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ECONOMIC COMMISSION FOR LATIN AMERICA

MEETING ON SCIENCE, TECHNOLOGY AND DEVELOPMENT IN LATIN AMERICA

Mexico City, 2-6 December 1974

REPORT OF THE MEETING

75-1-192

CONTENTS

/BACKGROUND

BACKGROUND

1. The ECLA secretariat convened the Meeting on Science, Technology and Development in Latin America in compliance with resolution 322 (XV) adopted by the Commission at its fifteenth session in Quito, Ecuador, in March 1973. In this resolution, the member governments requested the secretariat to evaluate the incidence of the technological factor in economic and social planning and to begin an analysis of the means of applying the Regional Plan of Action prepared by the United Nations Advisory Committee on the Application of Science and Technology to Development (ACAST).

2. These two tasks were to be carried out within the framework of the science and technology programmes proposed by the United Nations at the beginning of the Second Development Decade.

3. Subsequent to the adoption of resolution 322 (XV), three further developments drew attention to the concern of the governments regarding the adverse economic and social effects of scientific and technical backwardness. In the first place, the United Nations General Assembly, at its sixth special session, recently approved the Declaration and Programme of Action on the Establishment of a New International Economic Order, which emphasize the need for a code of conduct to regulate the transfer of specialized know-how on a worldwide basis in favour of the developing countries.

4. Secondly, the Meeting of Foreign Ministers of America at Tlatelolco, Mexico, in March 1974 and in Washington in April 1974 led to the creation of a working group responsible for proposing to the inter-American system new forms of co-operation in the field of science and technology, especially as regards the infrastructure and transfer of know-how. The group met again in Brasilia in June 1974 to define the scope and form of its activities.

5. Finally, ACAST is considering the possibility and advisability of the United Nations organizing a second world conference on science and technology in the next year or two.

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6. These various developments led to the holding of the present Meeting, which was convened by the ECLA secretariat in Mexico thanks to the generosity of the Mexico Government.

7. At the request of the ECLA member governments and in the light of very recent events in the field of international co-operation, the Meeting devoted special attention to the following four aspects: (a) the pattern of scientific and technical progress in the region; (b) the experience of the various Latin American countries in the promotion of scientific and technological development; (c) international and regional co-operation mechanisms that can be placed at the service of development in the region; and (d) institutional and financial arrangements for applying the Regional Plan of Action.

Part I

ORGANIZATION OF THE MEETING

Duration of the Meeting

8. The Meeting on Science, Technology and Development in Latin America was held at the Headquarters of the Mexican Ministry of Foreign Affairs at Tlatelolco, Mexico City, from 2 to 6 December 1974.

Attendance

9. The Meeting was attended by the representatives of 19 Member States of ECLA and by representatives of United Nations agencies and other intergovernmental and non-governmental organizations (a complete list of the participants is given in the Annex to this report).

Opening Meeting

10. At the opening meeting held on the morning of 2 December, which was presided over by the Minister of Foreign Affairs of Mexico, on behalf of H.E. Dr. Luis Echeverría, President of the Republic, statements were made by Mr. Gerardo Bueno Zirión, Director-General of the National Council for Science and Technology (CONACYT) of Mexico, Mr. Jaime Ayala, representative of Colombia, who thanked the Mexican government for the hospitality on behalf of the participants, Mr. Enrique V. Iglesias, Executive Secretary of ECLA, and H.E. Mr. Emilio O. Rabasa, Minister of Foreign Affairs, who concluded his statement by officially declaring the meeting open.

Election of Officers

11. The participants elected the following officers:

Chairman: Mr. Gerardo Bueno Zirión (Mexico)
First Vice-Chairman: Mr. Félix Soublette (Venezuela)
Second Vice-Chairman: Mr. Tirso Sáenz (Cuba)
Rapporteur: Mr. Jorge Arias de Blois (Guatemala)

/Programme of

Programme of Work

12. The following programme of work was approved:

1. Science and technology in the development of Latin America

Documents: - Technical progress and socio-economic development in Latin America: a general analysis and recommendations for technological policy (ST/CEPAL/Conf.53/L.2)

- Scientific and technical progress for the development of Latin America (ST/CEPAL/Conf.53/L.3) prepared by the Latin American Institute for Economic and Social Planning (ILPES)

2. Latin American experience in the promotion of science, technology and development

Documents: - Some recent experience in the promotion of scientific and technological development in Latin America (ST/CEPAL/Conf.53/L.4)

- Technology and the Latin American industrialization process (Information document Nº 2)

- Country reports.

3. International and regional co-operation

Documents: - ACAST. A Latin American plan of action for the application of science and technology to development 1/

- Scientific and technical progress for the development of Latin America (ST/CEPAL/Conf.53/L.3), prepared by the Latin American Institute for Economic and Social Planning (ILPES)

1/ The English version of this document, which was presented at the fifteenth session of ECLA (Quito, April 1973) was distributed to the Meeting under its original code number: E/CN.12/966. The Spanish text is in the form of a book published by the Fondo de Cultura Económica (Mexico City, 1973).

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- Some background information and considerations regarding the possibility of convening a world conference on science and technology (Information Document Nº 1)
- Reports by the United Nations specialized agencies and intergovernmental agencies.

4. Conclusions and recommendations

13. The Meeting decided to consider the various items of the agenda in the plenary meetings and set up a Working Group to study the draft resolutions submitted by the various countries.

14. The Working Group elected the following Officers:

Chairman: Mr. José Pelucio Ferreira (Brazil)
First Vice-Chairman: Mr. Jaime Ayala Ramírez (Colombia)
Second Vice-Chairman: Mr. Everett Marcel Knight (Jamaica)
Rapporteur: Mr. José Pelucio Ferreira (Brazil) 2/

Closing Meeting

15. At the closing meeting, the participants took note of the present provisional report, making their approval of it subject to the observations which they would submit in writing within a period of 30 days. The secretariat was authorized to give it its final form and subject it to suitable editing before distributing it to Governments.

16. Statements were made at the closing meeting by Mr. Ovidio Suárez Morales, representative of Bolivia, on behalf of the delegations present, Mr. Patricio Silva, representing ILPES, Mr. Enrique V. Iglesias Executive Secretary of ECLA, and Mr. Gerardo Bueno Zirión, Director-General of CONACYT.

2/ The Meeting had originally designated the representative of Peru as Rapporteur. However, as he was unavoidably prevented from attending the discussions, the Working Group asked its Chairman to act also as Rapporteur.

Part II

SUMMARY OF DISCUSSIONS

1. Science and technology in the development of Latin America

17. The participants discussed the document "Technical progress and socio-economic development in Latin America" (ST/CEPAL/Conf.53/L.2), and heard a statement by the Deputy Executive Secretary of ECLA which opened the discussion on the subject. The document sought to establish the nature of technological backwardness in the region within the framework of the general industrialization process, to analyse technical development options, and to suggest some lines of action in this field.

18. The Deputy Executive Secretary mentioned three main aspects of the technological problems of Latin America: (a) the low average level of technology and its structural heterogeneity; (b) the high degree of external dependence in the field of technology, and (c) the incompatibility between imported technology and the special conditions of the region.

19. He drew attention to the low average level of the per capita product per employed person prevailing in Latin America, as well as the scope and depth of structural heterogeneity, expressed in terms of differences in productivity and in the distribution of employment and production between economic activities. Major disparities in productivity occurred not only between the different economic sectors but also within each one of them.

20. Structural heterogeneity was of course linked with the extreme inequalities in income distribution, and these in their turn were related to the levels of consumption and the profound differences in their composition within the different social groups. He further stated that the secretariat had for some time been working towards an interpretation of the Latin American process which aimed to integrate these aspects with those of employment and technical progress so

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as to bring out the problems and limitations of the region's development, and he made a few observations regarding this interpretation.

21. As regards dependence on external technology, he noted that there were three stages in the historical analysis given in the document. The first was the stage of direct assimilation of techniques created in the centres; the second was the creative incorporation of imported technology, while the third involved the generation of a local process of technological innovation. By this reckoning, in spite of the dynamism shown by its industrial development, Latin America seemed to be still at the first stage.

22. The Deputy Executive Secretary said that ECLA was studying technological strategy and policy within this broad framework of economic and social problems. In the document before the Meeting, two options were examined: the first of these concerned a process of accelerated modernization and a high rate of growth, which required a vigorous expansion of the external sector - direct investment and trade - but failed to integrate the subsistence sector within a reasonable period and at adequate levels of production.

23. The second option could be described as the case of a moderate expansion of the modern sector and a shifting of investment towards the intermediate and traditional sectors, with the aim of increasing their productivity and eliminating the subsistence sector within a reasonable time. Such a development pattern probably implied less growth in the product and in foreign trade.

24. In conclusion he stated that although these analyses, which were of course over-simplified, only served the purpose of clarifying general ideas concerning the economic, social and technological implications of different styles of development, they nevertheless reflected some important conclusions, such as the need to promote a dynamic process with high rates of growth; the possibility of financing the greater investment which would be required by cutting back the level of consumption of the higher income groups; the need to find suitable economic and technological policies to increase productivity in the intermediate economic sectors (i.e., intermediate

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from the point of view of productivity), and the top priority of finding a solution to the problem of unemployment and extreme poverty.

25. The participants then considered the document "Scientific and technical progress for the development of Latin America" (ST/CEPAL/Conf.53/L.3), prepared by the Latin American Institute for Economic and Social Planning (ILPES).

