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REPORT TO THE UNITED NATIONS INDUSTRIAL
DEVELOPMENT ORGANIZATION

EXPERT GROUP MEETING ON FORECASTING AND
FORESIGHT ACTIVITIES IN LATIN AMERICA
(SANTA CRUZ, BOLIVIA, 11 - 13 OF DECEMBER, 1996)

PROJECT No. 96/198/IR

Submitted by
The National Academy of Sciences

La Paz, December 31, 1996

EXPERT GROUP MEETING ON FORECASTING AND
FORESIGHT ACTIVITIES IN LATIN AMERICA

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EXPERT GROUP MEETING ON FORECASTING AND FORESIGHT ACTIVITIES IN LATIN AMERICA

I. BACKGROUND TO THE EXPERT GROUP MEETING

Considering the recent important developments and results of the applications of forecasting and foresight activities throughout the industrialized countries, and more limited experiences in developing countries¹, UNIDO and the National Academy of Sciences of Bolivia, agreed as early as August, 1996, to explore the possibilities of executing a regional programme leading to their development and application to the regional context, with ample participation of all countries of Latin America and the Caribbean and several regional and international organizations.

It was also agreed that the first step in the process should be an Expert Group Meeting, which would take place as early as possible, with the support of UNIDO and the International Centre for Science and Advanced Technologies (ICS), on one hand and other Bolivian institutions on the other.

It was finally agreed that the meeting would take place in the city of Santa Cruz, Bolivia between the 11 - 13 of December, 1996. Immediately after this definition, the preparatory phase started and is briefly described next.

II. DESCRIPTION OF PREPARATORY ACTIVITIES

Both UNIDO and the National Academy of Sciences of Bolivia undertook the task of identifying the participants to the meeting.

The Academy identified, contacted and formally invited regional experts, representatives of national councils for science and technology, and of regional and international organizations. UNIDO also identified regional experts and contracted, at the same time, with a group of European and Japanese experts.

UNIDO, in consultation with the Academy, prepared the Terms of Reference for experts both international and regional that would contribute with working documents. It also prepared an Issue Paper, which served as a guideline for discussion.

Also, UNIDO and the Academy signed a Contract through which

¹ Discussed at length in the Draft proposal for a regional programme

the former provided financial resources for facilitating the meeting. This Report complies with one the clauses of the Contract which calls for its submission before the end of December, 1996.

III. DESCRIPTION OF MEETING

Objective

After the preparatory phase was completed, UNIDO and CIS with the cooperation of the National Academy of Sciences, the National Council for Science and Technology, the Centro Iberoamericano de Formación and the Universidad Autónoma Gabriel René Moreno of Santa Cruz, executed the Expert Group Meeting, between December 11 and 13. The Meeting evaluated the relevance and applicability, in a Latin American context, of current methodologies used internationally for technology forecasting and foresight exercises, reviewed an earlier forecasting activity in the region and prepared a framework for an internationally fundable programme for sustainable regional cooperation and further international cooperation in the field of technology foresight.

Attendance

The Meeting was attended by representatives of Government and National Councils for Science and Technology (Argentina, Bolivia, Chile and Mexico), su regional and regional groupings and organizations (Consortio Hemisférico para el Desarrollo de la Ingeniería y Ciencias Aplicadas, Economic Commission for Latin America, Orgaization of American States, Sistema Económico Latinoamericano, Corporacion Andina de Fomento, UNIDO/CIS), together with specialists from the University of Quilmes (Argentina), Campinas and Sao Paulo (Brasil). International experts in technology foresight came forom the Fraunhofer Institute for systems and Innovation Research (Germany), TNO (Holland), Technology and Management s.r.l. (Italy), NISTEP (Japan) and PREST - University of Manchester (United Kingdom). Annex I contains the complete list of persons that attended.

