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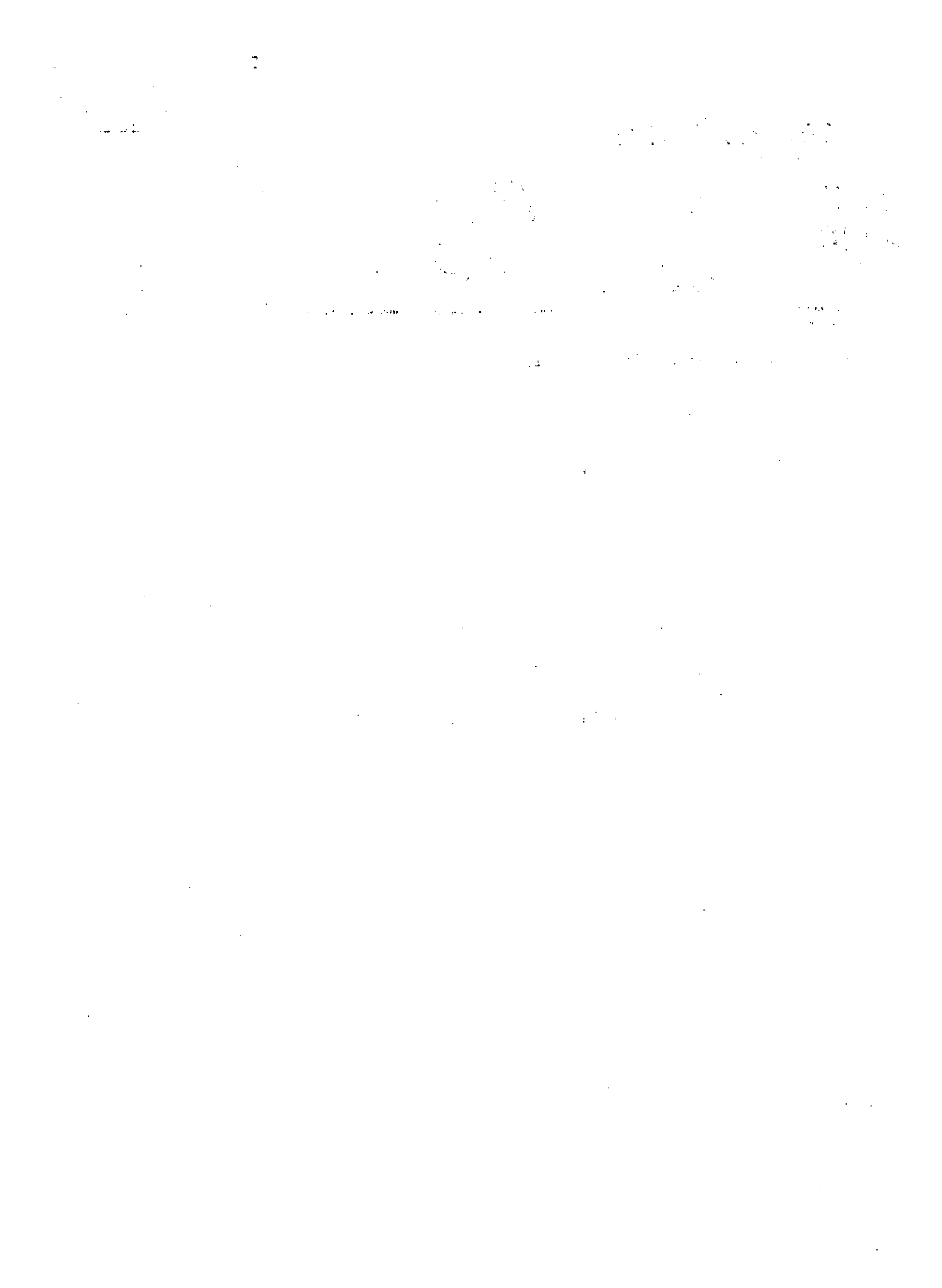
CEPAL

Economic Commission for Latin America

REPORT OF THE SEMINAR ON STYLES OF DEVELOPMENT AND  
ENVIRONMENT IN LATIN AMERICA

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1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial matters. This section also touches upon the legal implications of failing to maintain such records, which can lead to severe penalties and legal consequences.

2. The second part of the document focuses on the role of technology in modern record-keeping. It highlights how digital tools and software solutions have revolutionized the way data is stored, accessed, and managed. This section discusses the benefits of cloud storage, data encryption, and automated backup systems, as well as the potential risks associated with digital data, such as cyberattacks and data loss.

3. The third part of the document addresses the challenges of data security and privacy. It explores various threats, including phishing, malware, and insider threats, and provides practical advice on how to mitigate these risks. This section also discusses the importance of regular security audits and the implementation of robust access control policies to protect sensitive information.

4. The fourth part of the document discusses the importance of data backup and recovery. It explains how regular backups can prevent data loss in the event of a disaster or system failure. This section also covers the different types of backup strategies, such as full, incremental, and differential backups, and provides guidance on how to test and restore data from backups.

5. The fifth part of the document focuses on the legal and regulatory aspects of record-keeping. It discusses the requirements of various laws and regulations, such as the General Data Protection Regulation (GDPR) and the Health Insurance Portability and Accountability Act (HIPAA). This section also provides information on how to ensure compliance with these regulations and the consequences of non-compliance.

6. The sixth part of the document discusses the importance of data retention and archiving. It explains how to determine the appropriate retention period for different types of data and how to properly archive data for long-term storage. This section also covers the importance of regularly reviewing and purging old data to maintain system efficiency and reduce storage costs.

7. The seventh part of the document discusses the importance of data integrity and accuracy. It explains how to ensure that data is not corrupted or altered during storage and transmission. This section also covers the importance of regular data verification and the use of checksums and other error-detection techniques to maintain data integrity.

8. The eighth part of the document discusses the importance of data backup and recovery. It explains how regular backups can prevent data loss in the event of a disaster or system failure. This section also covers the different types of backup strategies, such as full, incremental, and differential backups, and provides guidance on how to test and restore data from backups.

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10. The tenth part of the document discusses the importance of data retention and archiving. It explains how to determine the appropriate retention period for different types of data and how to properly archive data for long-term storage. This section also covers the importance of regularly reviewing and purging old data to maintain system efficiency and reduce storage costs.

## INTRODUCTION

This report contains the conclusions and recommendations of the Seminar on Styles of Development and Environment in Latin America, held in Santiago, Chile, from 19 to 23 November 1979. The Seminar was a stage in the Project with the same title sponsored by the Economic Commission for Latin America (CEPAL) and the United Nations Environment Programme (UNEP).

The main objectives of the Seminar and Project were: (a) to study and shed light on the interrelationships between the styles of development prevalent in the region and problems of the environment and of resource utilization; (b) to encourage interest in alternative styles of development fostering better environmental conditions and a better use of resources; (c) to propose measures to improve living conditions in general and environmental conditions in particular, including those aimed at developing an alternative style of development.

Forty-nine documents on the principal aspects of the Project were prepared for the Seminar, with the participation of Project personnel, experts of CEPAL and other institutions interested in these problems, and independent consultants. An overall report attempting to incorporate and integrate the inputs of the different documents was also prepared.

The work of the Seminar was conducted through plenary meetings and five commissions. The plenary meetings discussed general issues and the conclusions and recommendations of the commissions, which were set up on the following topics: (1) Styles of Development and the Environment; (2) Agricultural and Forestry Modernization; (3) Urbanization and Marginality; (4) Energy and Industrialization; and (5) Planning. Each commission considered the documents most directly related to its own topic, as may be seen in annex 1.

The conclusions and recommendations have been presented in two parts, the general conclusions being followed by those of each commission. Some duplication is thus inevitable, particularly between the general conclusions and those of the commission on styles of development and the environment, since the general conclusions attempted to reflect as much as possible the work of the commissions.

## I. REPORT OF THE SEMINAR

1. The seminar considered the relationship between the environment and the style of development prevailing in Latin America in recent decades. Environment was considered to be the biophysical medium formed by society and nature, and the distinction was made between the natural, the modified and the produced or constructed environment. The concept of styles of development was defined as the way in which, within a specific system, human and material resources are organized and allocated with the aim of resolving the questions of what goods and services should be produced, for whom, how, where and with what resources. It was defined in a complementary way as the concrete and dynamic form adopted by a social system in a specific environment, particularly as regards certain fundamental dimensions which include (a) economic growth, (b) social development, (c) political participation, (d) cultural identity, (e) ecological sustainability, and (f) national self-reliance. These definitions imply, at the national level, styles that evolve through contradictions and conflicts between emerging or ascending and defensive or declining social forces; they also imply options or alternatives that are made possible through the political process and by planning for the modification or transformation of the predominant style.

2. While the unprecedented economic growth achieved in the 1950s and 1960s in most Latin American countries has made an appreciable contribution to improving the living conditions of broad groups of the population - though admittedly with severe manifestations of inequality between the various social sectors, and with the numbers of the poor growing in absolute terms - it has not permitted satisfactory progress towards maximizing the dimensions referred to above. The potential for growth and accumulation is still inadequate and insecure in many respects, poverty is prevalent, political participation is limited, cultural identity is severely threatened, there are new forms of external dependence and Latin American integration is moving forward only with difficulty, there is a substantial waste of natural resources through both over and underutilization and the environment is deteriorating with increasing rapidity, affecting the poorer urban and rural sectors in particular.

3. In recent years, transnational capitalist style of development has come to dominate the national development processes, though in different forms depending on the characteristics of each country, and has narrowed the options open to national policy and planning. Among the main features of this style are the transnational corporations as the dominant agency, growing mobility of capital at the global level, and the homogenization of technology, cultural models and patterns of consumption. The excessive economic rationality of a markedly oligopolistic nature imposed by the style of development has introduced or intensified a number of threats to the environment, local cultural creativity and the quality of life, and has restricted possibilities of seeking alternatives.

4. These threats include the excessive dependence of the development process on an energy base such as petroleum, until recently abundant and cheap, the irrational use of natural resources (both renewable and non-renewable) that is not sustainable in the long run and which visibly threatens to destroy the natural resources of the tropics; an equally undesirable spatial distribution of economic activities, the creation of urban agglomerations which are increasingly difficult to administer, the unequal distribution of income; the exacerbation of conspicuous consumption of the richest minority groups, with the consequent weakening of the domestic potential for capital accumulation; the accentuation of social marginalization, and the deterioration of the physical environment. What is more important is that people have become aware that these problems are not transitory, remediable shortcomings of the prevailing style of development, but ones which call for a profound transformation of the latter.

5. These processes have been particularly obvious in the 1970s, when the economic growth rate has also declined considerably, helping to worsen many of the problems outlined above. The growth requirements of the dominant style make it doubtful whether it is sustainable in energy terms, because of the dramatic changes recorded in prices and supplies of petroleum, and the slow progress made in the search for alternative energy sources and in the implementation of conservation policies, margins for the application of which are much narrower in the developing than in the developed countries.

/6. Furthermore,

6. Furthermore, the fall in the rate of economic growth in the Latin American countries is compounded by the fact that the style of development they have pursued in the recent period is passing through a crisis in the very centres which generated and disseminated it, and this presents new challenges and also offers new opportunities to the Latin American countries, for they are societies which can neither cut themselves off from the international style of development, nor rely on its long-term viability. Consequently these societies face an uncertain future, where the international context will have a changing effect on their economies, ecosystems and ways of life. As a result, there will be a need in the future for an unprecedented combination of foresight in the short, medium and long term, understanding of the way in which complex systems function, and flexibility in responding to a range of contingencies which cannot be foreseen. The uncertainty surrounding these contingencies confirms the need for Latin American societies and their political leaders to acquire a set of values and a conception of development which, despite this lack of certainty, will guide their respective processes and make it possible to respond creatively to obstacles and unexpected events.

7. Such a conception will have to take into account very carefully the diverse situations which characterize the various countries, not only as regards their historical evolution and their present economic, sociopolitical and cultural structures, but also in respect of their demographic conditions and natural resource base, including ecological characteristics, geographical location, size, etc. This is particularly important in the case of many of the Caribbean countries, which have a colonial history that extends into contemporary times and has left a socio-cultural inheritance that is very different from that of the other countries of the region, which are mostly very small countries, based on island ecosystems, etc.

8. Taking into account the development experience referred to, and the differences that exist between the various countries, the seminar was of the opinion that the development of the countries of Latin America should be founded on the achievement of the following principal objectives:

/(a) progress



(a) progress towards the creation of a production structure which is more diversified, efficient and flexible, which can continue to broaden domestic production potential and take better advantage of international economic relations;

(b) a more egalitarian distribution of ownership and of access to existing natural resources and wealth, and - bearing in mind the requirements imposed by the expansion of the production capacities - the channelling of a substantial proportion of the resources generated by economic growth first and foremost towards improving the working and living conditions of the poorest sectors of the population;

(c) creation of the institutional and other conditions necessary to ensure a higher level of organized participation of the broadest sectors of the population in the decision-making process and in supervising the implementation of decisions;

(d) a specific cultural identity, based on a society's natural resource endowment and on the fundamental values and traditions which have historically moulded the cultural heritage of the various sectors making up the peoples of Latin America, and on its enrichment and renewal through the critical and selective incorporation of contemporary culture, consumption and lifestyles;

(e) the achievement, in the most relevant sectors and dimensions of social activity, and within the context of the inevitable trend towards growing international integration in all spheres, of a greater capacity to generate endogenous, independent options and greater international bargaining power;

(f) in connexion with the preceding point, promotion of increasing Latin American regional solidarity and complementarity at all levels, within the general spirit of the objectives set out here, and giving particular attention to the rational socioeconomic and ecological utilization of the region's natural resources;

(g) the shaping of a type of economy, society, culture and form of international relations which - while in keeping with the above objectives - is consistent in the long term with the potentialities and the set of restrictions which arise in its necessary, continuous and increasingly significant interaction with the environment.

9. The problems facing Latin American development as well as the drawing up of alternative strategies, in order to be clearly understood, call for a transdisciplinary approach, to which consideration of the environmental dimension of development makes a decisive contribution. Concern for the environment introduces, among others, the following fundamental elements:

(a) recognition of the interaction and interdependence between the various segments of the social systems, through better understanding of the relationships which arise between society and the environment, both nationally and internationally;

(b) perception of the need to use systemic approaches which make it possible to explain and optimize the relations between society and the environment;

(c) recognition of the need to redefine the concept of development itself in such a way that nature is no longer considered as an inert medium which is a passive recipient of wastes and a source of raw materials, but that emphasis is placed on its capacity to influence social processes and meet human needs within certain limits;

(d) acceptance of the crucial importance of knowledge of flows of energy and materials in ecological systems, knowledge of which can offer guidelines for better management of ecological systems, both natural, modified and produced or constructed;

(e) recognition of the existence of ecological and social limits to economic growth, and their dependence upon the style of development adopted;

(f) the possibility of forecasting the relative or absolute unworkability of certain styles of development which are ecologically unsound;

(g) the possibility of moving forward towards a redefinition of the concept of development and environment in the light of objectives regarding the improvement of the quality of life, and incorporating consideration of qualitative elements in the theory and practice of development.

10. At a more specific level, consideration was given to the main requirements involved in certain processes of particular importance in the Latin American case - the development of agriculture, of industry and natural resources, and of urbanization, from the viewpoint of their compatibility with their bases of ecological support.

11. As regards agricultural and forestry development, attention was drawn to the following objectives, among others:

(a) to control excessive specialization and artificialization in the modern sector of agriculture in order, without wasting its growth potential, to avoid the displacement of labour, deterioration in ecosystems and the marginalization and destruction of the peasant sector;

(b) to protect agricultural land from overuse, especially in the peasant economy, through programmes of reforestation, terracing, irrigation, drainage, and so on, in consultation with rural communities and respecting their right to have access to adequate sources of subsistence;

(c) to define specific forms of development for arid and semi-arid areas, including the development of appropriate technology, using appropriate financial, technological and administrative resources, and bearing in mind their impact on employment;

(d) to pay similar attention to the requirements of tropical and subtropical areas;

(e) to avoid the destruction of Latin America's forest wealth, particularly in areas which are unsuitable for crop farming and livestock raising, developing policies and experiments which permit forestry development and improved management of these resources, by ensuring multiple use;

(f) to continue the analysis and implementation of the structural reforms necessary to achieve these objectives, both from the viewpoint of the economic efficiency of the solutions involved, and from that of social welfare, particularly as regards grass-roots organizations and the provision of basic services such as health, housing, education, communication and community infrastructure;

(g) to develop appropriate and ecologically sound technologies for Latin American agriculture, and create the economic and social conditions for their use, with emphasis on the specific requirements of tropical and arid areas;

(h) to employ appropriate technologies and farming methods compatible with the social and ecological integrity of the areas more suitable for the further expansion of the agricultural frontier;

/(i) to

(i) to rationalize the use of marine resources, in view of the existence of species which are in the process of extinction, and in order to avoid damage to them as a result of pollution, in certain coastal areas, and particularly in the Caribbean region.

12. As regards industrialization, natural resources and energy the following requirements were indicated:

(a) to pay greater attention in planning and development policies to the location of industry and improve the criteria used and the institutional mechanisms necessary to progress towards better geographical distribution of industries and of production activities;

(b) to progress towards the definition of scales of production which are appropriate from the environmental viewpoint;

(c) to identify appropriate technologies, both preventive and remedial, which take into account the requirements imposed by the environmental dimension, particularly with a view to reducing industrial pollution and creating the conditions for their application;

(d) to draft industrialization policies which stimulate job generation in that sector and, as a consequence, a rise in the incomes of wage-earners and an increase in the means available to them to preserve and improve their housing and urban living conditions;

(e) to propose strategies which emphasize consistency between the country's industrial structure and its natural resource base, both in order to increase the benefits derived from exploiting and processing such resources, and to diversify the industrial development of the country and improve its participation in the world economy;

(f) in the field of natural resources, to broaden the national processes of prospecting and exploration, strengthen control and local processing of such resources, improve the bargaining capacity of the State and the private sector, and examine the possibility of developing criteria and methods which attach proper economic value to such resources in the national accounts, in socioeconomic analysis and in planning;

(g) in the energy field, to encourage policies which not only seek to expand present sources of energy, but also promote the identification of alternative sources and the adoption of forms of social organization and

/technology which

technology which permit better use of energy, on the grounds that any energy policy whose effect is to maintain the present style of growth will be unworkable, and that the solution to the energy problem basically lies in the search for alternative styles of development, which incorporate in their objectives the freedom of each society to determine its own nature, the improvement in the quality of life and the protection of the environment.

13. In relation to urban development, it was felt that a continuation of present trends towards metropolitanization, an excessive increase in the urban population, the occupation of agricultural land for urban purposes and congestion and pollution in the towns will lead to unmanageable problems. Correcting these trends will call for changes in the prevailing style of development, and in particular, requires the following:

(a) the introduction of policies for planning and control of urban land, eliminating the speculative element from the price of such land and permitting broader access to it for all sectors of the urban population;

(b) the application of policies to subsidize public services in the urban - as well as rural - areas as a viable method of redistribution;

(c) developing the creation and making possible the use of appropriate technology for urban areas in each country, taking into account the resources available for urban investment and the supply of public services;

(d) readjustment of the tax structures in the urban areas in order to collect resources deriving from the inhabitants with the highest incomes and transfer them to the low-income sectors, both urban and rural;

(e) improvement and expansion of the public transport systems and progress towards more rational use of the private motor car;

(f) improvement of the health and nutrition services, going beyond the emphasis at present placed on curative activities;

(g) upholding of those expressions of culture which are most consistent with the specific values of each society, seeking co-operation from the mass communication media;

(h) creation of a legal and political framework which makes possible broad popular participation in the taking of decisions that affect the urban process and in their implementation, and permit a gradual redistribution of power and the appropriation of urban resources and social benefits.

14. In the field of planning, recognition was given to the heterogeneity of Latin America, as regards both physical and ecological conditions and the styles of development and political systems of the different countries. Planning is not independent of the style of development prevailing in them, but may serve as a tool for helping to modify it and make progress towards alternative styles to the extent that it enjoys sufficient political and social support. In this regard, in order to permit better understanding of the problems of development in general, and of the environment in particular, the prevailing systems of planning should undergo a thoroughgoing critical review and incorporate the following elements, among others:

(a) methods which make it possible to assess the depreciation or consumption of natural resources and the damage inflicted on the environment, as well as the enhancement of the natural resource base derived from investments to improve knowledge of them and their usefulness;

(b) the use of long-term time horizons, to allow for the consideration of those cycles of nature which are relevant for development strategies, but which are frequently ignored in planning;

(c) the specification of quality norms and standards vis-à-vis the environment and the use of resources;

(d) the incorporation in development planning of techniques designed to forecast the environmental impact of specific socioeconomic activities;

(e) the search for means of bringing the administrative division of the country into line with the ecologically significant zones;

(f) ensuring participation by the community in the planning process;

(g) giving full consideration to the needs of isolated communities in rural areas;

(h) promotion of programmes of environmental education which, in addition to training technical staff, help to create awareness of environmental problems;

(i) broadening of the environmental information base available to planners and, in general, those responsible for taking economic decisions.

15. The elements referred to are basically of an operational type. However, it is necessary to incorporate them within strategic conceptions which take account, in particular, of the uncertainty, crises and conflicts which characterize the present situation. This means that a profound change should be introduced in the conception of planning itself, where the accent is placed on ability to react creatively to unforeseen events. This in turn calls for a follow-up and monitoring system which, in order to be effective, must be based on decentralization and participation.

16. The operational and strategic aspects of planning must be placed within a normative framework, in which the objectives of development are defined. This should be the expression of an alternative development style, along the lines defined in general terms in paragraph 8.

17. Finally, the seminar turned to the identification of the most appropriate ways of continuing the efforts already begun to clarify and improve the relationship between the environment and styles of development in Latin America, through the joint efforts of CEPAL and UNEP. The following conclusions were reached:

(a) there is an urgent need for a critical re-examination, at both the national and international levels, of the styles of development prevailing in Latin America, as a contribution to modifying them or adopting a new style which is more suited to meeting the needs and aspirations of the countries';

(b) clear agreement with the scope and approach of the Global Report presented to the seminar, and with its aim of integrating in the concept of development a set of new aspects related to the environmental dimension;

(c) the importance and novelty of the challenges posed by the problems of the environment, both at the national and at the international level, make it necessary to engage in further analysis of the many complex aspects of the relationship between styles of development and environment in Latin America;

(d) special emphasis was placed on the importance which should be attached, within this line of research, to analysis of the cultural factors through which the prevailing style of development in Latin America is formed, spreads and is absorbed in preference to others, and to the need to develop paradigms which make it possible to advance towards a better relationship between man and nature;

/(e) bearing

(e) bearing in mind that, in the light of the experience outlined in the seminar, it is obvious that some sectors of Latin American societies have reacted positively to the challenges posed by the relationship between the environment and styles of development in the region, it was emphasized that the line of research referred to should cover the analysis and evaluation of specific cases - sectoral, regional and national - which offer alternative solutions to such problems, particularly as regards the processes of metropolitanization, regional development, the opening up of new land for agriculture and the search for forms of social organization and technologies which are more compatible with the ecological base of society in general, and with the limitations which have arisen in the field of energy in particular;

(f) this research should be designed to provide inputs for information, advisory and training activities connected with the environmental dimension of development and the search for ecologically sustainable alternative styles of development;

(g) in this context, the seminar stressed that it was desirable for CEPAL, ILPES and CELADE to incorporate the environmental dimension and the main contributions to and conclusions of the present meeting in their research, training and advisory programmes;

(h) for that purpose, the need to strengthen continuing activities in CEPAL on these problems was underlined, drawing benefit from the experience and momentum built up through this project and seminar;

(i) it was also strongly recommended that continued use should be made in these activities of the method used in organizing this project and seminar - that of mobilizing and involving in the problems of the environment and styles of development in Latin America the widest variety of technical units in CEPAL and other organizations in the system, in order to ensure that the environmental dimension is duly present in the analysis of all the sectors of economic and social development in Latin America;

(j) in order to complement the existing capabilities and the experience acquired within the CEPAL and UNEP system and in the countries of the region, and on the basis of the wide range of experience contributed towards the seminar, it was proposed to set up a network of governmental and private technical institutions with experience in the field of the environment and /styles of



styles of development in Latin America, with the aim of placing this capability at the service of the research, advisory and training activities to be defined in the future, and as a concrete expression of the potential offered by horizontal co-operation among Latin American countries;

(k) wider appreciation of the importance of environmental problems and the creation of public awareness of these issues was one of the needs most forcibly emphasized in the seminar; in that context, it is recommended that the Global Report and the documents presented to the seminar should be published and circulated as widely as possible;

(l) mention was also made of the possibilities which exist for extending to other developing areas this horizontal co-operation effort in certain specific aspects raised by the relationship between styles of development and the environment;

(m) it was recommended to CEPAL and UNEP that the work being carried out for the preparation of the International Development Strategy for the 1980s should take account of the documents, deliberations and conclusions of this seminar.

## II. REPORTS OF THE COMMISSIONS

### COMMISSION 1: STYLES OF DEVELOPMENT AND ENVIRONMENT

The commission focussed on the following four questions:

A. In what ways has the growing concern for environmental issues led to a better understanding of development problems?

1. The main contributions worth listing include:

(a) recognition of the interaction and interdependence of the different socio-cultural systems and subsystems through environmental processes both at the national (for example, the relationship between city and countryside, through material and energy flows) and international levels (trade, transport, shared natural resources and cross-boundary pollution, among others);

(b) recognition of the existence of ecological and social limits to growth, and their dependence on the style of development adopted;

(c) the need for a systematic approach to explain and optimize the relationships between man, society and nature;

(d) the redefinition of the very concept of resources, to take into account such aspects as the regulatory role of the sea, genetic reserves, forest ecosystems as regulators and potential producers, and so forth; nature thus ceases to be viewed as a mere recipient of wastes and source of raw materials, and instead its role in regulation and in the satisfaction of other human needs is stressed;

(e) the crucial importance of knowledge of flows of energy and materials in ecological systems, from which guidelines can be drawn for a better management in modified (forestry, agricultural and fishery) and man-made (urban-industrial) systems, in order to optimize their use;

(f) redefinition of the concept of development and environment from the standpoint of the quality of life, taking into account qualitative and subjective factors, material and non-material human needs;

(g) recognition of the importance for development thinking of the paradigms arising from a better understanding of ecological systems (adaptability, resilience, flexibility, organized complexity, diversity);

/(h) identification

(h) identification of the unviability of certain styles of development which damage the environment.

B. What are the salient features of the style of development prevailing in Latin America?

2. The concept of "style of development" has been defined from two complementary standpoints as "the manner in which human and material resources are organized and allocated within a given system in order to settle the questions of what goods and services are produced, for whom, how, where and using what resources"; and as "the concrete, dynamic form taken by a social system in a given environment", especially as regards dimensions such as (i) economic growth, (ii) social development, (iii) political participation, (iv) cultural identity, (v) ecological sustainability, and (vi) national self-reliance. At the national level these definitions imply styles which evolve through contradictions and conflicts between ascending forces and defensive or descending forces; as well as possible options for modifying or transforming the prevailing style by means of the political process and planning.

3. In recent years an international capitalist style has come to dominate the national processes, its forms varying with the characteristics of each country, and the options open to national policy and planning have narrowed. This style is characterized by the transnational corporation as dominant institution, increasing world-wide mobility of capital and standardization of technology, cultural patterns and consumption. The excessive economic rationalism imposed by the style has introduced or intensified a series of threats to the environment and restricted the possibilities of counteracting other threats to cultural diversity and creativity and the quality of life, by imposing technological options that strengthen its essential features.

4. This style is now passing through a crisis in the very centres which generated and disseminated it. This presents new challenges as well as new opportunities for the countries in which it has become dominant, for they are societies which can neither cut themselves off from the international style of development nor rely on its long-term viability. They therefore face an uncertain future, with constantly changing effects on their economies, ecosystems and ways of life. In the political sphere an unprecedented

/combination of

combination of foresight regarding the long run, of understanding of complex systems, and of flexibility in reacting to fluid short-term situations and to a broad range of contingencies will be required. This combination will in turn call for basic changes in the values of the political leaders and the population in general, and in their conception of development. These changes can only be expected to result from the impact of socio-political crisis, as interpreted by new types of thinkers and moulders of public opinion.

C. What are the main environmental effects of the prevailing style of development?

5. The excessive economic rationality of the prevailing style of development leads to a series of threats to the environment which include: the irrational use of renewable and non-renewable resources, particularly and increasingly in the tropics; the questionable rationality of the geographic distribution of economic activities; the concomitant creation of urban agglomerations which are increasingly difficult to manage; the deterioration of the physical environment; the loss of cultural identity; and insufficient autonomy in the fundamental decisions which affect development and, ultimately, its environmental aspects.

6. The excessive economic rationalism underlying these processes is linked with the shortcomings of the market mechanism in the evaluation of the economic costs of the process; with the imposition through powerful advertising media of standardized patterns of consumption leading to uniform, mass-consumption lifestyles detrimental to the integrity of the environment; and profound inequalities in the distribution of income which enable the periphery to reproduce sophisticated forms of consumption generated in central societies with much higher average levels of economic productivity and per capita income.

7. The glaring inequalities in access to the benefits of development - whatever its style - also affect the environment. In particular, the effects produced and registered by different economic agents vary: for example, two extreme cases are the large-scale production unit which is technologically highly complex, consumes a high level of energy per unit of product, and so forth; and the rural subsistence units located in agricultural land which is of low quality and generally overutilized.

/8. Obviously,

8. Obviously, these effects and features will have to be considered in the light of the concrete historical and structural circumstances of each Latin American society which characterize the "substyles" embracing the specific environmental factors in each case. From the global point of view, it may be seen that a number of serious, immediate problems are emerging which seriously threaten the very viability of the prevailing style of development.

9. The style's growth requirements have in particular run up against problems in the energy base underpinning them, as a result of the growing shortage of oil supplies. As for the use of alternative energy sources, experiments have begun in the preparation of fuels based on agricultural activity, which raises the question of the economic and social structural changes which might result from the spread of this practice. Special attention should be paid to the possible drawbacks of the use of agricultural land for the production of fuel rather than food.

10. With regard to other energy sources, such as nuclear plants, consideration must be given to the differing capacity of the peripheral and central countries to deal with the risk involved in running such plants. In any event, the emergence of the energy problem is no more than a particularly serious and pressing expression of the enormous, complex environmental effects of the present style of development.

D. What basic elements should a development strategy aimed at removing the adverse environmental effects of the prevailing style of development comprise?

11. The abovementioned consequences of the prevailing style led to a discussion of the need to adopt new development strategies and new forms of planning in order to face up to increasingly unsettled situations.

(a) the need was recognized to develop machinery providing an earlier and clearer grasp of the dynamics of environmental systems;

(b) the growing interdependence and faster rate of change of social and environmental systems at the world-wide level mean that adaptable strategies should be adopted which ensure the ecological sustainability of development;

/(c) an

(c) an adaptable development strategy allows more future options and maintains or increases the capacity to react to the unexpected. Hence the need to conceive and develop different forms of monitoring and machinery for feedback between social and environmental systems;

(d) a fundamental requirement in the development of this kind of strategy is a better theoretical and conceptual understanding of the ways of perceiving and explaining complex interdependent systems involving political, social, cultural, economic and environmental elements;

(e) the lack of theoretical tools in this field is both one of the causes of uncertainty regarding the future and a constraint upon the formulation of new strategies;

(f) particularly important is the need to advance in the design of machinery to monitor environmental effects which make possible some kind of "energy accounting", with a view to evaluating the rationality of human action in the environment;

(g) this need in turn stems from the inefficiency and inadequacy of the market mechanism in gauging the enormous short-, medium- and long-term economic costs of the environmental effects resulting from the present forms of resource allocation;

(h) the inclusion of the environmental dimension affects the forms of rationality of planning and the time-horizons used. In particular, in the case of damage to the environment, it becomes necessary to create mechanisms to determine the limits beyond which the consequences are hardly reversible. In this connexion, the desirability was recognized of decentralizing as far as possible the machinery for regulating and monitoring ecological systems so that emerging critical situations can be detected earlier;

(i) it is essential to design and set up appropriate institutional and legal machinery to ensure that in practice these concerns and objectives are acted on and implemented;

(j) it is also necessary to create awareness among all sectors of society of the increasing importance of environmental problems. Here education is fundamental, not merely at the higher and specialized levels but also at the more basic levels which reach the mass of the population.

12. The solution of environmental problems is, in the last analysis, a political task. The abovementioned threats to the environment are the direct consequence of the development style prevailing in Latin America, and in turn that style and the excessive economic rationality on which it is founded are geared to the interests of specific social groups which firmly upheld it. They also result from the expansionary logic of the style and its present forms of internationalization, linked with the workings of a likewise expansionary transnational system of which the social groups promoting the prevailing style are also part.

13. As long as there is no redistribution of power, nationally and internationally, it will be difficult to embark upon remedial strategies or viable alternatives. The crises and contradictions visible in the centres of the transnational system, however, leave some doors open for the redistribution of power essential for the formulation of new strategies.

COMMISSION 2: AGRICULTURAL AND FORESTRY MODERNIZATION

A. DIAGNOSIS

1. Economic activity in the agricultural sector has grown considerably over the last twenty-five years, during which the gross product of Latin American agriculture has increased two and a half times. This has been accompanied by a marked increase in the agricultural population: from 117 million in 1950 to 174 million in 1975, or 1.6% annually, a rather high rate for the sector. Despite the steady drop in its share of the gross domestic product, resulting from the higher growth of other sectors, it still accounted for 12% in 1977. Agriculture earned 44.2% of the region's foreign exchange in 1977, which indicates the continued enormous importance of export crops in Latin American agriculture, as well as for its development process in general, for it means that the resources from agriculture provide almost half of the financing of the imported inputs underpinning the expansion of the style of development.
2. While agriculture has grown, however, poverty levels have not changed significantly, and there has been a gradual polarization into modernized areas, with vigorous capitalist development, and the peasant sectors. The increasing presence of transnational corporations both in cultivating new crops and in marketing and processing the products generated in the sector is another characteristic of this period. The partial modernization of the countryside has increased the productivity of labour, and very often has had a great impact on the flow of migration to urban centres or frontier areas.
3. The growth of Latin American agriculture has taken place at the cost of the transformation and in many cases the deterioration of the ecosystems modified in the process of modernization. Before the present decade, three-quarters of this growth was accounted for by the expansion of the agricultural frontier, making use of natural fertility and, very often, the accumulated production of non-modified ecosystems. This ratio between the proportion of growth due to the expansion of the agricultural frontier and the percentage

/accounted for



accounted for by a rise in productivity has now been inverted. This reflects the gradual disappearance of the more favourable frontier land, and leads to greater artificialization of ecosystems, influenced by the dependent model of generation, adoption and dissemination of technology.

4. The rise of the new style of development with the penetration of capitalism into agriculture has led to the predominance of forms of production in which the profitability of investment increasingly takes precedence over ecological considerations. The peasant subsistence agriculture, whose fundamental objective is the survival of the population, continues to subsist side-by-side with these predominant forms.

5. Significant changes have taken place in the structure of land tenure over the last twenty-five years. Although except in the cases of Bolivia, Cuba, Chile and Peru the degree of land and income concentration has not been reduced, significant changes have occurred in the capitalist development of the countryside. The traditional large estate has been modernized in many areas and the modes of production arising from those changes have begun to condition development, imposing much more intensive forms of land use and replacing a situation of underutilization by one of overutilization. In becoming modernized, the traditional large estate has also ceased to be the structural counterpart of the small holding, due to the higher productivity and the displacement of labour visible in areas of more intensive cultivation. Consequently, the problem of the labour force of the small holdings or family units has tended to worsen. In addition, the forms of tenure in the small holdings sector have also changed, and forms of tenancy such as tenant farmers, huasipungos and sharecroppers, have declined noticeably. As a result, the poverty levels of the peasant sector have not changed significantly.

6. There is no doubt that the main socio-economic factors have changed with the penetration of the new style of development. The new infrastructure, particularly for irrigation, has most frequently been constructed for medium- and large-scale farming zones, and these have also been favoured by the major policies on pricing and credit. Marketing has been organized around the large-scale investment. Vertically-integrated enterprises, based on the development of capitalist farming, have gradually sprung up and these, associated with or sold to transnationals, have been the basis of the latter's penetration into agriculture.

7. The predominant style of development has steadily increased the differences between the farming sectors. Those with comparative advantages have turned to export products, while those producing for domestic consumption have frequently run into serious obstacles because of their low profitability. Side-by-side with these there remains the cluster of subsistence small holdings.

8. In this economic and social structure, the modernization of agriculture has taken place following a model of generation, adoption and dissemination of technology which has attempted to reproduce to a large extent that of the industrial countries, and particularly the United States. The degree of artificialization in Latin America has frequently been excessive. The varieties and species of the so-called green revolution at first produced spectacular results but subsequently gave declining yields, either because the new soil in which they were used did not have the high fertility of the soil in which this technological innovation was initially introduced, or simply because the seeds were not accompanied by the necessary technological package. The level of fertilization in Latin America, although well below the standards of the developed countries, varies sharply between the farms which do not use fertilizers (65%) and those using them in proportions resembling those of the industrialized countries. In some countries the use of pesticides has been excessive, especially in crops such as cotton and sugar cane. In addition, in some areas labour-displacing mechanization has not squared with the supply of labour. Equivalent unemployment in Latin American agriculture has been estimated at between 20 and 40% of the active population.

9. Capitalist penetration following the technological model described above has led to the breakdown of the large estate - small holding system. The lack of work for the rural population has fostered emigration to urban zones and the agricultural frontier, or has forced them to remain on their small holdings, causing further overutilization of the land.

10. Furthermore, the new capital flowing into agriculture is not attracted by the incentives of earlier periods - social status, security, etc., - which had led to situations of underutilization of land, but basically by the /profitability of

profitability of the investment and the possibility of generating surpluses. Consequently, the mobility of capital has become a new factor in the intensive and sometimes excessive use of land.

11. In recent decades millions of hectares of virgin land have been occupied. This expansion of the agricultural frontier has taken place primarily in tropical and sub-tropical zones using new soil habilitation technology. The peasant forms of occupation, using primitive manual technology, have been joined by the systems of large enterprises using very powerful heavy machinery.

12. The spontaneous occupation of new zones has risen with the construction of planned access roads in a number of countries: the population of Amazonia has grown considerably in this way.

13. The rising style of development has generated processes which have caused the physical environment to deteriorate. Neither the initial processes nor their effects are new in Latin America; they have existed even in the natural state. In earlier periods, the occupation of space and the new forms and systems of exploitation started processes of deterioration, but in recent decades the problem has differed by reason of its unprecedented scale, the new technology used and the surface area involved. Three processes are most characteristic of the rising style of development: deforestation in areas unsuitable for cultivation or livestock rearing, the unbalanced use of land and the excessive artificialization of ecosystems.

14. Average annual cutting of thick forest has been estimated at 6.54 million hectares between 1958 and 1973. This is another activity where the presence of international corporations has been considerable.

15. In Latin America a clear underutilization of land has existed side-by-side with a manifest overutilization of land. The underutilization characteristic of the traditional large estate, as indicated above, has been replaced by overutilization as the estate has been transformed into a large modern capitalist enterprise. The overutilization of land both in this form of tenure and in the small holdings has three basic causes: overgrazing, monocultivation and cultivation beyond the natural ability of the soil.

16. Overgrazing has occurred most seriously in areas which have been given over to agriculture for many years, and which also have a water shortage. This has taken place primarily in the Andean region, particularly the Altiplano; in almost all of Mexico, southern Patagonia, the plains of the Orinoco, the Secas polygon of north-eastern Brazil, and the arid and semi-arid Chaco. It has also affected the Argentinian wet pampas and other wet regions.

17. Monocultivation has been intensified with Latin America's specialization in international trade. The crop cycles of coffee, cotton, cocoa and sugar cane have been linked with the stages of monoproduction. The subdivision of land and the loss of population has led to the intensification of overcultivation.

18. It may be said that the excessive artificialization of ecosystems is the most characteristic feature of the recent modernization of agriculture. It stems from the possibility of using irrigation to counteract the shortage of water, improving soil through the application of fertilizers, controlling pests and diseases through the use of pesticides, using genetic material which can react to the extra production stimuli, and using all kinds of agricultural machinery both to improve the technology of soil preparation, sowing, pest control, harvesting, and so forth, and to increase the productivity of labour.

19. Unquestionably, using the necessary inputs and with the required scientific and technological know-how, agriculture must grow with artificialization. The problem arises when the system of generating and adopting technology is conditioned by foreign models, or geared to the interests of transnational and national enterprises, or both these things at once. The sale of a technological package almost always underlies the degree of artificialization of ecosystems, and frequently excessive levels of artificialization are found. The indiscriminate use of pesticides has led to the breakdown of trophic chains, the appearance of new pests and diseases and the genetic resistance of species which constitute agricultural pests or carry diseases such as malaria. The excessive use of pesticides has also polluted basic resources, particularly water.

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20. These initial processes linked with rural modernization, the expansion of the agricultural frontier and the overutilization of land have helped to accelerate the deterioration of the Latin American environment. The devastation of forests and the overuse of land have led to erosion on an enormous scale, and this increased erosion has directly affected the quantity of sediment borne by the river. Sedimentation and deforestation have also resulted in changes in river flows.

21. Salinization has sharply increased in irrigated soils. In 1964 there were already 1,965,000 hectares affected by salts in Central America (0.7% of the total cultivated area) and 120,163,000 hectares in South America (76% of the total cultivated area).

22. Finally, reference must be made to pollution, which in agriculture has resulted both from its endogenous processes and also from exogenous processes such as urban development, industrialization and mining. The use of pesticides has caused, in addition to the problems mentioned above, direct poisoning, pollution of breast milk and other foods, and contamination of fish and other sea products.

23. The deterioration of ecosystems has caused many of them to suffer from severe processes of desertification. The loss of flora and fauna, erosion, depletion, the altering of river beds and above-all desiccation have contributed to this process. The total extinction of animal and vegetable species will deprive future generation of genetic banks which might contribute to the advancement of science and the satisfaction of many human needs. In Latin America there are currently 25 million persons inhabiting regions suffering from severe desertification, covering an area of 17.5 million square kilometres.

24. The development of cities, tourism and industry has been so great in recent decades that it has taken considerable resources away from agriculture. Almost all Latin American cities began as agricultural or port settlements in river basins or valleys suitable for farming. Urban growth, taking place in the utmost anarchy from the standpoint of land use, has converted large agricultural areas to residential zones, industrial centres and transport networks. The rising need for areas of leisure, recreation and tourism has

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also affected the use of land and water. Every day Latin American agriculture loses resources not merely through the deterioration of its ecosystems but also due to the shortcomings of agricultural development itself or because they have been diverted to other activities. The expansion of the agricultural frontier is also becoming increasingly costly and difficult because of the severe ecological damage being wrought on the new resources brought into the agricultural sector.

25. A natural resource whose importance is rarely fully recognized is the sea, not only because of the many uses made of it and ways in which man exploits it, all of which are well known, but also because - like the land ecosystems - it plays a key role in the very reproduction of the conditions of life of the biosphere. The style of development has had a great impact on fishery and transportation, which have recorded annual average growth of approximately 4% and 9% respectively.

26. In Latin America the bays, estuaries and coastal lakes where these activities are concentrated cover a surface area of over 4 million hectares, which are heavily overutilized. This increased activity, together with the waste which the sea receives from the land, has caused all kinds of pollution. The problems of marine pollution of the Latin American countries vary according to their size, population, types of agricultural product and degree of industrialization. Some kinds of pollution stemming from industrial waste are concentrated around industrial zones. The most serious problems of chronic pollution occur with oil wells and the petrochemical industries in countries like Mexico, Colombia, Venezuela and Trinidad and Tobago. The heavy traffic in the Caribbean and Gulf of Mexico is a permanent threat and risk, as highlighted by the series of very serious accidents which have recently occurred to supertankers and undersea oil wells. The concentration of pesticides has also caused changes in the behaviour and fertility of fish, as well as cases of large-scale mortality in coastal waters.

27. Prior to the 1970s, the growth rate of the fishery sector was higher than that of the gross domestic product, but its share in the latter was very small, except in Cuba and Peru. Production did help, however, to satisfy part of domestic protein needs. In 1938 the regions of the

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country had a catch of 300,000 tons, compared with 7 million in 1977. The use of the catch of the region is characterized by the high percentage turned into fishmeal (75% in 1977). It is estimated that there are half a million full-time fishermen in Latin America; between 55 and 80% of these are small-scale fishermen. Like other forms of production, fishing has developed both as an enclave of high technology along transnational lines and at the same time a subsistence activity for increasingly marginalized sectors.

28. Broadly speaking, as far as resources are concerned there is still a large potential to be incorporated into fishery, but the catch of some species has already reached maximum possible limits. For example, albacora in Mexico is already exploited to the hilt, as are shrimp in Mexico, Panama and Ecuador. Caribbean lobster is fully exploited; along the Brazilian coast, demersal and pelagic species are moderately exploited; and sardines and hake are moderately to fully exploited in Chile and Peru. In sum, there is a large potential catch that could help to improve the nutritional situation in Latin American countries; but the style of development has imposed consumption habits which do not attach due importance to these food sources. Besides, most of the species which enjoy acceptance at present and can be exported outside the region are in danger of overexploitation.

#### B. OPTIONS

##### (a) Continuation of the trend

29. The above details show the trend of the rising style of development. The dominant modes of production lead to forestry and agricultural practices which run counter to resource conservation. As a result of the penetration of capitalism, in order to survive the peasant sector tends to overuse land or emigrate to the agricultural frontier (or to the cities). The capitalist are motivated by the expectation of generating a surplus and thus do not usually take ecological factors into account. And the more concentrated land tenure is, the worse these problems are. The versatility of companies which can move into and out of agriculture leads to high rates of extraction or of production of polluting waste, without taking into account the conservation of resources.

30. Agricultural policy in Latin America has tended to pave the way for the penetration of the rising style of development. The scenario indicates, with a very high degree of probability, the convergence of critical problems in Latin American agriculture. These problems are:

- (i) uncontrolled and devastating expansion of the agricultural frontiers;
- (ii) greater overutilization of land;
- (iii) worsening of the problems of unemployment, underemployment, marginality and poverty in agriculture;
- (iv) greater dependence on international market fluctuations;
- (v) widespread pollution in highly artificialized areas;
- (vi) resurgence of pests and outbreaks of new pests with the removal of natural controls;
- (vii) worsening of physical problems such as erosion, sedimentation and salinization;
- (viii) acceleration of desertification processes;
- (ix) persistence of inequalities in land and income distribution.

(b) Change of style

31. The above trends suggest the need to explore possible solutions through another development style which, to be viable, must be articulated with the other sectors and take into account all aspects of development: political, social, economic and, of course, environmental. Consequently, the predominant modes of production will have to consider protection and improvement of the quality of life, particularly in the peasant sector. The changes in the modes of production will have to lead to modifications of the structure of land tenure. The conservation of resources will have to be an integral part of the production process.

(c) Partial transformation of the style of development

32. We believe that although a change of style is fundamentally required, the fact that there is a clear structural heterogeneity in Latin American agriculture and that the style is merely ascending and not dominant in many countries and areas means that variations can be introduced to counteract the interests of the leadership groups responsible for the penetration of the new style, and at least check its rise, if not change it.



33. This heterogeneity also opens a number of paths which should be explored, including the following:

(i) partial changes in the structure of land tenure, introducing new systems and solving the problem of rural marginality;

(ii) application of policies aimed at the rational management and conservation of renewable natural resources;

(iii) changes in the models of generation, adoption and dissemination of technology;

(iv) Reorientation of the processes of occupation of agricultural frontier areas.

#### C. RECOMMENDATIONS

34. In the understanding that a new style of development involves a sound treatment of agriculture, the following recommendations are aimed at a partial transformation of the style, i.e., the third option. The viability of their implementation varies considerably, since they range from measures which come very close to questioning the style itself to others which are neutral to it.

35. The recommendations are divided into six topics: basic studies, socio-economic framework, alternative technology, extension of the agricultural frontier, peasant agriculture and the ocean. In the opinion of the commission, the greatest environmental problems arise in the case of the agricultural frontier and the peasant economy; the first, in connexion with physical space and the second with a sector of the rural population. Obviously the two overlap and are closely related.

##### (a) Basic studies

36. Basic studies are necessary because forestry and agricultural activity is based on the modification of ecosystems, and taking advantage of their attributes. The following recommendations are made:

(i) to carry out historical studies to identify the agents of the agricultural processes and the effects by type of agent and type of environment;

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(ii) to study the generic behaviour of the agents from the standpoint of their environmental impact in relation to different stimuli;

(iii) to identify, for planning purposes, environmental systems, ecosystems and their attributes, and analyse natural and induced processes of progression and regression;

(iv) to define clearly the conditioning factors or constraints and the potential of each environment. This is linked with the parallel comparative study of economic and ecological viability;

(v) to study in greater depth the problems of the ecological feasibility of forestry and agricultural activity. Prior to the total artificialization of an ecosystem, a study should be made of such aspects as substitutive or non-substitutive appropriation and all intermediate situations. For the concept of ecological feasibility to be operational, it should be borne in mind that no system is independent of the rest, and that its functioning and architecture are regulated by the rate of inputs to and losses from the surrounding ecosystems and linked with environmental limiting factors, both physical and temporal, which may cause the system to reach crisis point. Ecological feasibility may or may not coincide with economic feasibility. Formally, the conflict between the two arises from exploiting natural resources over and above their recuperative capacity, so that the normal working of the system is upset;

(vi) to investigate the deterioration thresholds of ecosystems below which they lose their recuperative capacity.

(b) Socio-economic framework

37. The following recommendations are made:

(i) to study the dynamics of the penetration of the rising style of development, in agriculture and also in fishery;

(ii) to establish the mechanisms of intersectoral relations;

(iii) to evaluate the effects of land reform, especially as regards income redistribution, the generation of a surplus in the sector, the productivity of land and labour, employment creation and impact on the environment;

/(iv) to

(iv) to analyse the compatibility between the ecological and the economic rationality of different systems of land tenure;

(v) to stress the need to weigh up the impact of agriculture and fishery policies on the different uses of land and water in relation to the conservation of the environment, renewable natural resources and the ecosystems involved; and in particular, study the effect of forestry development policies designed to increase plantations and the cutting of native timbers;

(vi) to alter the framework for the generation, adoption and dissemination of technology, and particularly the ways in which it is imposed by transnational integration and the appropriation of the surplus and its influence on science and technology policies;

(vii) to take account of the positive aspects of the use of resources and the technology of the various ethnic groups.

(c) Alternative technology

38. Research into technological options opens a broad field of study. Some zones of Latin America, such as the wet tropics and the arid and semi-arid regions, particularly require studies of technology for a better and more rational use of resources. Nevertheless, with available technology a much sounder agriculture could be achieved than is currently practiced. This indicates that the problem is not primarily technological, but rather that the economic rationality of existing forms and systems prevents the application of suitable technology.

39. Consequently, suitable technology is not used either because its use is not clearly profitable, or else because the system of distribution of technology is clearly cut off from many agricultural sectors, particularly in the peasant economy. In any case the following recommendations are made.

40. With regard to technology for exploring and assessing the quantity and quality of renewable natural resources and of ecosystems:

(i) to adopt and generate methods of prospection and evaluation of resources which make it possible to carry out dynamic studies of the relationship between society and the environment whenever possible;

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(ii) using inventory data, to establish methods of zoning by homogeneous or ecological areas, thus favouring the planning of the resource use in the light of each area's potential;

(iii) to study the integrated functioning of ecosystems, the behaviour of their attributes by anthropic action, resilience, stability, support, suitable disclimaxes, attractants, etc.

(iv) to interpret the socio-economic process of the occupation of space, particularly in the case of tropical and arid zones, in order to encourage the development of potential water resources as a means of counteracting desertification;

(v) to analyse the socio-economic factors conditioning the use of land by small-scale farmers, and the technology involved.

41. The main forms of technology applied to new systems of management of renewable natural resources and the environment to harmonize their use with the conservation of its constituent ecosystems should be as follows:

(i) technology allowing the implementation, in tropical zones, of forestry and agricultural systems which are compatible with the occupation of forested areas and their permanent conservation;

(ii) forestry technology designed to increase considerably the stock of conifers by large-scale reforestation projects, and to step up the cutting of native timber by making better use of existing forests;

(iii) research should be conducted into the impact of traditional agricultural and forestry technology on the conservation or deterioration of renewable resources. These studies should cover, inter alia: minimum-depth cultivation; recycling of organic matter; optimization of water use; combination planting; methods of erosion control; methods of grazing control; and regulation of burning of vegetation and research into its effects;

(iv) technology for diversifying agriculture and forestry by control; incorporating the native plants of the tropical and arid zones best adapted to the ecosystems of those regions of Latin America;

(v) technology for the integrated management of water basins, taking the upper, middle and lower basin as a unit;

/(vi) practices

(vi) practices leading to the conservation of native flora and fauna; and

(vii) technology designed to reduce the harmful effects of chemicals used in agriculture and of waste disposal systems which pollute the environment and water.

(d) Expansion of the agricultural frontier

42. In the countries with land still to be occupied, the programmed expansion of the agricultural frontier is recommended, to which end the following is desirable:

(i) to compile, arrange, co-ordinate and analyse the data available on recently occupied zones and frontier areas to guide programming;

(ii) to carry out selective further studies and surveys for a full basic diagnosis of such areas;

(iii) to select priority areas for micro-regional studies aimed at the efficient use of such areas in accordance with their environmental potential;

(iv) to locate and quantify the supply of public and non-utilized land;

(v) to apply land policies aimed at a suitable location of production, increasing supply, creating stable productive jobs and reducing inequalities in income distribution. To this end, priority should be given to the formulation and implementation of policies regarding land valuations so as to discourage speculation and increase productive use of it; colonization of public land by medium- and small-scale farmers; land reform for the same purpose; technological development designed to satisfy the needs of small-scale agriculture and promote more efficient use of the factors of production; credit, aimed at wider coverage from the standpoint both of geographical location and of categories of producers, discrimination in the granting of subsidies and improved marketing systems; and investment in infrastructure for the transportation, storage and distribution of forestry and agricultural products, increasing the network of secondary roads in priority areas and the use of inland rivers and existing railways.

(e) Peasant agriculture

43. It is recommended that priority should be attached to the problems of Latin American small-scale agriculture, and in particular:

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(i) to recognize the importance of traditional peasant agriculture, both because of the large proportion of the population represented by small-scale farmers and their families, and because of their economic contribution through the production of food and other crops;

(ii) to study this form of agriculture with particular attention as regards its economic rationality, use of natural resources and employment of labour. Special emphasis should be placed on the analysis of the structural obstacles and incentives affecting its performance, and the effect on it of traditional processes of concentration of land and capital;

(iii) to study the links between peasant agriculture and the economy as a whole and the urban centres;

(iv) to emphasize the importance and the potential contribution of peasant agriculture to the creation or recreation of technology which respects the environment, reappraising systems of production worked out by trial and error over generations in direct contact with the natural environment;

(v) to stress the possible role of peasant agriculture in the adoption of alternative styles of development in tune with nature, which avoid damaging levels of artificialization and seek to satisfy basic needs.

(f) The marine environment

44. The objectives of the new style of development should centre on the rational use of the environmental resources, and it is therefore recommended:

(i) to exploit marine resources giving priority to the satisfaction of the population's basic nutritional needs;

(ii) to reduce the losses between catch and consumption;

(iii) to encourage forms of agriculture which consume small amounts of energy;

(iv) to improve research on resources and the effects of fisheries on them;

(v) to analyse marine energy sources;

(vi) to implement policies for monitoring and controlling pollution.

COMMISSION 3: URBANIZATION AND MARGINALITY

A. DIAGNOSIS

1. The rising style of development in Latin America has produced high economic growth in the last 25 years, although there has been a sharp fall in the last five years. In overall terms, the growth rate of the product since the early 1950s was 5.5%, a rate above that of the world economy but lower than that of Japan, the European socialist economies and the Middle East.
2. This growth, however, has occurred in such a way as to increase the gap between the highest and lowest income groups of the population. It is estimated that 40% of the population was living in conditions of poverty around 1970, i.e., their income was insufficient to purchase in the market place the basket of goods and services considered essential, this percentage means that there were 113 million poor.
3. This quantification of poverty is the most revealing sign of a style of development which, while generating high rates of growth of the forces of production, is characteristically inegalitarian and exclusive. This feature has increased in recent years, since the share of total income accounted for by the bottom 20% of the income distribution between 1960 and 1970 in Latin America declined from 3.1 to 2.5%, and the average per capita income in this stratum rose by only 2 dollars compared with a per capita increase of 413 dollars in the top 5%.
4. The conclusion may be drawn that the functioning of the present style of development produces and reproduces the characteristic elements of the process of social inequality: concentration of income and, ultimately, wealth in the top income sector of society, and increasing exclusion of large groups of the population from the distribution of the social surplus, and inability of the production system to redistribute more fairly the benefits of economic growth.
5. The poverty levels referred to earlier (which do not obtain uniformly in all countries of the region) reflect a very severe structural problem involving a process of marginalization from the job market of a segment of

/the population

the population not very different from that living in poverty. This sector of the labour force, unable to get stable, permanent and decently-paid employment, is estimated to amount to about 28% of the labour force, unevenly distributed between agricultural (34%) and non-agricultural (18%) equivalent unemployment. This is what is usually called the marginal sector of society, which distinguishes it from the sectors incorporated into the production system. However, poverty also increasingly affects the segment incorporated into the system in which overexploitation and the fall in real wages affects large sections of the labour force.

6. These problems arising from the social process itself are the clearest evidence of the inegalitarian and exclusive nature of the social and economic system which generates them. The present style of development in Latin America contains processes which determine its structural heterogeneity, and the process described here appears to be the most important one. The spatial and cultural dimensions of the process of social marginalization and poverty, and the specific relationship between poverty and the geophysical and natural environment, mean that its existence and continuous reproduction are one of the main environmental problems arising from the predominance of the present transnational capitalist style of development.

7. This social inequality has historically been associated in most Latin American countries with the geographical concentration of production activities and population in a small area of each country's territory. It has therefore been suggested that this concentration is itself the spatial reflection of the social inequality inherent in the style of development. This argument confuses the different levels of social reality: social inequality can only be defined as the extent to which the different social sectors of the population are structurally unable to benefit equitably from the process of appropriation of the social surplus, whatever its spatial location. That is why the repeated efforts to correct inequality through the geographical decentralization of activities, when applied in Latin America, have not brought significant changes in the distribution of income or in access to the consumption of basic goods and services for subsistence. The cases of Argentina and Venezuela were given as evidence of this situation.

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8. Another indication that the present style of development has increased social inequality is the emergence of centres of rapid growth in various parts of the region. These small and medium urban centres grow very rapidly when the exploitation of a natural resource or the implantation of a wholly new production process occurs in a previously uninhabited or sparsely inhabited area. The speed of economic growth and the resulting supply of jobs exceed, in the known or studied cases, the forecasts of the demand for labour and availability of resources to satisfy the basic needs of the population. The resulting fall in living conditions is very steep, and worsens with the decline in the implantation of new production processes. Lack of forethought and the social model's inability to satisfy equitably the migrant population's needs of employment, housing, health, education and so on, have led to an extremely serious state in the environmental conditions of this type of social organization of space.

9. The two problems described above illustrate salient aspects of the demographic dynamics and of the typical urbanization process of the present Latin American style of development. Urban concentration, largely fuelled by large-scale migration to the urban centres, although varying from one country to another is one of the outstanding socio-economic phenomena in the region. Compared with any other area of the world, demographic growth in Latin America is the highest of all: 2.8% between 1950 and 1978. Urban growth is even greater, amounting to an annual 4.4%. The geographical expression of this growth is the increasing metropolization or megalopolization of society, with urban nuclei rapidly spreading over the surface area of a country.

10. Migration plays a fundamental part in this process, In Brazil, in the case of São Paulo for example, half the population recorded in the latest census was born outside the city limits. The model of social organization of space is unable to adjust to the needs arising from the growth of the population.

11. Urban environmental problems are one of the most obvious aspects of the present style of development and may be summarized as involving a high degree of exclusion of broad sectors of the population from collective

/consumer services:

consumer services: health, transport, housing and education. The pollution of air and water, overcrowding and the deterioration of environmental health conditions, the congestion of urban transport and increasing distance (in terms of time and cost) between work-place and home. vulnerability to natural disasters, etc., are some of the problems most directly related with the environment, and it should be noted that their impact is much greater on the lower income urban sectors.

12. A first striking aspect is the existence of uncontrolled urban settlements, directly linked with problems of the underutilization of the labour force and of access to urban land. Shanty-towns containing 20, 30 and even up to 50% of the population, as in Caracas, show that processes are at work which deny access to urban land for that segment of the population and prevent them from consuming the corresponding collective goods. Shanty settlements enable the sectors which control the process of accumulation in the large urban agglomerations to reduce the cost of labour, and therefore they are functional for the style, over and above their reproduction as a housing option for the dispossessed sectors of urban society.

13. The value of urban land has grown more than that of other goods and services, and this is a fundamental obstacle to access to housing and services, as well as a source of speculative profit resulting from an urban land market in which mechanisms generate high levels of income for its owners, intermediaries or financiers.

14. The state does not function as a neutral entity but encourages urban land speculation by its action or by omission. In the first case, by increasing social investment in the urban areas where the high income sectors are concentrated, and reducing it elsewhere, it gratuitously raises the value of land in those areas, thus encouraging speculative capitalization by the beneficiaries in real estate transactions.

15. Finally, the spread of private motorcars is accelerating at the expense of collective passenger transportation, despite the fact that the latter is responsible for transporting the majority of the urban population. State investment also reflects the age of the private motorcar, emulating the consumerist style of the central countries. This is visible

/in the

in the greater allocation of resources for road systems in high income areas as against investment in collective transport infrastructure. This is another mechanism whereby spatial segregation raises the speculative value of land.

16. Another dimension of the environmental problem of the population is health and nutrition. The great shortage of these services, the absence of preventive methods and the prevalence of a curative approach, and the difference in the quality of services provided to different income groups are a speaking sign of social inequality.

17. Underlying the processes which illustrate the prevalence of forms of production and reproduction of social inequalities, which are naturally not confined to those described above, there is the role of the state and the dynamics of society as expressed in political conflict. In the prevailing style of development, the state makes possible and in some circumstances encourages the reproduction of these inequalities. The displaced or excluded sectors are the social agents which cause conflicts of a political nature to overcome them. Here are manifested both the inefficiency of planning in the abovementioned areas and also the degree of liberty and freedom of expression of the handicapped sectors to make known their opposition to the prevailing situation and the different forms of its political organization.