26. The document was presented to the meeting, with accompanying comments and observations, by one of its authors (an ILPES consultant), who noted that the establishment of a new science and technology policy throughout Latin America was a very complex problem: as complex as it was to formulate a regional policy for economic and social development. He said that ILPES had made a study which considered economic growth, the improved distribution of income and the increasing of job opportunities as basic priorities, and went on to discuss the following points: (a) the heterogeneity of the gross domestic product from country to country and the economic activity of each country; (b) the interrelations and aspects which distinguished the development of science and the application of technology; (c) the joint need for a demand and supply of technology in order for technological change to take place; (d) its orientation towards the modern or traditional sector of the economy; (e) the creation, transfer and adaptation of technology in the process of technological change; (f) the contrast between the emphasis which had been placed on the transfer of technology to manufacturing industry and the high percentage of people employed in the traditional sector in Latin America, particularly in agricultural activities; (g) the limited capacity of these sectors to absorb technology, and the consequent need for assistance; (h) some priority objectives of policies directed towards technological change in Latin America; (i) the desirability of analysing policies, institutional factors, and human resources in the process of technological change; (j) the means by which the performance of agents of technological change could be brought in line with requirements so as to reconcile private interest with social priorities, and (k) the indirect impact of general government policies on such change.

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27. He also discussed certain aspects of special importance in the process of technological change, among which the following were of special importance: (a) the giving of priority of selective efforts in the field of technical education, continued education, and the provision of skills; (b) the creation of a minimum scientific and technological infrastructure based on education and on the scientific development of the universities and research institutes, and (c) the need for a set minimum scientific capacity in the form of permanent and stable scientific activity aimed at preparing the countries to deal with those problems which the technological needs of national development pose for science.

28. With respect to the transfer of technology, the representative of ILPES felt that the policy of diversifying its origin should be promoted, giving preference in particular to that provided by Latin America itself and by the medium-sized and small enterprises of the industrialized countries. He also stressed the need to reduce the importation costs by avoiding restrictive conditions in licensing contracts, to refrain from importing what was not needed (breaking down the technological package), to strengthen local bargaining power with the support of the State, and to work out joint bargaining positions in the Latin American countries vis-à-vis foreign enterprises.

29. The foreign investments which were approved should be implemented under conditions which guaranteed a real transfer of technology.

30. He believed that the creation or the adaptation of technology was subject to a process of supply and demand which required careful political and social evaluation, and that it was the duty of the State to create the conditions which would help to bring about technical change.

31. Lastly, he referred to the institutional problems of communication and guidance of State policies, concluding: (a) that it was necessary to integrate science and technology with global and sectoral planning, and (b) that while the national research councils signified a considerable advance in the field of the development of science and technology, they had not yet succeeded in establishing direct links

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with the productive system or with national development plans. As a result - as the ILPES document argued - it was necessary to establish effective and systematic means of communication between the production sectors, the scientific and technological infrastructure and the government of the country.

32. At the opening of the general discussion of this agenda item on the basis of the documents referred to, one representative stated that technological progress involved complex phenomena, as the experience of the industrialized countries had shown. He stressed the fact that the progress made by these countries had taken place under conditions which it would be difficult to reproduce in Latin America, citing by way of example their relatively slow growth of population, the abundance of natural resources, and an intense transfer of productive and technical know-how.

33. Such circumstances explained how the technological gaps between the industrialized systems - mention was made of Europe as compared with the United States - could be narrowed through actions based on bilateral technical assistance, the exchange of specialists, the training of an entrepreneurial sector sensitive to technological innovation, the standardization of production procedures, and State intervention.

34. It was obvious that the narrowing of technological gaps between industrialized countries was facilitated by the considerable size of the markets, the scales of production, and the possession of ample and diversified scientific potential.

35. The same representative stated, however, that the technological backwardness of Latin America showed features which were different from those referred to. The launching of the actions described above (paragraph 33) ran into serious obstacles inherent in the state of underdevelopment, and even if they could be put into practice they would do nothing to remedy technological inferiority.

36. It was pointed out that it was not possible to recommend a joint policy for science and technology without taking account of national differences. For example, some of the Latin American countries

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might require improved techniques in the agricultural sector more urgently than in the industrial one. This was the reason for the need to design a methodology which took account of the diversity in the endowment of factors, relative advantages and styles of development.

37. The Director of the United Nations Office for Science and Technology said that even the developed countries had an imperfect understanding of the significance and import of science and technology in modern life. Moreover, they too seemed to be overwhelmed by the lack of resources. The need to rationalize the allocation of these was one shared by all nations, although this need was greater in the less developed countries.

38. A policy for science and technology could not be reflected merely in a better allocation of funds and manpower. Two things were essential: (a) the identification of a selective pattern of technological growth, and (b) the full use of bilateral and multilateral assistance machinery.

39. He stressed the desirability of placing the United Nations system at the service of the technologically less advanced countries, without prejudice to the bilateral assistance they might get from the small industrialized countries. Although the United Nations did not currently have a coherent science and technology policy, the regional economic commissions could help in drawing one up and putting it into effect thanks to the close contacts they maintained with governments.

40. In that connexion, he thought that it would be of great assistance if governments tried to answer four basic questions which affected the selection of technology: (a) what type of scientific and technological development did they wish to achieve? (b) what did they need science and technology for? (c) what were to be the priority projects? and (d) how were operational links to be established between science and technology policy and economic policy?

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41. Moreover, together with this national effort it was necessary to undertake action established on a regional basis, which could cover the following fields: joint research programmes based on the Regional Plan; the establishment of training and research centres for areas of interest to two or more countries; the exchange of experiences in the field of scientific policy; the transfer and adaptation of technology; the treatment of foreign investment; industrial property, and finally, the defence of common positions in international forums dealing with the subjects of science and technology.

42. Several delegations agreed that it was necessary to give a more humanistic tone to technology. If this were not done it would not only affect the quality of social development, but would also discredit the intellectual legitimacy of the scientific and technological effort.

43. Furthermore, he thought that it was necessary to promote a balanced pattern of scientific and technological development, particularly in view of the fact that defects were present in all sectors.

44. Special attention was given in the discussions to the so-called "brain drain". Some delegations felt that this was yet another form of colonial exploitation still being practised. Other representatives outlined the internal causes which forced scientists and technicians to leave their country, even where no deliberate external stimulus existed. Local instability was also given as another cause.

45. At all event, it was agreed that the exodus of talent made it necessary to deal in a concerted manner with the promotion of basic and applied research, as well as the domestic demand for specialized services.

46. Several delegations pointed out that whatever point of view was taken concerning technical and scientific progress, account should be taken of the fact that in relations at the international level the law was often laid down by the transnational enterprises.

47. Summing up the discussions on the first item of the agenda, the secretariat noted that the participants were agreed on three subjects: (a) the irregularity of the flow and fragmentary nature of technical progress transferred to the region; (b) the complexity of the phenomena

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inherent in technical dependency and backwardness, and (c) the potential offered by regional and international co-operation in this field.

2. Latin American experiences in the promotion of science, technology and development

48. The representative of the ECLA secretariat, in his presentation and extensive observations on document ST/CEPAL/Conf.53/L.4 stated that it was desirable that any Latin American study on these matters should project a three-dimensional image which reflected the lessons of the past, the imperatives of the present and the tendencies of the future.

49. After saying that he considered it necessary to provide a clearer historical interpretation of the conditions which determined the industrial revolution, he then went on to review the experience of Europe and the developed countries, as well as the substantive changes which had been introduced in the social and the productive structure - especially in agriculture - owing to factors which favoured such evolution, but which were probably not present today in Latin America.

50. He further noted that under conditions of technological backwardness there were general problems for mankind which could be solved unilaterally. For this reason, the transformations which were inevitable should bear the stamp of humanity and equity, and the developing countries should pay great attention to the redefinition of growth guidelines which was going on in the industrial centres.

51. Referring to the pressing problems of the present, he went on to review a number of them which must be solved in connexion with projects, institutions, financial resources, etc., and stressed the importance of intellectual liberty in order to permit the free play of scientific ideas and the need for any Latin American strategy for the development of science and technology to be selective.

52. He then discussed the four stages into which, in the opinion of the secretariat, the experience collected in Latin America in the 1970s could be divided: (a) awareness by the public sector of the importance of science and technology for development; (b) the establishment of various institutional schemes, and especially the council for science

/and technology;

and technology; (c) measures to encourage the local supply of technical know-how, and (d) the implementation of concerted action which took account of the components of scientific and technological innovation and the possibilities of strengthening them through regional co-operation

53. He paid special attention to the positive achievements of the national councils for science and technology, drawing attention at the same time to the points where tension had arisen with the remainder of the public sector. The long-term view required in this field was very difficult to put into practice within a national system overwhelmed by problems requiring immediate solutions.

54. As regards the design of technological policies, such measures as the establishment of transfer registers, the breaking down of the technological package, the reorientation of public expenditure, and information systems were discussed. These actions were no doubt determined by balance-of-payments problems, restrictions on exports, and the shortcomings of labour markets.

55. The Secretariat representative went on to stress the need to identify a select set of measures in fields of interest to the countries, and the urgency of intensifying action in connexion with exports, industrialization and employment. To complete this sectoral approach, he noted that opportunities for regional co-operation were being opened in such fields as petroleum, fisheries, forestry, food and textiles. In conclusion, he emphasized the urgency of establishing new arrangements for training human resources.

56. The discussions on this item of the agenda were very extensive, and in the following paragraphs an attempt is made to summarize the various views expressed by the participants. Owing to the limited drafting time available, it was not possible to put the discussions themselves in any but chronological order, and the Rapporteur recognizes that a summary should have been made of the material provided by the discussions. However, it is felt that those statements which reflected a general consensus of the Meetings and which were taken up in the resolutions that it adopted (Part III of this report) stand out sufficiently by themselves.