Opening Session

Annex II contains the adopted Agenda for the Meeting. In the Opening Session, Dr. Juan Ignacio Pita, Director of the Centro Iberoamericano de Formación, welcomed the participants to the CIF and provided an overview of its training activities. Dr. Isaac Sandoval, Director of the Research Office of the Universidad Autónoma Gabriel Rene Moreno of Santa Cruz also gave his welcome, on behalf of the University.

Dr. Carlos Aguirre, President of the National Academy of Sciences and Executive Secretary of the National Council of

Science and Technology, reviewed the Meeting's background and reflected on its purposes; provided an overview of the science and technology situation in Bolivia. He stressed the importance of forecasting and foresight for a country that is initiating the design and implementation of its innovation policies.

Dr. Emilio Vento, provided ample information on the International Centre for Science and Advanced Technologies (CIS) and signaled to the importance that CIS gives to forecasting and foresight activities, which is the motive of CIS involvement in the Meeting.

Dr. Ricardo Seidl da Fonseca on behalf of UNIDO inaugurated the Meeting, providing arguments for forecasting as the base for policy definition, in particular, its importance of contributing to the creation of new visions for new policies and issues. It was stressed by Mr. da Fonseca that although UNIDO had some ideas about a future regional programme they by no means were inflexible and that the Meeting should provide the real and final outputs for a draft proposal.

Working Sessions

The Meeting, extensively reviewed and discussed regional and national experiences in both developed and developing countries. papers presented at the Meeting will be published as the proceedings of the Meeting by February, 1997.

The following main objectives, conclusions, recommendations of/for foresight emerged from the presentations and discussions:

- (1) Foresight is a key tool for decision making, thus, there is a need to develop foresight activities at both regional and national levels to support innovation and competitive policy formulation and implementation. In those countries where it has been applied, it has permitted the alignment of plans for science and technology or contributed to better investment of public funds. It can induce national dialogues on science and technology and thus create a better environment for their development;
- (2) Foresight is a particularly important instrument for the development of enterprises. It can for example, permit the identification of new opportunities in a globalized economy or for providing linkages among firms and of these with other innovation agents. It can also provide a more scientific base to technology imports of the countries in the region and create also a better based industrial development. Foresight can be a useful tool for those enterprises struggling for survival in a difficult environment;

- (3) The involvement of the private sector firms is also one way to obtain the interest of governments as the former can influence decision making;
- (4) Small and medium size firms have not been good users of foresight in general, but means should be envisaged for creating, in the SME sector, a better understanding of the techniques and devising means to serve their own purposes in the exercise itself;
- (5) Regional organizations providing guidelines for national and regional policy can find in foresight, an additional tool for their purposes, as most international debates, including those on trade, are today technology based. A thorough understanding of the technology process is a key asset to improve the negotiating environment;
- (6) Foresight can help improve the information systems and networks in the region and be particularly important to the efforts of monitoring the developments of new technologies. It can certainly contribute to a better understanding of technology development at the international level by following technology trends;
- (7) It is of great importance to create or improve, in some cases, the awareness of the importance of foresight activities at the political and decision making levels of all Latin American countries. The regional programme should be addressed, among others, to this objective but some preparatory activities must be devised in order to present a project proposal and be successful with it;
- (8) One immediate way of creating awareness is to use the results of the foresight exercises carried out in Japan and some European countries. This can be done by selecting from the results, those which are relevant to the future development of productive and export oriented activities of the region;
- (9) Human resources are necessary to execute successful foresight activities. There are many ways to train human resources - both in formal and non formal levels - and also many possible improvements in present university programmes. It would be of interest to examine curricula in universities;
- (10) At the same time, it is necessary to identify regional expertise already existing; along this line, a Directory of regional experts in foresight and related activities should be developed; The Directory

can be built on the experts that participated in the Meeting, who should keep contact initially as an informal network;