## B. OPTIONS

### (a) Continuation of the trend

18. One future option is to project the trends of the prevalent style of development. An extrapolation of the main processes analysed over the immediate medium-term future suggest the following trends:

(i) continued high population growth, although with a slight fall in rates;

(ii) persistence of urbanization and particularly metropolization and megalopolization. Migration and the displacement of the low-income population towards the outskirts of the large centres will increase urban sprawl;

/(iii) the

(iii) the occupation of land and the lack of services will therefore shift increasingly towards the outskirts of the large agglomerations;

(iv) given the exclusive nature of the style and the large-scale introduction of capital and natural-resource-intensive technology, the marginal fringe of the labour market will increase and the real wages of the employed labour force will tend to decline;

(v) the attack upon the physical environment of the built-up areas will continue and increase, as expressed in pollution, overcrowding, congestion, deterioration of housing and social infrastructure for the less privileged sectors, noise, etc.

(b) Partial modification of the style of development

19. A second option is that of adjustments or changes within the style in order to reduce or moderate the foreseeable effects resulting from its untrammelled operation. Some elements of this option to modify the trend would be:

(i) a progressive transformation of the technological model, shifting away from a production structure based on technology which is capital intensive and wastes non-renewable resources towards labour-intensive technology which substitutes such resources;

(ii) regulation of the indiscriminate importation of technological and consumption models which originated in the central countries;

(iii) redistribution in the process of appropriation of the benefits stemming from the use of collective consumer goods in urban areas.

(c) Structural transformation of the style of development

20. This third option rests on the hypothesis of replacing the present style by another, of which there are past and present examples in Latin America.

### C. RECOMMENDATIONS

21. Inasmuch as the present style of development has been found incapable of equitably distributing the benefits of economic progress and considered to deteriorate the general environment, a first series of recommendations is proposed with a view to fleshing out the second of the above options with concrete measures. These are followed by a number of suggestions for

/possible courses

possible courses of action by CEPAL on these problems, and finally possible future action is suggested with regard to the study of the relationship between styles of development and environment.

(a) Action to accompany option (b)

22. It is recommended:

(i) to ensure that there is a legal and political framework which allows broad popular participation in the social management of the decision-making process in urban areas, so as to secure an effective redistribution of power and of the appropriation of urban social benefits;

(ii) to apply policies for planning and controlling urban land so as to remove the speculative factor from the price of that non-renewable natural resource and ensure that the redistribution mentioned in the previous paragraph reaches all inhabitants, wherever they live;

(iii) to carry out co-ordinated policies for subsidising collective consumer goods in urban areas as a viable means of redistribution;

(iv) to foster the creation and use of technology which is suited to each country and area and takes account of local features as concerns the supply of public services (transport) and housing;

(v) to modify the tax structures in urban areas so as to tap resources from inhabitants of high-income areas and transfer them in the form of social infrastructure to low-income areas;

(vi) to improve the operating conditions of collective passenger transport as a means of progressively replacing the private motorcar, thus reducing pollution, congestion and noise which affect all urban residents;

(vii) to carry out preventive action in the fields of health and nutrition, to replace the emphasis currently placed on curative or remedial activities;

(viii) to defend autochthonous culture of popular forms and expressions by disseminating them on a large scale.

(b) Future CEPAL action

23. It is recommended that a network of institutions and persons linked with these problems should be set up on the basis of the participants in this Seminar. The objective of the network would be to circulate

/information among

information among members and distribute it to the general public and to other bodies. The secretariat would be based in CEPAL and would be responsible for receiving and circulating a periodic information bulletin.

(c) Study action

24. It is recommended:

(i) to undertake an exhaustive study of the present conditions of the quality of life of the urban population in Latin America;

(ii) to draw up an inventory of the dimension, structure and development characteristics of slums in the main urban centres of the region; and

(iii) to study the forms of appropriation of Latin American urban space by the different social sectors and actors.

COMMISSION 4: INDUSTRIALIZATION AND ENERGY

A. INDUSTRIALIZATION

(a) Diagnosis

The prevailing style of development in manufacturing industry may be characterized by the interrelationship of the following aspects:

1. In recent decades industrialization has played a leading role in the growth of the Latin American economies, and it may be said that in this stage of the region's development, industrial production became the motor force underlying the changes which occurred in society. The industrial product of Latin America increased nearly sixfold between 1950 and 1968, whereas the gross domestic product rose four and a half times. Since the population doubled, the per capita value of the industrial product tripled.
2. Given the well-known inequalities in income distribution in the countries of the region, it is the upper and middle income sectors, whose life styles are heavily influenced by those of equivalent groups in the developed countries, which determine the main characteristics of the market for manufactured goods. This has repercussions on the structure of manufacturing industry, with the result that the fastest-growing industries were those producing basic goods, and consumer durables, as well as some capital goods. In Brazil, for example, motorcar production recorded growth rates of over 18% annually in the past decade, whereas the production of buses, used by lower-income sectors, even failed to exceed population growth rates: a cumulative 3% per year. Output of televisions, refrigerators and other domestic appliances also shows high growth rates of between 12 and 15% annually, as does that of other basic products (chemicals, cement, petroleum, steel, and so forth).
3. Because of their limited domestic markets, the small countries have been unable to develop the production of some basic and capital goods industries which need large markets to ensure their profitability. Fundamentally, however, the rising style of development is the same for all countries of the region, and indeed apparently the norm for industrialization throughout the world. For example, the ideological foundations of the integration agreements basically reflect the interest of the countries involved in patterning their production structures on those of the large countries.

/4. Starting

4. Starting in the mid-1950s, the economic, political and social foundations for the implantation of the subsidiaries of transnational corporations in the more dynamic sectors of manufacturing industries began to be consolidated. This process advanced vigorously throughout the period, so that by 1973 this form of ownership was very marked in the faster-growing branches of the new style of development of manufacturing industry.

5. The dominant technology built into this type of development and its production structures is typically largely of foreign origin; it is capital-intensive, has a high consumption of energy, particularly oil, uses large scales of production, is highly polluting and creates new labour problems in industrial health and safety.

6. Industrial production is heavily concentrated in a few cities, usually the capitals of the countries of the region. This situation creates the following difficulties, among many others: dramatic indexes of atmospheric and water pollution, a tendency to deplete water resources, and growing problems in the quality of life of the urban population and of the industrial work force.

7. The production activities which are part of this style of development and the type of technology used in their production processes typically make preferential use of non-renewable natural resources. They tend not to encourage the use of renewable resources which abound in the region and which offer comparative advantages on the international level.

8. The region's international trade continues to show its well-known imbalance, and consists in exports mainly of raw materials and imports of manufactures from the centres. The development of manufacturing production is fundamentally aimed towards the domestic market, in consumer durables, chemicals, some basic inputs and a few capital goods. The result is situations like that of Brazil, where nearly 90% of imports consist of oil and capital goods.

9. With regard to the industrial redeployment of the central countries, two points should be made:

/(i) there



(i) there are cases of investment aimed at exploiting the natural resources of the region. This is an interesting option but one which in the large majority of cases involves highly polluting enterprises with the well-known risks for the ecosystems of the region. In addition, they are highly energy-intensive (and primarily use oil), resulting in the familiar problem this represents for the near future.

(ii) Furthermore, these enterprises use little labour, and therefore do not represent much of a solution for the employment problem, at least in comparison with the size of the investment involved. Furthermore, in many cases the interest in implanting such enterprises in the region stems from the desire to take advantage of low wages, which is again no contribution to the solution of the region's social problem.

(b) Options and recommendations

10. An effort of imagination is called for in relation to planning for a number of different scenarios for the year 2000.

11. In the first scenario, based on a projection of the trends described above, we must see as vividly as possible the situation towards which we are heading along the present path. Obviously, this analysis and projection is only possible when taking a global view of all the problems of the rising style of development analysed in the different commissions of this Seminar.

12. The second scenario, containing a number of options which we shall analyse, should embrace novel approaches such as durable products, the use of renewable resources and suitable technologies in production in terms of labour, space, capital, environment and natural resources; avoiding pollution in the extraction of raw materials and in industrial processes, the development of non-polluting products, the creation of a political and institutional framework involving the active participation of the population in the control and generation of options, the development of suitable scales of production or technology and the decentralization of industry.

13. Using these elements of an alternative style of development, short-term solutions could be found focussing on the following aspects:

/(i) machinery

(i) machinery should be set up to orient new investment and research and in general all the efforts of all available resources towards the objectives indicated for the year 2000;

(ii) measures should be taken to encourage the relocation of new industries in the region, thus helping to reduce the present growth rates of urban centres;

(iii) the necessary research should be undertaken and policies implemented to avoid pollution of the physical environment, and the legal and institutional framework for their application should be created;

(iv) the necessary methodologies should be developed to ensure that the abovementioned environmental problems are suitably taken into account in the assessment of industrial projects;

(v) an inventory should be made of the different technological alternatives which exist for developing production aimed at satisfying the population's basic needs;

(vi) horizontal co-operation among the different countries of the region and of the third world should be fostered with a view to advancing towards the abovementioned goals.

## B. ENERGY

### (a) Diagnosis

14. The following has been observed:

(i) the dominant style of development makes intensive use of energy, particularly oil;

(ii) the oil-importing countries of the region have a vast and mounting debt;

(iii) this debt is not with the oil-exporting countries but with the central countries;

(iv) the dominant technology of the industrial, agricultural, urban, etc., style of development, in other words, the dominant style of development, is very inefficient in its use of energy;

/(v) conventional

(v) conventional energy is very damaging to the environment: for example, the pollution stemming from the shipping, refining and use of oil as a fuel and as an input for different industrial and agricultural activities; large hydroelectric dams also cause ecological problems which are usually little known;

(vi) with regard to non-conventional energy sources, large-scale deforestation results from the use of forests for firewood, a situation which has worsened with the steady rise in the price of oil. The lack of information leads to unreliable quantitative assessments which usually underestimate the seriousness of the situation;

(vii) there is little co-operation among Latin American countries in the energy field;

(viii) planning and policies are oriented exclusively towards the supply of oil, coal and electricity, neglecting the analysis of the sectoral demand for energy of agricultural, industrial, commercial, housing, mining and other activities and the most efficient forms of alternative supplies of energy;

(ix) little account is taken of the rural sector in energy planning and therefore in the allocation of investment;

(x) limited and incomplete data exist on the use, production and reserves of energy by types of energy and consumer sectors.

(b) Options and recommendations

15. The objectives of energy development should be redefined with a view to ensuring the society's self-reliance, the quality of life and the protection of the environment.

16. New forms of energy use should be developed, such as:

- (i) in the transport sector: - preference for collective rather than individual transport;
  - railways instead of road transport;
  - river transport;

- (ii) in housing: - design suited to the materials available, the climate and social objectives;
  - redesigning of cities in order to cut down the distances involved in urban transport;

/(iii) in

- (iii) in the industrial sector: - use of the residual heat from industrial processes and electricity generation;  
- more efficient use;

(iv) in the agricultural sector: - higher yields per unit of energy used.

17. New renewable energy sources should be developed: solar power; biomass; the rational use of agricultural, urban and industrial wastes; wind and geothermal power; and power from small waterfalls.
18. A concern should be fostered for positive net energy, in other words, for new processes which produce more energy than they use. For example, there is serious discussion about the net energy balance in the case of sugar cane alcohol.
19. The polluting effects of the new sources of energy must be identified.
20. New energy planning methodologies must be developed, involving inter alia energy accounting systems and, fundamentally, policies must be designed which make it possible to act upon demand rather than merely project supply.
21. An urgent study should be made of the problem of deforestation for energy purposes and suitable policies should be developed.
22. A suitable new institutional structure should be set up for the centralization of information and decisions and the active participation of the population, which should also foster regional co-operation.

## COMMISSION 5: PLANNING

### A. INTRODUCTION

1. The purpose of the present report is to set out the conclusions of this Commission, and its recommendations concerning the development of a form of planning which makes it possible to build a better society, one of the aspects of which is the quality of the environment.
2. The Commission understood its task as being to draw up planning models which would make it possible to incorporate the environmental dimension into planning, instead of dealing with environmental planning as a sectoral activity.
3. Account was taken of the recommendations made in the various papers submitted to this and other commissions, as well as the considerations set out in the general part of the report of the Seminar. However, the following focusses on those aspects which do not appear in the general part of the report, or in the various papers or reports from other commissions, so as to avoid unnecessary duplication.
4. The Commission believes that, in order to incorporate the environmental dimension effectively in development planning, at least the following requirements must be met:
  - (i) greater awareness among the population of environmental issues and their characteristics and their links with development;
  - (ii) training of technical and professional staff who understand environmental matters and their relationship with development;
  - (iii) the existence of an appropriate legal and institutional structure which, among other things, makes it possible to co-ordinate the various aspects and the implementation of related programmes;
  - (iv) assessment of the environmental situation in general and by sector;
  - (v) the existence of information systems which make it possible to evaluate the impact of various technologies and socio-economic processes for exploiting nature.

## B. DEVELOPMENT PLANNING IN LATIN AMERICA

5. The Commission recognized that development planning would have to take account of the dominant style of development, without prejudice to the search for an alternative style by means of planning. This, of course, would require new conceptions of planning, which would differentiate it appreciably from current practice. Great importance was attached to recognition of the political feasibility of the measures proposed, and the action strategies adopted, in order to prevent planning from being leading solely to the design of technocratic utopias.

6. The heterogeneity of Latin America is recognized, in terms both of physical circumstances in the countries (the differences existing in the major ecosystems which predominate in the different countries, for example), and of their political structures and styles. Obviously, planning will have to make the necessary adjustments in its objectives, strategies and instruments in order to adapt to these different contexts.

7. In the political sphere, the role of the State is of central importance, and in that respect at least three situations with regard to the rising style may be distinguished:

(i) the State as promoter of the rising style, its consolidation and growing penetration;

(ii) the State as regulator and obstacle to the increasing hegemony of the rising style;

(iii) the State as transformer of the style.

8. The role of planning will be different in each of these situations. In the first it will be limited to policies of openness to transnational capital and will rely on the market to regulate various processes, including the distribution of income and wealth, the appropriation and use of resources and the quality of the environment. The options for alternative styles of planning are very limited. In the second case, planning might be seen as one of the instruments used to protect sectors or activities threatened by the penetration of the style, and might contemplate more direct intervention by the State in order to modify the processes mentioned above, for example through direct regulation and controls, public investment

/and other

and other forms of intervention. In the third situation, planning would act as one of the key elements in the transformation of the style.

This situation would call for prior changes in the power structure and in the political control of the State.

9. It is necessary to highlight the variety of situations in which the style of development operates, since in each one the requirements and potentialities of planning are different. It was recognized that even though in the most restrictive case choices and some freedom of action always exist, it would be utopian to recommend very substantial changes in the style of planning, in for example, a situation like the first of the three described. Given that some freedom of action always exists it is for that reason important to examine what the real options are and what are the lines of research capable of improving the underlying theory and the techniques of planning.

10. In general, the models of development planning which have been used in Latin America very often correspond to neoclassical conceptions of the development process which leave aside any consideration of the distributive effects and the costs of the growth process. The objective pursued is the highest possible growth rate in the product on the basis of an optimum allocation of resources - an optimum allocation being that which maximizes private economic benefits.

#### C. RECOMMENDATIONS CONCERNING DEVELOPMENT PLANNING

11. The models employed in planning usually restrict themselves to considering aspects related to the rate of financial accumulation, and ignore consumption of natural resources and damage to the environment. Accordingly, it would appear important to design models which make it possible to incorporate these dimensions, in order to gain a more accurate idea of what is the net product of the processes of economic growth. This in turn would call for systems of social accounting which would make it possible to give these models empirical content.

12. The above suggests that the growth rate in the product should be replaced by the objective of improving the quality of life in planning

/models. If

models. If this proposal is accepted, it is clear that the dimensions related to the environment, income distribution, access to resources and the very stability of the development process assume particular importance in planning.

13. With regard to the evaluation techniques which have been used in development planning, and particularly those derived from the cost-benefit models, the Commission is of the view that:

(i) these techniques have obvious merits, but also suffer from serious shortcomings when placed within the context of development;

(ii) they tend to be more effective in evaluating a relatively limited problem or the effect of a project in particular, and less useful in evaluating overall development programmes or strategies;

(iii) as an alternative, the Commission suggests the establishment of environmental standards and the selection of projects and the fixing of priorities among them by means of the cost-effectiveness technique. Progress could also be made in the quantitative restriction of the exploitation and use of natural resources;

(iv) it was considered of the greatest importance that the prices used in planning should reflect the relative scarcity of resources over a period longer than that considered by the market;

(v) in recent years a set of techniques for evaluating environmental impact have arisen which have not been incorporated in development planning (mention should be made of the Leopold Matrix, the Battelle-Columbus Method and so on). It is clear that these techniques could help to improve the processes of development planning. Consequently, it is recommended that ways of ensuring that they are incorporated in planning should be studied. Of course, the Commission recognizes the limits inherent in many of these techniques, and it is for that reason that they should be studied within the context of development planning, with a view to adapting them where possible, and replacing them if not.

14. The penetration of the style leads - through various mechanisms, including those related to the use of a certain type of technology - to greater complexity in the social systems which are the subject matter of planning, a phenomenon which has been termed imposed complexity. This process



of growing complexity leads to a loss of control over the planned processes and to greater uncertainty in planning operations. Planning in conditions of uncertainty means that planning should acquire new features:

(i) it should fall within the framework of scenarios which, at the very least, give an idea of possible changes in the environment where the planned processes take place. The scenarios might cover different periods. This helps to reduce uncertainty;

(ii) it should be contingent or capable of adaptation instead of being determinist, since a capacity to react to exogenous changes is an important component of planning in open systems;

(iii) it should be strategic, recognizing that in complex systems it is impossible to handle all the variables and their interrelations. This, in turn, calls for a theoretical capacity to identify the strategic variables and relations;

(iv) it should, as far as possible, use periods of time which approximate to the cycles of nature, extending the period considered in the plans.

15. The Commission recognizes that the suggestions made call for intensive research designed to improve the theoretical foundations of development planning, and the tools used, and to permit the establishment of new systems of accounting which make it possible to give empirical content to environmental considerations in planning. It suggests that ILPES, because of its role in the field of planning, both in research and in training and advisory services to governments, might co-ordinate these efforts in co-operation with other bodies, such as UNEP, for example. ILPES is urged to intensify its work to integrate the environmental dimension in its courses, its advice to the governments of the region and its research programmes, and to promote interdisciplinary dialogue and the co-ordination of the environmental planning operations carried out in Latin America by university and governmental agencies.

#### D. PLANNING AT THE REGIONAL LEVEL

16. Recognizing the role played by overall development planning, the explicit inclusion of the environmental dimension grants importance to the regional level, since this is the level at which the inherently spatial nature of the environment may be grasped in operational terms. It also permits consideration of the specific features of the various ecosystems, avoiding the tendency to recommend over-general policies and guidelines for planning.

17. In the regional context, it was considered that communities themselves should, as far as possible, be responsible for planning. In many cases, it is these communities which are best placed to appreciate local needs and lay down targets consistent with them, to evaluate the effects of various activities and to follow up the various processes which affect the relationship between society and nature.

18. These considerations concerning regional planning led the Commission to consider the following aspects:

(i) the need to seek means of relating administrative regions and ecological regions. It was not considered necessary or desirable for these to coincide, but it was felt that a link should be achieved by various means (interregional planning committees, better information systems, and so on);

(ii) the Commission recommended that "ecological links" (interfaces), such as rivers or lakes, for example, should not be used to delimit administrative borders between regions. These "ecological links" are precisely the systems which require greatest attention, and for that reason it is important that they should be located in a single administrative unit and not shared between two or more;

(iii) partly in view of the above, it is considered that regionalization for environmental planning should receive priority attention. This would include consideration of the links between intra-regional, interregional and national planning;

/(iv) it

(iv) it is necessary to develop flexible and efficient machinery for participation, which would vary with the specific situation of each country or region, but which might include local environmental councils, public hearings, and so on.

#### E. EDUCATION

19. In the long term the utmost importance is attached to making society aware of environmental problems, in order to influence values, attitudes and consumption patterns.

20. Environmental education is of central importance in this process, and should not be viewed as merely one more course added to the educational curriculum. The environmental approach should spread through the whole range of education, and awareness should be created of the environment, its limits and possibilities. The development of programmes of environmental education is of particular interest in view of the role of misrepresentation played by the mass communication media in this regard, and the difficulty of introducing changes in the media within the framework of the prevailing style.

21. This means that it will be necessary to introduce changes in the educational methodology and its content. As regards the former, education must be made less discursive, and linked more to direct contact with social and biological processes. As regards the latter, education should be less classificatory and should lay greater emphasis on the dynamic, interrelations and effects of the relationship between society and nature.

22. The training of technical and professional staff is another highly important activity. Those located in planning or policy formulation activities should be aware of overall environmental problems, and those which correspond to their specific sectors. It is equally important to emphasize the interdisciplinary nature of studies on the environmental dimension. In this way it will be possible to improve these planning processes rapidly, permitting proper environmental management as a part of the development process.

## F. INFORMATION

23. The Commission recognized that information, and the integration of information in the environmental dimension, is a central component of planning. It also recognized that in Latin America information systems suffer serious shortcomings in terms of the quality, quantity and use of the information, and access to it. In many countries this access is very limited, and information on resources is frequently controlled by foreign firms and other outside bodies. It was recognized that the information systems are closely related to the rising style of development.

24. The following measures are recommended:

(i) action by the agencies dealing with environmental problems (UNEP, for example) in preparing the national accounts systems, in order to ensure that they take environmental aspects into consideration;

(ii) preparation of appropriate indicators in the form of thesauruses, glossaries, and so on to standardize and guide the collection of information on resources and the environment;

(iii) broadening of the information bases on inventories of resources, technologies and projects, as well as national bibliographies;

(iv) training of systems analysts capable of designing and applying systems which are suited to Latin America's needs;

(v) channelling of investment in information systems towards the improvement of means of dissemination and the aspects related to access to information, and not, as at present, towards increasingly more sophisticated hardware.

25. CEPAL, through CLADES, should intensify the work which has been carried out concerning the diagnosis of the status of the information systems by region and country. The necessary efforts must be made to ensure that the UNEP/INFOTERRA methodology can be incorporated in the region's information systems;

26. It is essential to record the state of the environment in Latin America and changes in it. CEPAL and the United Nations Statistical Office have been preparing a project along these lines, which should be stimulated and supported.

27. The Commission gave serious discussion to priority projects linked to information of a regional, subregional and national scope, including the following:

(i) at the regional level: information which serves to underpin the management of ecosystems shared by several countries; compilation and analysis of existing environmental legislation; documentation on regulations in force in the region; data banks on natural resources;

(ii) at the subregional level: listing of alternative technologies suitable for the specific conditions in tropical, arid and semi-arid subregions and so on; information on centres related to sectoral information services; documentation on human settlements;

(iii) at the national level: inventories of skills in information systems, availability of resources for aerial photography, cartography, and so on.

#### G. TECHNOLOGY

28. The Commission recognized the great importance of technology in defining the style of development and its relationship with the environment. At present the technology which characterizes the processes of production in the dominant style of development is defined on the basis of the interests of transnational capitalism. Increasingly it is the transnational corporations which control such technologies.

29. Starting from the principle that "there is a residual fund of tradition and wisdom ... in the people themselves ..." the Commission felt that the strategy whereby the appropriateness of technologies was a matter for local decision was of great usefulness. This strategy is founded on the broad participation of the community in developing technology and using the knowledge involved in it.

30. Nevertheless, it was recognized that the strategy is limited to a sector which may be residual. Accordingly, it was felt that it would also be necessary to tackle the scientific and technological infrastructure in order to ensure that the process of technological change is subject to guidelines designed to minimize harmful effects.

31. An important aspect as regards technology is that, for many of the ecosystems which characterize Latin America (tropical and subtropical zones, for example), technologies which are appropriate for their rational exploitation do not exist, or at least are not used. A substantial effort is required in the region to develop such technologies and make them accessible within a relatively short period of time.

#### H. LEGAL AND INSTITUTIONAL ASPECTS

32. It is recommended that steps should be taken to ensure that institutional forms of co-ordination and methodologies for management exist which permit an appropriate flow of political and environmental inputs. These inputs, produced by the areas of global management of the environment which exist or are created in the countries, should fall within the framework of:

(i) the global development policy determined by the areas of planning;

(ii) the sectoral policies for the areas in which management involves direct handling of elements of the environment with a view to developing their productivity (agriculture, livestock raising, forestry, mining and so on), infrastructure (public works, transport, and so on) and services and equipment (urban development, health, and so on);

(iii) the sectoral policies for areas which are of great importance in determining the feasibility of any environmental policy, especially if it requires a change in the style of development (education, scientific and technological development, information, and so on);

(iv) the policies for administrative decentralization of a geographical nature (in provinces, regions and towns).

33. It is recommended that the legal framework governing the environment should be adjusted in order to ensure:

(i) due constitutional protection for the right of the inhabitants to enjoy a proper environment and quality of life;

(ii) appropriate basic or organic legislation which incorporates the fundamental principles and objectives of overall environmental policy, the fundamental and procedural norms which ensure the consistency of the whole legal environmental system, and the institutional machinery required

for the formulation and implementation of the environmental policy taking account of the internal intersectoral and interjurisdictional requirements, and those of popular participation;

(iii) the adaptation of the sectoral legislation corresponding to the different natural resources, so as to introduce aspects relating to ecosystems;

(iv) the incorporation of standards for the preservation of the environment in a group of sectoral laws of a different kind, such as those for industrial promotion, urban development, energy and so on;

(v) the legal foundations of the present forms of appropriation of natural resources and the elements of the environment, whose impact on the present shape of the style of development it would seem unnecessary to emphasize;

(vi) regional international law, so as to ensure proper treatment of interjurisdictional environmental problems.