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57. In this connexion, it should be noted that the statements made by the participants expressed, in general, the interest of their governments in the assistance which ECLA could and should provide in the field of scientific and technological planning in the Latin American region, offering its traditional dissemination of methodologies in this field which it had so far explored only to a limited extent. Thus, it was felt that this new task of ECLA could - as in the case of economic and social planning - provide effective support for governments in designing their economic policies.

58. Some Latin American countries, it was pointed out in the discussions, still did not have bodies specializing in the study and promotion of science and technology although efforts to organize such bodies were being made in those countries.

59. The interest of many delegations in the organization of information systems as a means of systematizing the mass of scientific and technological knowledge built up in other parts of the world was very marked. There was general agreement that such data banks should be organized with a view to providing, as needed, information requested by the users of the material in question.

60. Several representatives stated that scientific and technological development had recently begun to be considered as an obvious variable of economic growth in their countries, thus making it an instrument for achieving the socio-economic objectives planned by governments.

61. Three delegations described the institutional reorganization carried out in their countries to permit the Councils for Science and Technology to carry out their operations effectively at the interministerial level.

62. Several representatives stated that in their countries attempts were being made to improve the co-ordination of the policies of the Councils for Science and Technology with those of the private sector, so that the latter could in turn strengthen its links with the public sector.

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63. It was widely recognized that UNDP had been providing valuable aid to various technical assistance projects in this field covering such objectives as quality control methods, the adoption of industrial standards, mechanisms for the transfer of technology, etc.

64. More than one delegation noted that the study of scientific and technological development had not attached sufficient importance to the existing supply, i.e., to inventories of the region's potential. Therefore, it was recognized that there was need to co-ordinate such studies with those required by the demand for technology. Some representatives stated that there had been important advances in their countries in respect of efforts of this kind.

65. In the course of the discussions, reference was made to the difficulties which arose when any attempt was made to persuade the international financial agencies to grant loans to cover the costs of scientific and technological research.

66. Several speakers also emphasized that the financial resources at the disposal of the research councils or institutes were not sufficient to satisfy their needs. It was, however, mentioned that in some cases these resources had been increasing significantly

67. Among the causes of the brain drain from the developing countries to the industrialized countries, the lack of stability of the scientist in the face of political vicissitudes was mentioned. One delegation suggested, as a possible solution, that talent should be recruited at the international level, but on condition that the persons involved remained in their country of origin.

68. Many representatives recognized the need for intersectoral co-ordination in research in line with the actual situation in the countries. Once efforts in this sense had been co-ordinated, they could be fitted into a science and technology plan which in turn would come to form part of the national development plan.

69. It emerged from the debate that the majority of efforts made in the Latin American countries had been carried out in terms of the supply of technology. It was generally accepted, however, that it was urgent to study a link-up between this supply and the existing demand, either using a pragmatic approach or in a sectoral form.

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70. One representative pointed out that the stages in the process leading to a coherent science and technology policy supported by all sectors might take place simultaneously or in reverse order.

71. Several delegations from member countries of the Cartagena Agreement mentioned the co-ordination which had given an impulse to that pact and pointed out that Board Decisions 24, 84 and 85 already contained explicit technological policies.

72. Special stress was placed on the importance of concerted action in science and technology, and various representatives suggested that the entire public administration and its users should be mobilized in order to co-ordinate adequately the allocation of certain resources which were generally scarce.

73. Some representatives underscored the prospects offered by bilateral co-operation among Councils and emphasized its importance in the execution of the research in which they were engaged, pointing out that it allowed use to be made of the experiences of other countries of the area.

74. Considering that a large number of Latin American countries depended to a considerable extent on agriculture, two representatives observed that the modernization of this sector was essential and it was necessary to develop advanced technologies which would permit a substantial increase in agricultural productivity for this purpose.

75. Various participants considered advances in the educational system to be of major importance for scientific and technological development; others mentioned the need for introducing changes in the curricula of educational institutions so that requirements in this area would correspond to the human resources available.

76. One of the participants considered that it was a moral obligation for scientists to support development in the field of technology, since in this way they were responding to the support which the governments of their countries had given them in their academic training.

77. The Meeting was told of the considerable efforts being made in Latin America in the area of science and technology through the

national councils, regardless of the geographical size of the various States and despite the fact that the small countries are faced with limitations of a special nature.

78. In some countries, it was stated, special emphasis had been placed on research aimed at solving the actual problems existing in specific sectors of production. In that connexion, several delegations stressed that it was necessary to boost and reinforce technological studies on agriculture and not only those on the industrial sector.

79. One representative informed participants of the possibility that his Government might grant considerable financial support for scientific and technological research, on the basis of the additional resources coming from the increase in the price of its petroleum exports.

80. He considered that scientific and technological studies should be undertaken in the Latin American countries to provide a solution to certain problems such as the eradication of certain endemic diseases, nutritional and housing questions, etc., which, since they were innate problems of Latin America, were not studied by the industrialized countries. He also drew attention to the need to conserve, use, and disseminate the technologies already available, which had been obtained as a result of very considerable internal efforts.

81. He further emphasized the urgent need to undertake research on new uses for some primary goods produced in Latin America. That would allow the countries of the area to protect themselves from the adverse effects exerted on their economies by instability in the basic commodity markets.

82. Recognition was given to the importance of bringing the higher educational institutions into closer contact with the specific problems of their host countries. The predominant role of these institutions in scientific and technological development and the need to adapt research to the solution of actual problems made the transcendental importance of an effort of this type easy to understand.

83. Several delegations also underlined the importance of introducing selective criteria regarding imports of technology from the industrialized countries, so as to give preference to those best adapted to the resources of the recipient country.

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84. One representative said that, in view of the weakness of the Latin American economies in general in terms of finance, it was extremely important to obtain the best possible yield from expenditure on research. He also mentioned the difficulties met with in seeking finance for research projects, owing to short-term budgetary pressures. Since this made it necessary to modify the order of priorities in expenditure, it was detrimental to the long-term investment which this expenditure on science and technology represented.

85. The representative of an industrialized country expressed concern regarding the possible reduction of the expenditure which the companies of his country normally devoted to technological research. That might take place as a result of the recent increase in production costs resulting from the international economic situation and the financial difficulties which had arisen as a result of the recession in the economy of his country.

86. He questioned the correctness of the assertion that the importation of technology had negative consequences in that it represented a heavy burden on the balance of payments of developing countries, and maintained that it might be more advantageous for the importing countries to acquire licences and permits than to carry out the actual research work themselves.

87. He also mentioned the temporary lag in scientific and technological research due to the need to deal with urgent questions and, at a given moment, to provide various alternative solutions to a given problem. In that connexion, he suggested that research should anticipate events and not follow them, as was the case at present.

88. Lastly, he expressed doubts as to whether imports of technology limited the employment of labour, and proposed that a more extensive study should be made of such an important problem.

89. A delegation from a Central American country suggested that the systems of communication between research institutes and the direct users of technology should be improved, specifically mentioning as an example the agricultural extension programmes which bring the farmer into contact with those responsible for studying new methods of cultivation.

90. One representative stressed the disadvantage at which his country was placed by the high cost of contracts for the use of foreign technology, which was even higher than that stipulated in agreements on the transfer of technology between developed countries.

91. Another delegation expressed its country's appreciation of some of the action taken at the sub-regional level by the Central American Research Institute for Industry (ICAITI), especially in the fields of standardization, research, quality control and sectoral technical assistance.

92. In that connexion, one representative suggested that once the priority areas of research had been demarcated at the national level, the regional mechanisms should group together individual country projects of the same type with a view to the pooling of effort.

93. The encouragement of extravagant luxury consumption through the communication media, in a society characterized by a high degree of income concentration, was conducive to increased external dependence and, with the shaping of consumption patterns via the demonstration effect, ultimately led to the large-scale use of imported technology and even imported raw materials. That partly helped to define one of the most pressing needs where research was concerned, namely, linkage between basic and applied research.

94. After referring to the private sector's lack of interest in scientific and technological research - and to the way it was reflected in the sources of financing themselves, almost all of which pertained to the public sector - the same representative pointed out that technological innovations ought to be consonant with the country's general socio-economic situation. Otherwise they would not redound to the benefit of the population as a whole.

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A case in point was the adverse effects of the Green Revolution in Mexico, where the structure of the country's agriculture had not been taken into account.

95. It was clear that in some countries the well-balanced formulation and implementation of scientific and technological development policies designed to solve short-term and long-term problems - and it was stressed that the former were lagging behind the latter - was a motive of concern because of the shortage of both financial and human resources.

96. One delegation placed special emphasis on the need to quantify financial appropriations for the development of science and technology, recognizing that - owing to the systems of budget management - it was not always easy to assign funds purely for research purposes.

97. One method of improving the quality and quantity of scientific potential would involve, among many other implications, increasing and strengthening Society's interest in science and motivating young students to take up scientific careers. It was also important to promote a creative, critical and experimental attitude among students at all educational levels.

98. Summing up the discussion of agenda item 2, the secretariat noted that the presentation and exchange of national experiences had highlighted the significant progress achieved by the countries in the formulation and application of a consistent scientific and technological policy. The greater recognition accorded by the authorities and the general public to the potentialities of science, the designing of new financing schemes, and the impetus given to the training of specialists in that field were creating an atmosphere more favourable to the harmonization of supply and demand. That trend should be taken into account by regional and international co-operation mechanisms, last they should fail to keep abreast of the will and action of governments.

/3. International

3. International and regional co-operation

99. Consideration of agenda item 3 began with the presentation of "A Latin American Plan of Action for the Application of Science and Technology to Development" by Mr. Víctor L. Urquidi, on behalf of ACAST.

100. In his statement Mr. Urquidi drew attention to the background, aims and content of the Plan and also referred to the implementation machinery which could be set in motion. The Latin American Plan was the outcome of the work done by the Latin American group of ACAST, with the collaboration of the United Nations specialized agencies, the ECLA secretariat and, in its field of competence, the Department of Scientific Affairs of the Organization of American States.

101. The steps taken by ACAST to promote the World Plan and the regional plans had been guided by three basic objectives: (a) that by 1980 the developing countries should spend 1 per cent of their gross domestic product on research and development in the field of science and technology and on supporting services; (b) that the industrialized countries should allocate 0.05 per cent of their gross domestic product to international co-operation in the field of science and technology; and (c) that the developed countries should assign 5 per cent of their expenditure on non-military research and development to problems of interest to the developing countries.

102. The Latin American Plan of Action devoted special attention to the need for research and for the utilization of existing knowledge for the rational exploitation of natural resources, the expansion of production in agriculture, fisheries and forest industries, the preservation and distribution of food, the improvement of industrial processes, the application of appropriate technologies and their relation to employment, the training of scientific and technical cadres, and the remedying of the deficiencies apparent in the social development of Latin America, including those relating to housing

/and public

and public health. The Plan took into account, of course, the studies which had been carried out in those fields by regional and intergovernmental agencies.

103. The representative of ACAST indicated that it was desirable for governments to define scientific and technological strategies and priority areas, so as to pave the way for concerted action on the part of the regional agencies of the United Nations. With the collaboration of the ECLA secretariat, ILPES, the United Nations Development Programme (UNDP), OAS and the Inter-American Development Bank (IDB) - as well as the necessary support of the National Councils for Science and Technology - progress could be made in the formulation and execution of regional and sub-regional projects of vital importance for Latin America.

104. The meeting was also addressed by Mr. Bruno Leuschner, who had been specially invited by the Latin American group of ACAST through the good offices of the National Council for Science and Technology (Consejo Nacional de Ciencia y Tecnología - CONACYT) and El Colegio de México.

105. Mr. Leuschner briefly reviewed the tasks entrusted to him some time ago by the ECLA secretariat in connexion with the formulation of the Latin American Plan of Action, and said that - leaving aside its merits or demerits - what was important about that document was that it clearly revealed how vast and urgent were the problems posed and how essential it was to consider the inter-related whole rather than separate sectors. The participants paid enthusiastic tribute to Mr. Leuschner for his many years of work in the service of the United Nations in this and other fields of Latin American development.

106. On the opening of the general discussion of this topic, some participants advocated the creation of a special committee within ECLA, to analyse questions relating to science and technology in conjunction with government representatives.

107. The representative of an industrialized country, referring to the need to exchange information for the development of science and technology, said that more attention must be given to the more

direct and personal channels of communication, rather than to those that were confined to mere exchanges of documents. Expressing his appreciation of the hard work done by ACAST, which had culminated in the Latin American Plan of Action, he voiced the opinion that the Plan should be applied with a global approach that would take into account the social and economic framework. Several delegations endorsed his praise of ACAST's work and urged that the Plan should be put into operation at the earliest possible date.

108. Several representatives pointed out that the ACAST study was proof in itself of the immense advantages of concerted action at the Latin American level.

109. One representative, alluding to the quantitative targets for investment in scientific and technological research, maintained that at the international level 0.05 per cent of the gross domestic product could not be considered a very high proportion. Even so, it would not be possible to get anywhere near that figure until those responsible for directing scientific activity established priorities in their field. Only at the level of government advisers could any objection be raised to such targets. That meant that the decision was in the hands of the politicians.

110. The representative of the Latin American group of ACAST said that at the meeting on science and technology held in Paris in 1973 there had been some difficulty in securing approval of the second and third targets of the World Plan of Action, and especially the latter, because it was difficult for the developed countries to separate that part of their expenditure on research which was of a non-military character. Even in the developed countries there was a lack of communication between the scientific, political and entrepreneurial communities.

111. A number of delegations suggested that specific projects of common interest to several countries of Latin America should be identified, pointing to the contribution that this would make to closer regional co-operation. In this connexion, and in the light of the suggestions of every kind coming from countries and international

agencies, one representative proposed that such projects should be studied and placed in order of importance for greater efficiency.

112. The same representative asked the authors of the Regional Plan of Action to include a basic bibliography on the subject to enable countries to study certain specific points in greater detail, and suggested the creation of a regional fund for pre-investment studies in the field of science and technology. This would make it possible to achieve the targets set by ACAST.

113. Another delegation expressed some doubt as to the possibility that there would be an increase, as ACAST suggested, in the volume of financing supplied by the industrialized countries for this purpose. Moreover, considering the small financial contribution of the private sector, it was essential to use fiscal policy to tap additional resources. In this way, the entire community would be involved in the efforts to promote the development of science and technology.

114. The Meeting considered it indispensable, both in the specific field of information and in respect of present and future possibilities for action, that the various agencies of the United Nations family and the inter-American system should contribute their observations and views on the Regional Plan of Action. The following is a brief summary of the statements of the representatives of these agencies.

115. The Director of the United Nations Office for Science and Technology described the objectives of the Committee on Science and Technology for Development, which had been established by the Economic and Social Council in 1972 with a membership of 54 countries to promote international co-operation and provide the Council with guidance in that field. He hoped that ECLA's activities in connexion with science and technology would be closely co-ordinated with those of the new Committee.

116. He further pointed out that each country must prepare its policy on science and technology within the context of a national plan and identify specific regional or subregional projects for which ECLA and ILPES could provide assistance. In conclusion, he stated that

his Office would give its support in the Economic and Social Council to the suggestion that ECLA should have appropriate resources for dealing with this sector.

117. The representative of UNDP noted that many of the aspects of the ACAST Plan were already being implemented and had appropriate financing, and that the next step was for the Latin American countries to establish their own priorities under the Plan. The resulting projects would then be dealt with provided they complied with established norms and the necessary financial resources were available.

118. The representative of FAO referred, inter alia, to the worldwide food shortage and proposed that the Plan of Action should give high priority to technology in the agricultural sector.

119. The representative of WHO said that his organization had devoted attention to academic research in the health field and described its most recent activities in the field of applied research.

120. The representative of ILO approached technology from the standpoint of the user and drew attention to the need to consider it, within the context of national plans, as a variable which was particularly important because of its relevance to levels of employment.

121. The observer from UNESCO mentioned the activities that his agency had undertaken to promote science and technology, in addition to its contribution to the formulation of a scientific and educational policy within ACAST.

122. The representative of ICAO summarized the intensive activities being carried out by his Organization through its regional centres in respect of the training of intermediate-level experts in the field of civil aviation. He also drew attention to the direct technical assistance which it provided to countries in the execution of their regional air transport plans.

123. The representative of IBRD supported the suggestions that the Regional Plan of Action should be kept up to date so as to serve as a framework for the evaluation of the technology component in development projects. He stressed the importance of design engineering

/in the

in the transfer of technology and his Organization's desire that the services of Latin American consultants should be used and that a great effort should be made to promote local and regional capability in that field.

124. The representative of UNIDO referred to the Declaration of the Latin American Conference on Industrialization held in Mexico City the week before and stressed the care that should be devoted to the selection, acquisition, adaptation and development of technology so that the developing countries could increase their share of industrial production. If their share of world industrial production was to reach 25 per cent by the year 2000, the technological development of those countries would have to progress more rapidly than their industrial product.

125. The Meeting also heard the representative of OECD, who described his Organization's activities in this field and suggested that, because of the tremendous volume of work involved in the execution of the Plan of Action, ECLA should review it and select certain fields that required priority attention.

126. With regard to the agencies of the inter-American system, the representative of IDB mentioned that the Bank had, for the first time, included higher education and advanced training in its international financing schemes. Current programmes of activities included support for research into scientific and technological development and extension services in various sectors.

127. The observer from INTAL expressed his concern at the high cost to Latin American countries of imports in the form of technology "packages" and suggested a number of alternatives for reducing this cost by promoting technological co-operation among the countries of the region, either by increasing the activities of specific research centres or by encouraging the transfer of technology already developed in the relatively more advanced countries.

128. The representative of OAS said that technology was both a fundamental input of the process of production and an agent of economic and social change at every level. He also mentioned the advantage of having a plan of action as a framework for his Organization's future activities.

/129. The

129. The representative of the Central American Technological Research Institute for Industry (ICAITI) described the various fields in which the Institute was operating to promote technological research, standardization, provision of advisory services, training of human resources and basic studies for the formulation of a subregional technology policy. He also referred to the assistance which his Organization had provided to other Latin American countries outside the subregion with a view to creating similar centres. Finally he stated that ICAITI fully supported ACAST.

4. Conclusions and recommendations

130. Part III of this Report gives the texts of the resolutions adopted at the Meeting, which reflect the aspirations of most of the ECLA member countries to overcome their lag in the field of science and technology.

131. Although the resolutions are abundantly clear in themselves, it nevertheless appears desirable to point out the links between their content and the aims which the Meeting had in view. It will be recalled that one of the objectives was the examination of recent patterns in the technical progress of the region. Governments were agreed that in some cases (such as in the rural sector and in the least developed countries) technical innovations had only spread slowly, whereas in others technical progress tended to spread quite rapidly, in keeping with advances in industrialization. Be that as it may, it was felt that the type of technological change primarily generated in the industrial centres was in keeping neither with the resources of the developing countries, nor with their economic and institutional infrastructure, thus making it essential to put into effect more selective patterns of technical progress.

132. With reference to the channels of transmission of technical progress, the representative of Brazil said that foreign investments had not been totally harmful in that sense: in the final analysis, the behaviour and incidence of such investments depended on the negotiating capacity of the recipient country and on some objective factors about which it was not appropriate to go into detail at the present meeting.

/133. It

133. It was stated that the exodus of qualified personnel represented a serious loss for the developing countries. The representative of Nicaragua noted that the phenomenon also took place between Latin American countries, because of inequalities in their levels of development, but it was generally agreed that the most significant outflows were towards the developed countries.

134. The United States delegation observed that no industrialized country seemed to pursue any policy of luring away professional-level personnel, although it might be that some organizations having nothing to do with governments engaged in such practices.

135. Another matter regarding which concern was expressed by several delegations was the assistance that must be provided for the relatively less developed countries of the region. It was pointed out that there was a danger that the disparities observed at the international level might spread to the region itself, to the detriment of Latin American unity. Any action - and particularly in the field of science and technology - should therefore automatically include preferential treatment for the countries which were only beginning their industrialization process.

136. With regard to the second aim of the Meeting (evaluation of national and regional experiences), it was agreed that there was now considerably greater understanding of the needs of technical progress, and advances had been made towards the solution of some of the problems standing in its way. Most of the countries had set up institutions which had been entrusted with important tasks regarding the implementation of a science and technology policy, and the public sector's commitments in respect of development were thus beginning to gain broader scope.

137. The discussions regarding regional and international co-operation machinery demonstrated governments' keen interest in making use of such machinery in accordance with national aspirations and needs. It was stated that aid machinery should complement national efforts in project preparation, the assignment of international funds, and the training of human resources, while international forums could

/serve as

serve as a vehicle for the expression of common aspirations of the area, particularly as regards the overcoming of external technological dependency.

138. The Latin American Regional Plan of Action proved a useful frame of reference for the discussions. In general, the governments associated themselves with the content and aims of the Plan, although they also stated that it should be subjected to periodic revision in order to incorporate the experiences and new desires of the countries in this field of regional co-operation. It was noted in that connexion that the Intergovernmental Expert Committee, whose first meeting was to be convened in 1975, could set in motion a number of projects envisaged in the Plan, as well as other initiatives which governments might consider important. ACAST and the United Nations Office for Science and Technology would provide help in carrying out those tasks.

139. To sum up, the Meeting achieved a clearer definition of the work that needed to be undertaken in the region with a view to securing selective technical changes which would promote economic and social development. In addition, the secretariat was provided with guidance as to its responsibilities in this field, within the framework of its activities on behalf of Latin American development.

/Part III

Part III

RESOLUTIONS ADOPTED AT THE MEETING

1

Creation of an Intergovernmental Expert Committee for the Analysis of the Application of Science and Technology to the Development of Latin America

The ECLA Meeting on Science, Technology and Development in Latin America,

Recalling resolution 322 (XV) adopted by ECLA at its 178th meeting on 30 March 1973;

Considering that ECLA has built up an extensive knowledge of the history of development in Latin America, has made a substantial contribution to the development and dissemination of economic and social planning techniques, and has recognized the role of science and technology in the integrated development of the region;

That science and technology are increasingly important in economic and social development and thus need adequate and efficient planning;

That it is desirable to pursue the analysis of the Regional Plan of Action for the Application of Science and Technology to the Development of Latin America, prepared by the United Nations Advisory Committee on the Application of Science and Technology to Development (ACAST);

That there are numerous international agencies which provide assistance to the countries of the region in the field of science and technology;

That intensive and growing international activity is being carried on under the auspices of United Nations, regional and sub-regional bodies in the field of the formulation of scientific and technological development policies;

/That this

That this international activity - and especially the action of ACAST and its world and regional plans of action - has played a decisive part in bringing about the growing awareness of Latin American Governments as regards the role of science and technology as driving factors in economic and social development;

That any plan of action should take account of the problems raised by the great disparity in levels of development and the variety of development styles of the countries of the region;

That it is desirable to seek some form of joint programming so that the action of the international agencies is not duplicated and its efficiency and productivity is increased for the benefit of the Latin American countries, particularly the least developed among them;

That the Latin American countries need to adopt common criteria, to propose and discuss joint programmes or support activities, and to engage in co-ordinated and joint activities in the field of science and technology;

That the Latin American countries should unify their proposals in negotiations on international resources, where regional requirements are involved;

That no machinery yet exists for the countries of the region to carry out the activities required for the satisfactory development of intra-Latin American co-operation;

That ECLA has received express mandates from the United Nations General Assembly to promote and encourage co-operation in the field of science and technology in Latin America, in line with the objectives adopted by the Organization at the world level in this field;

That there is an urgent need to idenfify priority areas for scientific and technological research at the country level;

That while the priorities established in each individual country can hardly be expected to coincide with those of the other countries, there undoubtedly exist some priorities which are common to all;

That mere speculative negotiation on common priority areas is not sufficient to secure real action at the regional level, and that it is consequently necessary to create real capacity <u>in all the countries</u> for identifying priority areas and generating programmes and projects within those areas;

/That there

That there is a need to strengthen this capacity for formulating specific projects in the common priority areas at both the national and regional levels;

That the capacity to prepare sub-regional or regional co-operation projects in the field of science and technology needs to be improved;

That there is a growing need to provide formal training for staff in the various aspects of the administration of science and technology;

1. Declares:

1.1 That scientific and technological co-operation between Latin American countries at the sub-regional or regional level or between 3 or more countries should be based on the establishment of common priority areas made up of:

(a) Countries of the same sub-region,

(b) Countries with common problems or capacities,

(c) All the countries of Latin America.

1.2 That co-operation should be based on specific infrastructural research or innovation projects, within the context of the priorities of the countries or groups of 3 or more countries, which explicitly define the degree of external participation and its contribution to the development of the capacity of the country or region.

1.3 That it is necessary to devise machinery to give coherence to scientific and technological programming and co-operation in Latin America with a view to making the action of the international agencies at the sub-regional and regional levels more effective.

1.4 That the scientific development of the region requires the channelling of more resources towards basic research, whether free or oriented, since in addition to its inherent cultural value this constitutes a major factor for the development of the educational system and is a potential source of practical knowledge.

1.5 That the technological development of Latin America calls, inter alia, for the implementation of co-operation programmes in the following fields, based on clearly defined projects:

(a) Selection, adaptation and creation of technology;

/(b) Training,

(b) Training, specialization and recovery of human resources;

(c) Establishment and strengthening of research institutions and support services for scientific and technological activities;

(d) Development of information systems and services on technology;

(e) Strengthening and creation of support services for technological development in the productive sectors;

(f) Creation or strengthening of national policy and programming bodies for science, technology and the transfer of technology, and their linking with national development programmes and plans and co-operation at the sub-regional and regional level.

1.6 That the economic and social development of Latin America requires prompt action to increase local capacity for the adaptation and development of technology in certain priority sectors, including food, ecology, agricultural technology, health, housing, marine resources, mineral resources, energy resources and industrial technology, with the aim of contributing to the achievement of priority objectives directed towards independent and self-sustained socio-economic development.

2. Recommends that:

2.1 In accordance with paragraph 4 of ECLA resolution 322 (XV), an Intergovernmental Expert Committee should be created within the Commission to analyse the application of science and technology to Latin American development and should meet in 1975.

2.2 The Intergovernmental Expert Committee, with the technical support of ECLA, should consider how to implement the Regional Plan of Action for the Application of Science and Technology to Development, on the basis of the discussions and conclusions of this Meeting.

2.3 The Intergovernmental Expert Committee should study above all the possibility of the joint execution, at the regional or sub-regional level, or by groups of 3 or more countries, of programmes and projects conducive to the application of science and technology to the economic and social development of the Latin American countries.

/2.4 The

2.4 The Committee should also study and suggest mechanisms for the co-ordination of the programmes and projects referred to in the foregoing paragraph with the action of other international agencies of the United Nations system and with the programmes and policies of the countries of the region.

2.5 The Committee should study and suggest - in co-ordination with ECLA, ILPES and the United Nations Office for Science and Technology, and with the collaboration of ACAST - methodologies and procedures conducive to the attainment of targets II and III of the Plan of Action relating to the contribution of developed countries to scientific and technological research and its use on behalf of the countries of Latin America.

2.6 The Committee should conduct studies and make recommendations to permit the best possible use of international funds for the financing of joint programmes connected with research into and the application of technologies of regional and sub-regional interest, or of interest to three or more countries.

2.7 The Committee should, on the basis of experiments and studies already carried out at the regional, sub-regional and national levels, continue with the evaluation and establishment of common procedures - such as an international code of conduct - for orienting and making possible the transfer of technology under conditions that are compatible with the real economic and social development requirements of the countries of the region.

2.8 The Committee should contemplate among its activities the possibility of intensifying the assistance that the relatively more developed countries can provide to the least developed countries of the region.

2.9 The Committee should bear in mind the need, when applying any regional plan, to take account of national priority areas as a basis for the identification of common regional or sub-regional areas.

2.10 ECLA, in carrying out its specific mandates in the field of science and technology, should:

/(a) Strengthen

(a) Strengthen the internal machinery of the secretariat with a view to intensifying its studies in the field of science and technology in connexion with the economic and social development of the region;

(b) Intensify its studies on the conditions under which the technological development of Latin America is taking place, both in the region as a whole as well as in each country, and its relation to economic and social development, thus aiding the maximum dissemination and evaluation of experience gained in this field;

(c) Carry out special studies, relating mainly to the field of science and technology, covering:

- sectors and possibilities for using indigenous technologies
- alternatives and machinery for linking the supply and demand of technology
- channelling co-operation from the developed to the developing countries
- analysis of the characteristics of the regional science and technology plans and their limitations
- the volume of financial resources allocated to research and development activities in each country;

(d) Co-operate closely with the United Nations Office for Science and Technology in the fulfilment of ECLA's specific commitments and, at the same time, receive all the support that this Office and ACAST can provide for its regional-level work in the field of research and co-operation with the governments of Latin America.

2.11 ECLA and ILPES should give priority in their work programmes to studies aimed at the design of methodologies to improve the means of integrating policies and plans in the field of science and technology with those related to economic and social development.

2.12 ECLA and ILPES, in conjunction with other international agencies - particularly those of the United Nations system - should carry out studies on the improvement of methodologies for collecting data and formulating national science and technology plans so as to permit the comparison of such plans by means of the identification of areas of common interest to three or more countries of the region.

/2.13 The

2.13 The ECLA secretariat and ILPES should strengthen the national scientific and technological planning and programming bodies of all Latin American countries through:

(a) Assistance in developing an adequate capability for identifying priority areas and designing programmes and projects;

(b) The training of experts in the various aspects of administration of science and technology by means of specialization and refresher courses and seminars at the Latin American level;

(c) The provision of advisory services for resolving such specific problems as:

(i) the improvement of the capacity of countries to absorb and utilize the various forms of co-operation available at the international level;

(ii) the incorporation of the science and technology variable in development planning;

(iii) the administration and management of research and development activities;

(iv) the improvement of the ability of countries to negotiate and evaluate technologies;

(v) the study of the interrelationship between economic policy and scientific and technological development;

(vi) the improvement of the ability of countries to train high-level human resources for scientific and technological development.

In all this, special emphasis should be placed on the needs and requirements of the relatively less developed countries and sub-regions of Latin America.

2.14 ECLA and ILPES should study the feasibility of establishing a fund to finance the formulation of specific co-operation projects at the sub-regional or regional level in the field of science and technology.

3. Requests the ECLA secretariat to submit to the forthcoming session of the Commission in Port of Spain the bases of a programme of activities in this field, together with its administrative and financial implications.

/Transfer of

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Transfer of technology to the Latin American countries

The ECLA Meeting on Science, Technology and Development in Latin America,

Recalling the Declaration and Programme of Action for the Establishment of a New International Economic Order adopted at the sixth special session of the United Nations General Assembly, and in particular paragraph IV (A) of the Programme of Action, which provides for the formulation of an international code of conduct for the transfer of technology to the developing countries;

Emphasizing that the notable scientific and technological advances achieved in the developed countries in recent years have generally failed to benefit the developing countries as much as might have been expected;

Considering that scientific and technological co-operation both within the region and between Latin America and other regions of the world is an important factor for economic and social development and contributes to the strengthening of international peace and security;

Convinced that profound structural changes in the economic and social sphere introduced by the developing countries in the exercise of their sovereign rights are a prerequisite for the integrated development of those countries, and that these will constitute a means whereby scientific and technical progress and the results of international co-operation in this field will really benefit all the people of the developing countries;

Stressing that the present economic situation of the developing countries is aggravated by their difficulty of gaining access to technology on just and reasonable terms;

Considering that in the majority of cases foreign investments have not been the most suitable form of transfer of technology, so that it has become necessary to establish mechanisms to control such investments and also to strengthen the negotiating power of the developing countries;

/Concerned at

Concerned at the clauses which are frequently found in contracts between technology-producing enterprises in certain developed countries and the developing countries, such as clauses involving the obligation to import specified raw materials and intermediate products, machinery, equipment and spare parts, which raise unit production costs, limit export possibilities, hinder import substitution, and generally slow down the growth of their economies and the development of national technology;

Likewise concerned at other restrictions which suppliers of technology impose on the developing countries, such as the prohibition of exports of goods produced with that technology or the obligation to obtain prior approval for such exports, thus affecting the benefits which could be obtained from the generalized system of preferences and the measures adopted in favour of regional economic co-operation and integration;

Extremely alarmed at the violations which many enterprises making investments or supplying technology commit by demanding guarantees in respect of profits and royalties and even in respect of the internal policies of the recipient countries;

Observing that the continuation and aggravation of the deterioration in the terms of trade considerably reduces the developing countries' financial possibilities for gaining access to the technologies of the developed countries;

Noting that economic integration processes based on the industrial and technological complementation of the various participants may be beneficial for speeding up the economic and social development of the developing countries;

Considering that among the restrictive practices identified are those enumerated in the attached Appendix;

1. Energetically condemns the practices followed by enterprises supplying technology in the majority of the developed countries and calls for the establishment of machinery to facilitate the transfer of technology to the Latin American countries on just and equitable terms;

/2. Calls

2. Calls for the adoption of policies to permit the entire population of the Latin American countries to benefit integrally from world scientific and technological advances;

3. Confirms the provision in the Declaration and Programme of Action for the Establishment of a New International Economic Order to the effect that States are fully entitled to nationalize resources or enterprises or to transfer ownership of them to their own nationals, in exercise of their full sovereignty, as well as to impose on transnational enterprises and the other enterprises supplying technology all such regulations and limitations as they may consider necessary for safeguarding their independence and sovereignty and guaranteeing the economic and social progress of their nations;

4. Requests the Executive Secretary of the Economic Commission for Latin America to include an item on the transfer of technology in the agenda for the sixteenth session of the Commission and to prepare studies on the following matters for the consideration of the Latin American Intergovernmental Expert Committee:

(a) The elements that should be included in a code of conduct on the transfer of technology to the developing countries, in the light of the studies carried out in that regard by the United Nations Conference on Trade and Development and the Committee on Science and Technology for Development, as Latin America's contribution to the global work being done along these lines within the United Nations system;

(b) Sub-regional and intra-regional co-operation machinery and the ways in which the technological complementation of the various countries of the region could operate within regional integration processes in accordance with the countries' levels of development and without any discrimination on account of differences in their economic and social systems;

5. Also requests the Executive Secretary of ECLA to prepare as soon as possible a study which, taking into account the work done by other organizations and the experience existing in the region on the arrangements for the transfer of technology and for foreign investment,

/makes a

makes a compilation in co-ordination with the other regional economic commissions of the legal provisions adopted in the countries covered by those commissions to regulate these matters;

6. Further requests the secretariat of ECLA to prepare a study on the total cost of and benefits deriving from the different channels and conditions for the transfer of technology, and on ways of creating the basic conditions for strengthening the countries' negotiating power for acquiring new technology.

Appendix

Restrictive trade practices

1. Restrictions on domestic trade and partial or total restrictions on exports;

2. Obligation to purchase products, machinery and equipment from the technology suppliers and/or from enterprises indicated by them;

3. Obligation to enter into a paid contract for the "transfer of technology" in order to be able to obtain products, machinery and equipment from abroad;

4. Imposition of contractual secrets in an abusive manner, thus turning an item of technology which is not patented in the recipient country into an item of industrial property;

5. Collection of royalties in respect of items which are in the public domain or are not registered in the recipient country;

6. Obligation to grant the supplier enterprise rights in respect of improvements or innovations made by the concessionnaire;

7. Obligation to use a foreign trade mark in order to acquire or gain the right to use an item of technology;

8. Fixing of sale prices, including export prices;

9. Obligation to export through the supplier of the technology;

10. Total or partial limitation of production during and/or after the term of validity of the technology contract;

11. Maintenance of the contractual link, with or without remuneration, even after the expiration of industrial property privileges;

/12. Imposition

12. Imposition of right to participate in the capital of the enterprise requesting the technology;

13. Limitation of the research and development policy and activities of the enterprise requesting the technology;

14. Obligation to contract staff from the supplier;

15. Prevention of contestation of industrial property rights held or claimed by the supplier of the technology;

16. Restrictions on obtaining technology from other suppliers;

17. Practices obliging clients to accept additional paid technology not requested or needed by the client;

18. Practices using quality control or quality standards as a means of imposing unjustified requirements on the recipient of the technology;

19. Practices providing that the payments for technology shall be greater when the goods produced are for export than when they are for domestic consumption;

20. Subjection to foreign laws or obligation to submit disputes to foreign courts in respect of any differences over the interpretation or fulfilment of contracts;

21. Establishment of obligations going beyond the period of validity of the contract.

/Exodus of

3

Exodus of qualified personnel from Latin America to the developed countries

The ECLA Meeting on Science, Technology and Development in Latin America,

Recalling United Nations General Assembly resolutions 2083 (XX) of 20 December 1965 on the full utilization of human resources; 2090 (XX) of 20 December 1965 and 2259 (XXII) of 3 November 1967 on the training of national technical personnel with a view to accelerating the inudstrialization of the developing countries; 2320 (XXII) of 15 December 1967 and 2417 (XXIII) of 17 December 1968 on the exodus of trained personnel from the developing countries, and resolution 1573 (L) of the United Nations Economic and Social Council;

Recalling in particular United Nations General Assembly resolution 3017 (XXVII) of 18 December 1972, instructing the Secretary-General to prepare an updated report on the exodus of trained personnel from the developing to the developed countries and further instructing him to prepare guidelines for the establishment of a plan of action to reverse this phenomenon;

Asserting that the acceleration of the rate of development of the developing countries and the improvement of their social structures through the elimination of mass poverty, the achievement of a just and equitable distribution of income, and the elimination of inequality, ill health and illiteracy requires, inter alia, an integrated strategy for scientific and technological development, closely linked with national development plans and programmes;

Fully convinced that the possession of trained technical and scientific personnel is of particular importance for the developing countries if they are to be able to gain the maximum benefits from the transfer and assimilation of imported technology and also progressively develop their own technologies;

/Considering that

Considering that the results of the efforts and resources directed by the developing countries to the training of such personnel are being adversely affected and their stock of scientific and technical resources is being depleted as a consequence of the brain drain fostered by some developed market economy countries, thus weakening the capacity of the developing countries to embark upon their own integrated development;

Recognizing the need for structural changes in the economic and social sphere in order to secure a qualitative and quantitative improvement in the possibilities for professional education and training and to strengthen the technological infrastructure of the developing countries;

Bearing in mind that one of the underlying causes for the exodus of trained personnel from the Latin American countries to the developed market economy countries is the enormous difference between the levels of development of the two groups of countries, and that one way of combating this is to be found in a broader context of economic, scientific, technological, educational and other forms of co-operation, placed at the service of integrated development and accompanied by the necessary social changes;

Observing with concern that the enormous scientific and technological advances made in recent years by the developed countries have not redounded to the benefit of the developing countries, but have on the contrary helped to accentuate their dependence;

Emphasizing that the phenomenon of the exodus of trained personnel from the Latin American countries to some developed market economy countries really amounts to a reverse transfer of scientific and technological know-how and human resources;

Recalling the Declaration and Plan of Action for the Establishment of a New International Economic Order adopted at the sixth special session of the United Nations General Assembly;

Also recalling the Economic Declaration and Programme of Action for Economic Co-operation agreed upon at the Fourth Conference of Heads of State or Government of the Non-Aligned countries, held in Algiers in September 1973;

/Further recalling

Further recalling the relevant provisions of the World Plan of Action for the Application of Science and Technology to Development.