- (11) It is necessary to establish a foresight thematic network (under CYTED) and link it with other networks and organizations at the regional and international level, among them, the Network on Indicators (CYTED); the Latin American Association for Technology Management; The Latin American Society of Science and Technology; the Observatory of the Future (Colombia); the Bolivar Programme; the Club of Rome and the European Science and Technology Observatory Network;
- (12) The advantages of association of the countries (and the regional programme) must be weighted at the moment of engaging any international or regional organization. In any case, this does not preclude the all too important task of associating national governments and institutions;
- (13) It is particularly important to link any future foresight programme with the Cartagena Plan defined by the Ministers of Science and Technology of the region in March 1996 and the Plan approved by the Summit of Heads of State in December, 1996 in Santa Cruz. These constitute guidelines as they are based on the identification of key issues of the region, as for example, poverty, and thus constitute priorities for all governments;
- (14) It is particularly important to involve many people in foresight exercises: the councils for science and technology, associations, universities, political establishments and the media. The involvement of the latter is key to the diffusion of results;
- (15) Foresight exercises at national level should try to use comparable methodologies with other studies in the region (or at international level). This approach may overcome a certain degree of distrust of methods and results for practical uses that still exist. Also, the approach will provide additional support to the integration process of the region;
- (16) Both Delphi and Non delphi approaches must be taken in the regional programme. Also, it should be possible to consider both global and sectorial approaches. It is key for example to respond to questions such as: what technologies to abandon, what to buy, what technology does not exist and is necessary to develop for a specific problem. A sectoral approach may contribute

to the development of innovation in strategic areas. A sectoral - type approach may also be taken for example by identifying a list of export products of the region (or subregions);

- (17) A sectoral approach may be taken in the regional programme, after consulting the National Councils of Science and Technology on what they believe are their priorities. In any case, however, it should be clear that a foresight exercise may be better adapted to some sectors than to others;
- (18) The selection of areas must be done around issues or problems associated to the most urgent needs of the countries of the region. In most cases these lie today in the areas of education and health;
- (19) The objective of any foresight exercise must be very clearly stated at its onset;
- (20) The Programme should define the use of INTERNET as a means of communication among network members;
- (21) It is not enough to carry out a single foresight exercise, there must be a series and at the same time an institution dedicated to the follow up of the results. At the same time, projects must simultaneously represent benefits to enterprises (in their business development) and for government (improvement of policy decisions);
- (22) It is particularly important that whatever the area/sector, the foresight exercise should be done as quickly as possible to produce good demonstration effects in the short term;
- (23) Foresight to be successful must be based on strong political will and the use of the best available techniques
- (24) The regional programme should be able to: (a) Improve networking, (b) Define top - down approaches, (c) Define bottom -up approaches, (d) Define specific projects for specific problems, (e) Lead into the creation of a Latin American Observatory for Science and Technology

Panel Discussion

The main purpose of the final panel was to come back to main purpose of the Meeting, that of discussing the possibility of a regional programme. During the panel, the main techniques were

again reviewed and the results obtained in other countries discussed further in depth. The panel discussed the feasibility and interest of the countries of the Region to undertake a longer term programme and the eventual objectives that could be pursued.

Working Group

With the results of the discussion in the Panel and the previous sessions, a working group was organized whose main task was to prepare a draft proposal. The working group, composed of J. Yutronic (Chile), R. Dagnino (Brasil), G. Lugones (Argentina), M. Abbate (Argentina), C. Aguirre (Bolivia), I. Olalde (Mexico), P. Ellwood, R. Da Fonseca and E. Vento (UNIDO) with the support of the European and Japanese experts, discussed a draft at length. It was finally prepared by a smaller drafting group and was put into the discussion of the Meeting on Friday.

Final Session

The draft that was discussed, including some later additions, constitutes as Annex IV to this Report. The draft is intended to be the basis for the preparation of a project document. It thus includes not only objectives to be followed in a regional effort, but also, recommendations for the preparation of the project proposal itself.

P. Ellwood and R. Da Fonseca on behalf of UNIDO and C. Aguirre on behalf of the local organizers thanked the participants for their contribution and committed themselves to continue the preparation of a proposal for a regional programme on foresight.