34. The Commission recognizes that the legal structure is in keeping with the demands of the dominant style. This suggests two aspects for consideration: (i) that, as in other areas of economic and social realities, outside juridical forms penetrate in this field too, and (ii) that it is possible to achieve objectives linked with the environment and to the achievement of a better quality of life through machinery and means not laid down in the formal legal and administrative structure.

#### I. FINAL OBSERVATIONS

35. The Commission is fully aware of the limitations that the political style imposes on the implementation of the measures proposed in this and other reports.

36. However, it considers it important to create awareness of the aspects pointed out, and above all of the need for planning to form part of a style which is based on participation.

37. It is not only the state which intervenes in the economic and social processes. In the dominant style the powerful economic groups and the transnational corporations influence and in many cases determine global

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policies. In order to introduce an alternative style or to make changes in the present style, it is necessary to strengthen the groups and institutions which, in one way or another, hold adversary positions - trade unions, environmental groups, regional groups, churches and so on.

38. The papers submitted to this seminar and the discussions held in it provide guidelines for the formulation of an alternative conception of planning and for the development of more appropriate methodologies.

Just as, in previous decades, CEPAL played such an important role in drawing up development strategies using programming techniques, so today it can be a key factor in formulating new guidelines for development and drawing up new arrangements for planning.

39. Finally, it is necessary to emphasize that what is sought is the building of a better society for the peoples of Latin America, a task which makes it necessary to achieve substantial structural transformations. This should not be confused with the more technical problem of including the environmental dimension in planning schemes.



Annex 1

DOCUMENTS PRESENTED AT THE CEPAL/UNEP REGIONAL SEMINAR ON "STYLES  
OF DEVELOPMENT AND ENVIRONMENT IN LATIN AMERICA", LISTED  
BY WORKING COMMISSIONS

Symbol <u>1/</u>	Author	Organization	Title <u>2/</u>
COMMISSION 1: "STYLES OF DEVELOPMENT AND ENVIRONMENT"			
R.1	Amílcar Herrera	-	Desarrollo, medio ambiente y generación de tecnologías apropiadas
R.2	Sergio Melnick	-	Desarrollo y medio ambiente. Principales escuelas, tendencias y corrientes de pensamiento
R.6	Marshall Wolfe	-	Perspectivas: el medio ambiente en la palestra política
R.22	Raúl Prebisch	CEPAL	Biosfera y desarrollo
R.25	Armando di Filippo	CELADE	Distribución espacial de la actividad económica, migraciones y concentración poblacional en América Latina
R.32	Gilberto C. Gallopín	Grupo Análisis Sist.Ecológicos (Fund.Bariloche)	El medio ambiente humano
R.34	Nicolo Gligo V. and Jorge Morello	CEPAL/UNEP -	Notas sobre la historia ecológica de América Latina
R.36	Oswaldo Sunkel	CEPAL/UNEP	Los estilos de desarrollo y el medio ambiente en el proceso histórico reciente de América Latina

1/ All the documents for this Seminar have the symbol E/CEPAL/PROY.2/R... (individual serial number) and are in the "Restricted" classification.

2/ All documents are in Spanish except where otherwise indicated.

Symbol	Author	Organization	Title
R.44	Oswaldo Sunkel and Luciano Tomassini	CEPAL	La dimensión ambiental y el cambio en las relaciones internacionales de los países en desarrollo
R.45	Jaime Hurtubia	UNEP	La evolución del pensamiento ecológico
R.49	José J. Villamil	CEPAL/UNEP	Concepto de estilos de desarrollo: una aproximación
R.50	Oswaldo Sunkel	CEPAL/UNEP	Estilos de desarrollo y medio ambiente en América Latina, Borrador de informe global
COMMISSION 2: "AGRICULTURAL AND FORESTRY MODERNIZATION"			
R.3	Grupo Análisis Sist. Ecol.-Carlos A. Barrera	Grupo Análisis Sist.Ecológicos (Fund.Bariloche)	Economía y ambiente: análisis del subsistema regional Chaqueño
R.4	Charles C. Mueller	-	Expansión de la frontera agrícola y medio ambiente en el Brasil: el sur de la región centro-oeste y la amazonía
R.10	Sergio Salcedo and José Leyton	FAO	El sector forestal latinoamericano y sus interrelaciones con el medio ambiente
R.11	Nicolo Gligo V.	CEPAL/UNEP	Estilos de desarrollo, modernización y medio ambiente en la agricultura latinoamericana
R.16	Constantino Tapias	FAO	El medio oceánico y la actividad pesquera
R.27	Juan Gastó	-	Ecosistema. Componentes y atributos relativos al desarrollo y medio ambiente
R.28	Juan Gastó	-	Bases ecológicas de la modernización de la agricultura

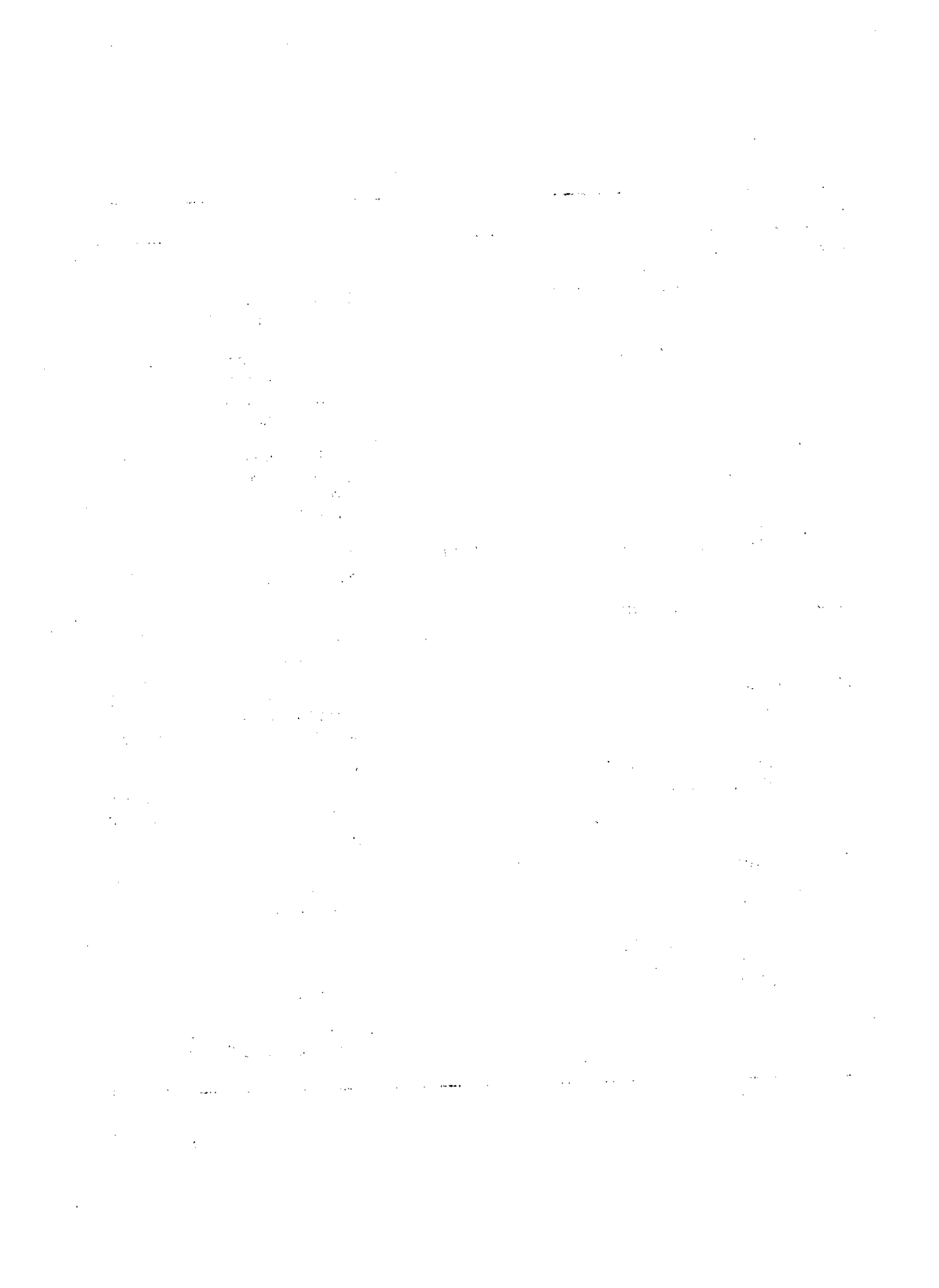
Symbol	Author	Organization	Title
R.33	Jorge H. Morello	-	Ecología y atributos del ecosistema
R.47	Emiliano Ortega	CEPAL/FAO	Interrogantes en torno a la agricultura campesina y el deterioro del medio ambiente
R.48	Jorge Adámoli and Patricio Fernández	- OAS	Expansión de la frontera agropecuaria en la Cuenca del Plata: Criterios ecológicos y socio-económicos para su planificación
COMMISSION 3: "URBANIZATION AND MARGINALITY"			
R.5	Carlos Borsotti	CEPAL	Estilos de desarrollo, medio ambiente y estrategias familiares
R.7	Juan Pablo Antún	-	Centros de crecimiento explosivo en América Latina
R.8	Lucio Kowarick	-	El precio del progreso: crecimiento económico, explotación urbana y la cuestión del medio ambiente
R.9 <u>3/</u>	Ian Thomson	CEPAL	An analysis of some of the social consequences of the automobile in Latin America
R.12	Guillermo Geisse	-	Renta de la tierra, heterogeneidad urbana y medio ambiente
R.17	Jorge Wilhelm	-	Metropolización y medio ambiente
R.18 <u>3/</u>	Giorgio Solimano	-	The impact of socioeconomic development and ecological change on health and nutrition in Latin America

3/ English only.

Symbol	Author	Organization	Title
R.21	Alejandro Rofman	-	La "interiorización" espacial del estilo de desarrollo pre-vaeciente en América Latina
R.24	Larissa Lomnitz	-	Organización social y estrategias de sobrevivencia en los estratos marginales urbanos de América Latina
R.40	Centre International pour le Développement	CID	Medio ambiente marginal y estilos de desarrollo en América Latina
COMMISSION 4: "INDUSTRIALIZATION AND ENERGY"			
R.15	Jorge Trénova	CEPAL	Perspectivas de la energía solar como sustituto del petróleo en América Latina hasta el año 2000
R.19	Carlos Plaza and Terence Lee	CEPAL CEPAL	Las grandes presas: expresión concreta de un estilo de desarrollo
R.31	Alfredo del Valle	UNDP	Los nuevos problemas de la planificación energética en América Latina
R.37	Ignacio Vergara S.	IMCO	Transporte marítimo y contaminación en América Latina y el Caribe
R.38	Fernando H. Cardoso	-	Perspectivas del desarrollo y medio ambiente: el caso de Brasil
R.42	Alberto Uribe and Francisco Szekely	- UNEP	Localización y tecnología industrial en América Latina
R.43	Hernán Durán de la Fuente	CEPAL/UNEP	Estilos de desarrollo de la industria manufacturera y el medio ambiente en América Latina, Impacto en el recurso hídrico
R.46	Alcibiades Azolas Hernán Durán	CEPAL CEPAL/UNEP	Consumo energético en la industria manufacturera: el caso de Brasil

Symbol	Author	Organization	Title
COMMISSION 5: "PLANNING"			
R.13	Lety Gaete	CLADES	Información medioambiental para la planificación
R.14	Santiago Torres	-	La incorporación de la dimensión medioambiental en la planificación regional: aspectos operacionales
R.20	Rubén D. Utría	CEPAL	La incorporación de la dimensión ambiental en la planificación del desarrollo: una alternativa de guía metodológica
R.23	José J. Villamil	CEPAL/UNEP	Impacto del turismo: la experiencia del Caribe
R.26 <u>3/</u>	Warren Crowther	IDRC	Information, development style and environmental problems in Latin America
R.29	Vicente Sánchez	-	Papel de la educación en la interacción entre estilos de desarrollo y medio ambiente
R.30	Lowell Jarvis and Emilio Klein	PREALC PREALC	Generación de empleo y la conservación de los recursos naturales. Un programa para El Salvador
R.35 <u>3/</u>	Warren Crowther	IDRC	Technological development, development styles and environmental problems
R.39	Alvaro García Hurtado and Eduardo García D'Acuña	ILPES ILPES	Las variables medioambientales en la planificación del desarrollo
R.41	Guillermo Alonso	-	Antecedentes jurídicos del medio ambiente en América Latina.

3/ English only.



Annex 2

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