1. Energetically condemns the continuation and aggravation of the exodus of trained personnel from the Latin American countries to some developed market economy countries and urges the latter to abandon all practices aimed at promoting this exodus. It further urges all Latin American countries to endeavour to create the minimum working conditions conducive to the efficient performance of their scientific and technical personnel.

2. Requests the Executive Secretary of the Economic Commission for Latin America (ECLA) to take the necessary measures to set up an ad hoc group of experts from the Latin American countries to meet as often as is necessary in Mexico City to study in depth the problem of the exodus of qualified personnel from the Latin American countries to some developed market economy countries, in order to determine the causes, effects, and ways of eradicating and reversing this phenomenon;

3. Calls upon the Executive Secretary of ECLA to take the necessary measures, in collaboration with ILPES and CELADE, to prepare a report designed to complement at the regional level the documents prepared on this subject by the Secretary-General of the United Nations (E/C.8/21) and the Secretary-General of UNCTAD (TD/B/A/C.11/25) and to cover, inter alia, the following aspects:

(a) The detectable causes of the exodus of trained personnel from the countries of Latin America to some developed market economy countries, including both those which are attributable to the actions taken by some developed market economy countries and those which are the result of structural distortions in the countries of the region;

(b) Ways in which the exodus of trained personnel from Latin America to developed market economy countries affects the scientific and technological-development of the countries of the region, both quantitatively and qualitatively, including determination of the amount of financial resources lost by the countries of the region as the result of the professional education and training thus wasted and the payments which those countries have been obliged to make in respect of the importation of trained personnel from abroad in order to execute their development plans and programmes;

/(c) The

(c) The benefits obtained by the more developed countries to which this exodus from the Latin American countries has mainly been directed, with special attention to the savings on the education and training of personnel, determination of the value of the articles produced and services provided by such personnel, and determination of the importance and magnitude of the contribution made by them to research in the recipient country;

(d) The mechanisms used by some organizations and developed countries to promote the exodus of trained personnel from the Latin American countries, including migration and salary policies and the systems of recruitment of staff in universities and research centres practised by enterprises and institutions of those developed countries;

(e) Determination of the professions and specialities where the incidence of the exodus of trained personnel is greatest and of the adverse effects on the countries of the region in these fields;

(f) Measures that could be adopted by the developing countries to minimize the exodus of trained personnel and its effects, including aspects where regional co-operation could play a relevant role;

(g) Measures that should be adopted by the developed market economy countries which receive trained personnel coming from the Latin American countries, and action through which the international community could help to eradicate this phenomenon;

4. Requests the Executive Secretary of ECLA to take the necessary measures to provide assistance to those countries of the region which so request in the study and quantification of the exodus of trained personnel and its effects on the country concerned, together with assistance in the implementation of measures to minimize the phenomenon, including the introduction of systems of data compilation and improvement of statistics to determine its magnitude.

5. Further requests the Executive Secretary of ECLA to include an item on the exodus of trained personnel on the Agenda of the sixteenth session of the Commission, to be held in 1975.

/Measures in

4

Measures in favour of the relatively less developed countries

The ECLA Meeting on Science, Technology and Development in Latin America,

Bearing in mind the stated objective of the United Nations General Assembly to narrow the gap between the developed and developing countries;

Taking note of the disparity in levels of development between the countries of the Latin American region and of the fact that the less developed countries, in their limited situation, have been unable to take full advantage of the assistance available from international bodies;

Recognizing that the less developed countries of the region have had problems in achieving their national priorities as regards developing their human resources;

Considering that some of these countries have not been able to establish all of the necessary institutional infrastructure for the planning, co-ordination and development of science and technology;

Observing that the domestic development of science and technology and its effective transfer from external sources can only be achieved if there is a substantial body of qualified experts at every level and a sufficiently developed infrastructure;

Considering the advantages of horizontal co-operation within the region, where necessary between national and regional institutions;

Aware of the intense and increasing activity at the international level sponsored by United Nations, regional and sub-regional agencies in the field of science and technology;

Bearing in mind the growing awareness among Latin American governments of the role of science and technology as a dynamic factor in economic and social development;

Emphasizing the need for the constant updating of the Regional Plan of Action for the Application of Science and Technology to the Development of Latin America and of the Plan of Action for the

/Establishment of

Establishment of a New Economic Order and the accompanying Declaration, adopted by the United Nations General Assembly at its sixth special session.

Resolves to request that:

1. The less developed countries in the Latin American region should be given preferential treatment by ECLA and by ILPES in all their activities in the field of science and technology, and the international agencies which provide assistance to developing countries should be encouraged to apply the same criteria;

2. ECLA and ILPES should give high priority to co-operating with the countries of the region in the development of human resources at every level;

3. ECLA should assist these countries to acquire adequate infrastructural institutions for scientific and technological development;

4. ECLA and UNDP should promote horizontal co-operation between the countries of the region in all activities related to science and technology;

5. ECLA should recommend that governments consider the establishment of a single body in each country to maintain a link with international and regional agencies and with foreign countries in the field of science and technology;

6. ECLA should recognize that one of the main objectives of the assistance provided by United Nations experts is the permanent training of local personnel and should make every effort to select those experts that are best suited to the task;

7. ECLA should promote the exchange of experiences between the less developed countries and the more developed countries of Latin America so that the former can have the benefit of the latter's most valuable achievements in the development of science and technology and of the measures designed to protect their systems;

8. A study should be made of the possibility and feasibility of the proportional participation of the relatively more developed Latin American countries in the establishment of a fund primarily intended to provide assistance to the relatively less developed countries by financing programmes and projects in science and technology,

Annex I

COMMENTS BY THE UNITED STATES ON THE RESOLUTIONS ADOPTED AT THE MEETING ON SCIENCE, TECHNOLOGY AND DEVELOPMENT IN LATIN AMERICA

Creation of a Latin American Intergovernmental Expert Committee for the Analysis of the Application of Science and Technology to the Development of Latin America

The United States supports this resolution. With reference to the language of unnumbered preambular paragraph 11, viz., "That the Latin American countries should unify their proposals in negotiations on international resources, where regional requirements are involved," the United States recognizes the right of countries to unify their proposals.

It trust, however, that proposals would be unified only after a free and full exchange of views among all member countries of ECLA including the United States. In this wise, countries desiring to unify their positions can do so with assurance that they have the fullest information and understanding of the situations and views of other member governments.

Transfer of Technology to the Latin American countries

The United States Government supports the operative paragraphs 4, 5 and 6 of this Resolution. With regard to paragraph (4) a, it wishes to suggest that the actions of the foreign ministers of the Americas also be taken into consideration in ECLA studies of a code of conduct on the transfer of technology to the developing countries.

The United States abstains from supporting the preambular paragraphs of the Resolution, namely, unnumbered paragraphs 6, 7, 8, 9, and 12, and numbered paragraphs 1 and 3. The assertions in these paragraphs including references to restrictive trade practices are not supported by fact and analysis and prejudge the conclusions of the analytical studies requested of ECLA in this same Resolution. More particularly:

(a) Authoritative analysis has not established that "in the majority of Cases" foreign investments have not been the most suitable form of transfer of technology. Experience has demonstrated that foreign investments have been the most effective method of transfer of technology and have made a most important contribution to economic development (ref: paragraph 6).

(b) The diversity and complexity of international commercial arrangements regarding the transfer of technology, and the lack of a base of reliable and widely applicable statistical and analytical data regarding this commerce pose considerable obstacles to the development of comprehensive rules governing this commerce that are both generally applicable and serve the legitimate priority interests of the parties concerned.

Some important aspects of commerce in technology are treated under already existing international treaties, such as those dealing with inventions and other intellectual property and the International Monetary Fund undertakings regarding the handling of international financial transactions. Some of these same aspects and others - particularly, matters of restrictive practices - are dealt with to various degrees by national legislation or in regional agreements. Taken all together, however, the existing pattern of established rules regarding this important subject is far from comprehensive and, particularly as regards national legislation, exhibits in many important respects disparities in the approach to particular problems that require rationalization before the whole matter can be resolved to the mutual satisfaction of the legitimate interests of all parties, private and governmental.

Solutions which are developed should be flexible rather than rigid, taking into account the varying needs of technology-receiving countries and the fact that effective transfer of privately-held technology requires not only adequate systems of protection of rights but also relative freedom of the parties to bargain for terms which provide economically sound incentives to both technology-supplying and technology-receiving firms (ref: preamb. paras. 7, 8, 9, 12).

(c) Instead of a preamble that indiscriminately condemns restrictions on the flow of technology, the United States would favour a revised preamble that logically supports the operative paragraphs. Such a preamble might include a series of objectives, such as the need to:

Strengthen the capabilities of developing countries required for meaningful and productive transfer of technology and for making wise choices on the types of technology needed for balanced economic and social development;

Provide the broadest possible opportunities for the international transfer of technology on a commercial basis for the benefit of all nations and their citizens;

Insure equitable treatment of the particular legitimate interests of technology-supplying firms and technology-receiving firms and their respective governments;

Recognize the wide diversity of commercial arrangements and modalities for the transfer of technology that can serve these interests and not introduce artificial constraints that would preclude the use, where legitimate and appropriate, of any of potential value;

Recognize the special needs and priorities of the developing nations; and

Provide a basis for the effective rationalization of both international agreements and national legislation bearing on international trade in technology.

If such objectives are to be achieved, it will be necessary to investigate and analyze existing information regarding a number of basic facets of the matter, and to develop additional information to fill important gaps in that already available. To this end, the United States supports the operative paragraphs of the Resolution calling on the Executive Secretary of ECLA to prepare a series of analytical studies on the international transfer of technology.

(d) With regard to numbered paragraph 3 "confirming" certain provisions in the Declaration and Programme of Action for the Establishment of a New Economic Order, the United States Government has stated on many occasions that it shares the conviction that there is real need for basic improvements in the international economic system, and supports in principle the formulation of new guidelines. But many of the provisions of the Declaration and Programme of Action are unacceptable to the United States Government in their present form, including those cited in this Resolution which deal with foreign investment in terms which do not take into account the duty of states to observe fully all relevant agreements and international obligations. Such provisions would discourage rather than encourage the capital flow which is vital for development and fail to achieve the purpose of encouraging harmonious economic relations and needed development.

Exodus of Qualified Personnel from Latin America to the Developed Countries

The United States abstained from supporting this Resolution because its tone, its assertions, and its proposed implementation do not represent a balanced treatment. From the standpoint of the United States Government, the Resolution is not sufficiently addressed to the underlying causes of the exodus of qualified personnel and the constructive measures needed to ameliorate the problem. More specifically:

(a) The movement of qualified personnel from Latin American countries to the United States is not due to actions taken specifically to attract qualified personnel, as ascerted in the Resolution. Rather it is a consequence of the fact that there exist in the United States greater professional opportunities, personal income, opportunities for children, and similar incentives.

(c) The movement also is a reflection, in many instances, of unhappiness with the state of affairs at home, such as inadequate recognition, low status and rewards for scientists, unstable political conditions, and inability to make an adequate living. Unless these circumstances are improved, measures narrowly aimed at reducing migration of professional personnel will not achieve this objective.

(c) A large proportion of the leaders in science, engineering, and medical science in Latin America secured their advance training in the United States. As a group, they retain close and warm personal and professional relationships with their colleagues in the United States. In total, and on balance, the combined effects of all kinds of movement of highly trained persons between Latin America and the United States have been beneficial to Latin America.

(d) As it has in the past, the higher education system of the United States continues to offer a subsidized education to tens of thousands of students from Latin America. All but a few of the students return to their own countries. In fact, the movement of qualified persons from some Latin American countries to the United States is almost negligible. This is true, for example, of Mexico, Brazil, and Venezuela. On the other hand, the movement from some other countries is heavy. Among those most affected are Colombia, Jamaica, and Trinidad. Therefore, most, but not all, actions relating to the movement of highly trained persons must be designed on a country by country and not a hemispheric basis.

(e) The movement of highly trained persons from Latin America to the United States of a character requiring greatest attention is that of physicians. This movement is symptomatic of deficiencies in the medical education systems of both Latin American countries and the United States. It is also symptomatic of deficiencies in their systems of health care.

In light of the above, the United States believes that serious approaches to the amelioration of the problem of exodus of qualified personnel from Latin American countries must involve discussion and co-operation between the United States and Latin American countries, since the movement is largely the consequence of disparities in country conditions. The United States favours the conduct of studies by ECLA that examine both (a) the effects on Latin American countries due to the exodus of qualified personnel and the basic factors contributing to such exodus, and (b) the benefits received by Latin American countries from training opportunities provided by developed countries. Such studies should examine possible measures to improve the situation, such as:

Ways to increase the flow of professors from universities in the United States to those in Latin America;

Ways to increase the flow of students from Latin America to the United States and return, including the model programme now being developed by Venezuela;

Ways to strengthen co-operative research and graduate education efforts among Latin American countries;

The establishment or strengthening programmes or institutions for advanced training in areas of strategic importance to development, such as industrial management, government administration, and natural resources management;

Practical measures that might induce highly qualified persons who have migrated to return;

Measures for dealing with the problems generated by the movement of physicians to the United States (in co-operation with the Pan American Health Organization).

This is not an exhaustive list. It indicates the types of studies which the United States would view with enthusiasm. Such studies could lead to more productive, action-oriented results based on individual incentives rather than cost/benefit analyses and studies oriented toward raising barriers to the international flow of qualified personnel.

Annex II

LIST OF DELEGATIONS

1. States Members of the Commission

ARGENTINA

Representative: Angel Federido Robledo, Ambassador to Mexico

Members of Delegation: Javier Fernández, Esther Malamud, Alberto Araós

BOLIVIA

Representative: Ovidio Suárez Morales

BRAZIL

Representative: José Pelucio Ferreira

Members of Delegation: Amilcar F. Ferrari, Jayme Villa Lobos

CANADA

Representative: Robert Richard

CHILE

Representative: Alejandro F. Yung

Member of Delegation: Sergio Montenegro Arriagada

COLOMBIA

Representative: Jaime Ayala Ramírez

COSTA RICA

Representative: Rodrigo Zeledón

Members of Delegation: Mariano Ramírez Arias, Carlos A. Moreno

CUBA

Representative: Tirso Sáenz

Members of Delegation: Roberto Vizcaino Lafita, Juan Ferrán, Abelardo Moreno, Ernesto Meléndez Bach, Orlando Borrego Díaz

ECUADOR

Representative: Angel Matovelle

Member of Delegation: Hernán Donoso Velasco

EL SALVADOR

Representative: Pío Segundo Calderón

FRANCE

Representative: Jacques Akniv

Member of Delegation: Alain Catta

GUATEMALA

Representative: Jorge Arias de Blois

Member of Delegation: Eduardo Martínez García

HONDURAS

Representative: Humberto Rodríguez Escobar

JAMAICA

Representative: Everett Marcel Knight

Members of Delegation: Kenneth E. Magnus, Trevor E.B. Dacosta

MEXICO

Representative: Gerardo Bueno Zirión

Members of Delegation: José S. Gallástegui, Alejandro Carrillo Castro, Santiago Meyer Picón, Enrique Aguilar Riveroll, Mario A. Correa Sarabia, Enrique Martín del Campo, Jorge Pérez Galicia, Fernando Treviño Sojo, Roberto Marcos, Juan Eibenschutz

Advisers: Víctor L. Urquidi, Carlos Gual, David Ibarra Muñoz, Raúl Ondarza, Manuel Puebla, Alonso Fernández, Carlos del Río, Miguel Wionczek, Aliber Guajardo, Guadalupe Belloc de Barrera, Susana Avila Castelazo, Miriam Weissberg Szclar, Antonio C. Villalva

NICARAGUA

Representative: Emilio Turcios Estrada

Members of Delegation: Mario Solórzano Marín, Eric Fonseca M.

PANAMA

Representative: Emilia Arosemena V., Ambassadress to Mexico

Members of Delegation: Gloriana de Porras, Magali Miró

UNITED STATES OF AMERICA

Representative: David Beckler

Members of Delegation: Andre C. Simonpietri, Clint E. Smith, Charles J. Stockman

VENEZUELA

Representative: Félix Soublette R.

Member of Delegation: Yinda de Osorio

2. United Nations bodies

UNITED NATIONS

Klaus-Heinrich Standke, Director for Science and Technology

International Labour Organisation (ILO)

Víctor Tokman, Jorge Alfredo Difrieri

Food and Agriculture Organization of the United Nations (FAO)

Guillermo Gómez Marzheimer

United Nations Educational, Scientific and Cultural Organization (UNESCO)

Antonio de Veciana, Alfredo Picasso de Oyague

World Health Organization (WHO)

Philippe Cavalié

International Bank for Reconstruction and Development (IBRD)

Fernán Ibáñez

International Civil Aviation Organization (ICAO)

Carlos Velasco Reyes, Roberto Malvido Ocampo

United Nations Industrial Development Organization (UNIDO)

Chitta R. Guha

United Nations Environment Programme (UNEP)

Alfonso Santa Cruz

United Nations Development Programme (UNDP)

Elena Martínez, Luis Pérez Arteta

United Nations Advisory Committee on the Application of Science and Technology to Development (ACAST)

Víctor L. Urquidi, Louis Rosseau

Latin American Institute for Economic and Social Planning (ILPES)

Patricio Silva, Edgardo Boeninger, Héctor Soza V., Enrique Pirard

Institute for Latin American Integration (INTAL)

Luciano Tomassini, Fernando Mateo

3. Intergovernmental Organizations

Organization of American States (OAS)

Carlos A. Martínez Vidal, Alejandro Moya

Inter-American Development Bank (IDB)

Ismael Escobar, Simón Teitel

CARICOM

Beverly Watson

European Economic Community (EEC)

Herman Van Der Loos

Organization for Economic Co-operation and Development (OECD)

Ayhan Cilingiroglu

SPECIALLY INVITED GUEST

Bruno Leuschner