IV. FINANCIAL REPORT

The following table resumes the expenses incurred at the meeting by all contributors. Annex V, contains the supporting documents for the UNIDO/ICS contribution.

TABLE. EXPENSES FOR THE MEETING (ALL EXPENSES IN US DOLLARS) (1)

	UNIDO (2)	ANCB (3)	CIF (4)	OTHERS
1. Airtickets	4,015.77			4,000 (6)
2. Honoraries	4,000.00			- - -
3. Perdiems (5)	4,720.00			2,500 (7)
4. Pre Meeting expenses: Communica tions (fax, phone, mail); Photocopies		500.00		
5. Other Meeting Expenses: Services - Meeting rooms; computer; transport to/from airport to Hotel; photocopies materials: transparencies, diskettes; support staff, etc - Acquisition of documents from PREST - University of Manchester	1,063.89	500.00	4,000.00	
6. Coffee breaks and lunch		500.00		
7. Meeting proceedings transcript, editing, diagraming printing)	7,900.00			
8. Diffusion (mail)		500.00		
9. Other support staff		500.00		
TOTALS (8)	21699.66	2500.00	4000.00	6500.00

Notes:

(1) Expenses in "bolivianos" converted to US dollars at the official rate of \$b. 5.17 per US\$.

(2) Expenses under UNIDO Contract only

(3) ANCB: National Academy of Sciences

(4) CIF: Centro Iberoamericano de Formación

(5) At the rate of US\$ 80.00 per day and including terminal expenses (airport taxes and transportation at departure and arrival in home countries)

(6) SELA, OAS, SECYT (Argentina), CAF, University of Puerto Rico

(7) Same as (6) except SECYT (Argentina)

(8) See below and page 3 of the detailed financial report for the possibility of utilizing non used resources for the promotion of the regional programme

RESUME OF EXPENSES

1. Total Budget as per Contract:	US\$	26 200.00.-
2. Advanced Payment	US\$	20 916.00.-
3. Total Expenses incurred	US\$	21 699.66.-

Difference on behalf of the National
Academy of Sciences US\$ 783.66.-

Difference on behalf of UNIDO US\$ 4 500.14.-

It is proposed in the top letter to use this difference for the early promotional activities of the regional programme.

ANNEX I

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11 to 13 December 1996**

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ANNEX II

PROGRAMME OF THE MEETING

PROGRAMME

**Expert Group Meeting on Technology Forecasting and
Foresight Activities in Latin America.
Beyond Latin America 2000**

Tuesday, 10 December

20:00 pm: Informal cocktail for participants and Santa Cruz officials and others at the Hotel Los Tajibos

**Wednesday, 11 December
Centro Iberoamericano de Formación**

08:00 am: Departure of bus from Hotel to Centro Iberoamericano de Formación

08:30 am: Registration and administrative business

09:00 am: Opening of meeting

Welcome remarks:

- Juan Ignacio Pita, Director of the Centro Iberoamericano de Formación.
 - Isaac Sandoval, Director of the Research Center of the Universidad Gabriel René Moreno
 - Carlos Aguirre, President of the National Academy of Sciences and Executive secretary of the National Council for Science and Technology
 - Goran Appelgren, UNIDO Country Director, Bolivia
 - Emilio Vento (UNIDO-ICS)
 - Ricardo Seidl da Fonseca UNIDO Technology Policy programme.
- Meeting expectations

09:30 am: Video presentation on Bolivia

10:00 am: Coffee break

10:30 am: Issue paper (Mr. Peter Ellwood, UNIDO)/

10:30 am: Delphi studies

Dr. Terutaka Kuwahara (NISTEP, Japan)

Dr. Kerstin Cuhls (Fraunhofer-ISI, Germany)

13:00 pm: Lunch break (at the Centro)

14:00 pm: Non-Delphi foresight methods

Prof. Luke Georghiou (PREST, U.K.)

Dr. Hans Schaffers (TNO, Netherlands)

Dr. Kerstin Cuhls (Fraunhofer-ISI, Germany)

Prof. Giuseppe Lanzavecchia (Technology and Management Srl Italy)

General discussion

18:30 pm: Close and departure of bus to the Hotel

Thursday, 12 December

- 08:30 am: Departure of bus to the Centro
- 09:00 am: Technological Prospective for Latin America Project (Prof. Renato Dagnino)
- 10:00 am: Coffee break
- 10:30 am: National forecasting reports
Dr. Gustavo Lugones/Dr. Maximo Abate (Argentina)
Prof. Carlos Aguirre/Dr. José Luis Telleria (Bolivia)
Dr. Heinrich Ratner (Brazil)
Dr. Jorge Yutronic (Chile)
Dra. Isabel Olalde (México)
- 13:00 pm: Lunch break (at the Centro)
- 14:00 pm: Comments by International and other national organizations
Dr. Antonio Leone (SELA)
Wilson Peres (CEPAL)
Sitoo Mukerji (OEA)
Jorge Velez A. and Luis Pumarada O'Neil (COHEMIS Programme - University of Puerto Rico)
Hernán Escudero (CAF)
- 15:30 pm: Coffee break
- 16:00 pm: Panel discussion of framework for future programme
Prof. Carlos Aguirre (chair)
Formation of a working group
- 18:00 pm: Close and return of bus to Hotel, except for working group.
- 18:30 pm: Meeting of working group: preparation of the framework

Friday, 13 December

- 08:00 am: Departure of bus to the Centro
- 08:30 am: Presentation and discussion of the framework
- 13:30 pm: Closing session
Dr. Peter Ellwood (UNIDO)
Dr. Ricardo Seidl da Fonseca (UNIDO)
Prof. Carlos Aguirre (Bolivia)

ANNEX III

MAIN CONTENTS OF THE MEETING'S
PROCEEDINGS

1. Introduction by UNIDO/ICS and The National Academy of Sciences (3 pages)
2. Beyond Latin America 2000. Issue Paper. UNIDO. ITPD (SPEC), December 6, 1996 (19 pages)
3. Contribution by Terutaka Kuwahara (16 pages)
4. Contribution by Kerstin Cuhls (42 pages)
5. Contribution by Luke Georghiu (29 pages)
6. Contribution by Hans Schaffers (60 pages)
7. Contribution by Giuseppe Lanzavecchia (22 pages)
8. Contribution by renato Dagnino (16 pages)
9. Contribution by Jorge Yutronic (10 pages)
10. Contribution by Henrique Rattner (12 pages)
11. Contribution by Carlos Aguirre (15 pages)

Other contributions may be accepted until the end of January

Present number of pages: 244; approximate final number 300

ANNEX IV

DRAFT PROPOSAL FOR THE UNDERTAKING OF
A REGIONAL - LATIN AMERICAN -
PROGRAMME ON FORESIGHT ACTIVITIES²

² The present version of the draft is that which was extensively discussed at the meeting in Santa Cruz and includes the notes of the National Academy of Sciences, taken during the course of the discussions. A final draft will be prepared by the end of January, 1997, which will include the notes taken by UNIDO and suggestions that may be received from the participants to the meeting in December/January.

A REGIONAL INITIATIVE FOR THE DEVELOPMENT OF FORESIGHT ACTIVITIES IN LATIN AMERICA

Introduction

The success in the design and implementation of policies and strategies of technology development and innovation are today, crucially dependant on how good a vision of the future can be developed and how well their formulation provides for future evolution of both society and technology itself. Technology foresight can be a key tool for improving policy formulation and in general with innovation and socio - economic change.

Background

Considering the recent important developments and results of the applications of forecasting and foresight activities throughout the industrialized countries, and more limited experiences in developing countries, UNIDO and the National Academy of Sciences of Bolivia, agreed to explore the possibilities of executing a regional programme leading to their development and application to the regional context, with ample participation of all countries of Latin America and the Caribbean and several regional and international organizations.

In effect, an expert meeting held a three day discussion in the city of Santa Cruz, Bolivia, between the 11 and 13 of december, 1996. It was attended by representatives of Government and National Councils for Science and Technology (Argentina, Bolivia, Chile and Mexico), su regional and regional groupings and organizations (Consortio Hemisférico para el Desarrollo de la Ingeniería y Ciencias Aplicadas, Economic Commission for Latin America, Orgaization of American States, Sistema Económico Latinoamericano, Corporacion Andina de Fomento, UNIDO/CIS), together with specialists from the University of Quilmes (Argentina), Campinas and Sao Paulo (Brasil). International experts in technology foresight came forom the Fraunhofer Institute for systems and Innovation Research (Germany), TNO (Holland), Technology and Management s.r.l. (Italy), NISTEP (Japan) and PREST - University of Manchester (United Kingdom).

Objectives and character of a Regional Initiative

The main objectives of a Regional Initiative for the Development of foresight Activities in Latin America are:

- (1) Raise awareness of the critical importance of foresight as instrument for improvement the competitiviness of enterprises and institutions;

- (2) Apply and develop technology foresight as innovation policy instruments;
- (3) Undertake foresight demonstration activities applied to specific sectors;
- (4) Develop national capabilities for handling techniques of foresight and related activities;
- (5) Support national foresight activities and the establishment of a regional network on foresight;

The Initiative will be characterized for being interactive, coordinative and be jointly implemented. As such it is multinational and multisectorial and is ideally integrated to national initiatives. It is open to the test of both delphi and non delphi techniques. It will constitute a two to three years effort, in which time the usefulness of the technique should have been demonstrated.

The initiative will take into account the different levels of development within the region, in particular in the science and technology system and the enterprises.

Project preparation

- (1) Selection of a regional facilitator and counterpart;
- (2) Identification of administration mechanisms for project implementation;
- (3) Set up an INTERNET home page outlining proposals for future activities (pending transfer to the counterpart)
- (4) Holding of Expert Group Meetings, to determine the scope, methodology, cost, time, frame and related details of studies in each of the study areas. One expert per area plus representatives of 7 - 12 countries. Output: report to UNIDO;
- (5) Preparation of Project Document

Project components

- (A) Awareness building and creation of foresight culture
 - (1) Identification of national focal points in conjunction with National Councils for Science and Technology;
 - (2) Identification of interested institutions and individuals;
 - (3) Undertaking of relevancy studies using the results of European foresight studies, to demonstrate utility of foresight approaches in Latin America context to policy makers, private firms and NGO's;
 - (4) Preparation of proposals for promotional and informational network of centres of foresight

excellence, as a CYTED Thematic Network, with access invited from other relevant regional networks and drawing on experience of similar networks in Europe. Activities to include an electronic newsletter, training, coordination with specific sectors;

(B) Coordination and foresight implementation

- (1) Developing and promoting measures to coordinate and harmonize national and multinational foresight activities in the region with a view to:
 - (i) Adopt common and/or compatible foresight objectives, methodologies, infrastructure and management teams;
 - (ii) Use foresight in the design of innovation policies;
 - (iii) Organize management and executive teams and follow up activities;
- (2) Implementation of pilot foresight studies and exercises at subregional levels, covering different areas and/or sectors, in particular more specific problems and issues in the region, in order to test the instrument and demonstrate its applicability.

(C) Development of national and regional capabilities

- (1) Creation of a pool of codified knowledge of foresight processes and a parallel roster of regional and international experts that, through a special - purpose donor - driven fund could provide technical assistance to foresight sponsors and implementing organizations.
- (2) Enhancing human skills through training of foresight practitioners provided by international experts through courses, workshops seminars, fellowships and study tours.
- (3) Introduction of foresight techniques into curricula of universities.