

CEPAL
ECONOMIC COMMISSION FOR LATIN AMERICA

LIMITED
CEPAL/MEX/UCT/78/3
February 1978

SUGGESTED STRUCTURE FOR THE PREPARATION OF
THE NATIONAL REPORTS

78-2-94-50

19 OCT 1978

1944
1945
1946

1947

1948

1949

1950

INDEX

	<u>Page</u>
A. General Information about the Country	1
B. Institutional Schemes	1
C. Human Resources (Available and Potential)	2
D. National Policy on Scientific Research and Development	3
E. National Policies on Technical Standards	3
F. National Policy on Industrial Property	4
G. National Policy on Scientific and Technological Information	5
H. General Information on Import and Trade of Technology	5
I. National Policy on the Use of Natural Resources	6
J. National Policy on International Cooperation	7
K. Existing Links between Science and Technology and the National Policy on Development	7
L. Evaluation and Potential Projections of the National Policy and Structure of the Scientific and Technological System of the Country	8
M. Identification of Priority Areas of Development	9

REPLY TO THE
LETTER

1951

The following information is being furnished to you for your information and use. It is based on the information available to the Bureau at this time. It is not intended to be a final report and is subject to change as more information becomes available. The information is being furnished to you for your information and use. It is not intended to be a final report and is subject to change as more information becomes available.

A. GENERAL INFORMATION ABOUT THE COUNTRY

- a) The country: its political, social and economic structure.
- b) Natural resources: known and potential.
- c) Productive structure: available and potential.
- d) Principal aspects of foreign trade: Import, export, origin and destination.
- e) National planning systems: organizations responsible, type of plans prepared for medium and long terms, objectives, and aims.
- f) Organizational system: distinctive patterns of the public administration and the private sector.
- g) Educational system: describe all levels and patterns.

B. INSTITUTIONAL SCHEMES

- a) Research institutions: institutions dedicated to basic and applied research (specify). Formal and informal interrelations between operational and investment budgets.
- b) Institutions concerned with the transfer of technology: inform about the revision of contracts, disaggregation of technological packages. