of policies;
- c) Strengthen national research and training capacity;
- d) Review the capability of national research and training centres, with a view to promoting a regional network of them, together with regional co-operation to further enhance the capacity of the region to help individual countries deal with energy policy issues.

19. It was pointed out that there has been considerable duplication of effort by international and bilateral agencies. Further, little effort has been made to analyse the experience of the agencies and the related country experiences which could provide a basis for a more systematic approach to supporting, and learning from, national efforts in energy policy formulation and implementation. It was suggested that a great deal could be learned from an examination of the 31 country energy assessments made under the World Bank/UNDP programme, the structure of the new World Bank/UNDP energy management programme, the experience of the World Bank in the review of public sector management, the OLADE programme on energy balances, the UNDP-supported "Programa Energético del Istmo Centroamericano (PEICA) and the IEA country energy policy review and evaluation process. On the basis of such an examination a phased regional programme of technical co-operation in energy policy could be mounted. The action suggested could be initiated with a flexible approach to assessment in a limited number of countries, looking at institutions, human resources, energy and development policies and the investment programme in energy-related areas. Key elements would be: use of local institutions and consultants in the assessment; a rapid first approximation of the development policy context and priority concerns of countries in the field of energy in the short run

/(2-3 years);

(2-3 years); identification of those areas where countries would be interested in technical co-operation; definition of procedures for addressing critical areas of concern which, through successive testing could be used for comparative analyses to make possible a cumulative process for improving public decision-making on energy/development issues.

#### IV. CONCLUSIONS AND RECOMMENDATIONS ON REGIONAL CO-OPERATION IN ENERGY PLANNING AND POLICY

20. Under their programme of co-operation, OLADE and ECLA will be responsible for the formulation of activities, search for the necessary financial and technical resources from countries and institutions inside and outside the region, and co-ordination and supervision of activities in two major areas - development of a framework for co-operation in energy planning and policy and a regional programme of technical co-operation in the study of national energy situations.

##### A. Framework for co-operation in support of energy planning activities

21. Three main lines of action were identified in this field: information, research and training.

22. Information: It was considered that information is a basic element in planning, and although it depends partly on the planning policies and methodologies used it is nevertheless possible to define certain areas of priority action:

- a) Preparation and periodic updating of a directory of institutions connected with energy planning, research, training and information in Latin America;
- b) Preparation of physical energy information: continued preparation of energy balances, supplemented with information on reserves, energy potential, energy uses, yields, useful energy, etc.;
- c) Preparation of energy information of an economic nature: prices, tariffs, costs, investment coefficients, taxes and financing;
- d) Preparation of energy information of a technological nature regarding both conventional and non-conventional sources, including conservation and rational use of energy;
- e) Preparation of information of a socio-economic and cultural nature needed as an input for energy planning, e.g., GDP, investment, saving, production, population, income distribution, sectoral data (transport, industry, agriculture, services, etc.). This statistical information should be supplemented with bibliographical information on conceptual and/or qualitative studies on the subject. Emphasis was placed on the creation of the necessary mechanisms to promote the processing and smooth circulation of this information at the national and regional levels.

23. Research: As regards basic and applied research to back up activities connected with energy planning policy, a number of lines of research were identified which, although not exhaustive, were considered to be of interest for /energy planning

energy planning activities. Reference was made, inter alia, to the following topics, which are not listed in order of priority as their relative importance will vary from one country to another:

- a) Energy planning methodologies relating to both equilibrium and interaction between demand and supply;
- b) Development of partial or global models as energy planning tools;
- c) Studies on the relation between energy and levels of sectoral activity (agriculture, industry, transport, households);
- d) Studies on the energy problems of rural areas and relatively less developed zones;
- e) Surveys on energy consumption and efficiency by sectors, sources and uses;
- f) Impact or influence of the energy sector on the socio-economic system: investment, employment, environment, balance of payments, etc.;
- g) Relation between energy planning and global planning;
- h) Relations between styles of development, energy and the environment;
- i) Problems of prices, taxes and subsidies;
- j) Problems of financing;
- k) Analysis of the impact and advisability of large energy projects: e.g., economies of scale versus flexibility;
- l) Analysis of the importance of total regional demand for equipment and materials as a bargaining element with suppliers of these goods, and its role in promoting the regional industrialization process;
- m) The influence of the supply of certain energy sources on energy-use technologies.

It was considered essential to organize institutional support (financial and technical) for projects such as those listed above, in such a way as to strengthen regional research capacity.

24. Training: Reference was made to the desirability of promoting a regional plan of action in the field of training in order to consolidate and expand both the activities already being carried on by various centres in the region and those which ILPES and OLADE plan to carry out in the future. For this purpose, it would be desirable to set up a regional network to link these activities. Reference was also made to the need to promote training in project preparation, appraisal and monitoring, as a means of linking energy planning with the execution of projects.

B. Regional programme of co-operation for the provision of advisory assistance on energy studies

25. General framework: Latin America needs improved knowledge of its energy situation so that it can implement policies and execute projects which are better adapted to present and future requirements for development. The region has human resources and technical capability which could be mobilized more effectively in the short term to carry out the studies required. There is also potential for the rapid development of additional technical and human capacity for the same purpose. At the regional level, the spirit and framework of the Latin American Energy Co-operation Programme (PLACE) have established the general lines along

/which regional

which regional co-operation could mobilize this capacity. Implementation of a programme of advisory assistance for energy studies in Latin American countries by OLADE and ECLA, in conjunction and complementation with other activities at the national and regional levels, will bring important benefits for the development and rational utilization of the energy resources of the region.

26. Objectives: Within the framework of interrelations between the energy sector and the set of variables which condition economic and social development, and as a function of the specific needs of individual countries, the programme has as its objectives:

- a) To collaborate with countries which so request in studies aimed at identifying the essential problems and suggesting alternative solutions for energy development, with special emphasis on the identification of projects, policies and policy instruments; the institutional framework (including the availability of human resources); financing; and technical co-operation;
- b) To provide the countries with advisory assistance in specific fields -determined as a function of the national priorities and critical areas established by each country- where external support is required to complement the planning and policy efforts underway or programmed;
- c) To strengthen and promote concerted co-operation between Latin American countries and institutions operating in the region, within the spirit of PLACE.



Annex I

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Annex II

LIST OF DOCUMENTS DISTRIBUTED

1. Adams, Pat and A. Barnett, "A report of the informal meeting of energy research donors, 20-12 April 1982", IDRC, Ottawa, July 1982.
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4. Acosta, José Ramón, "Naturaleza de los aspectos críticos en el campo energético enfrentado por la República Dominicana", Santo Domingo, April 1983.
5. Umaña, Alvaro F., "Brief analysis of Costa Rica's energy system", San José, April 1983.
6. Suárez, Carlos E., "Experiencia de la Fundación Bariloche en el campo de la asistencia técnica en política y planificación energética en América Latina", San Carlos de Bariloche, April 1983.
7. UNDP, "Breve síntesis sobre el compromiso y la acción del PNUD en el sector energético en América Latina", Santiago, April 1983.

Annex III

AGENDA

1. Introductory remarks by the Executive Secretary of ECLA and the Executive Secretary of OLADE.
2. Presentation by selected Latin American countries of government perceptions of:
  - a) The nature of key energy/development issues confronted by the country
  - b) The need for comparative studies or policy-oriented research on issues by regional or international agencies
  - c) How these issues have influenced national requests for financial and technical assistance
  - d) How international and bilateral agencies have interpreted the issues in structuring their research and response to requests for assistance
  - e) What modifications might be considered in order to make external assistance and research at the regional or international level more relevant to helping governments plan and manage energy policy within the overall economic development context.
3. Presentation by selected international and bilateral assistance agencies of their perceptions of:
  - a) Key energy/development issues confronting countries with which they deal
  - b) How the agencies have responded to these issues in structuring research or in providing technical or financial assistance
  - c) Response of recipient countries to both the agencies' perception of key issues and the assistance provided.
4. Overview and debate on national demands for technical assistance, and the capacity and focus of international, regional and bilateral agencies to supply such assistance with adequate research support.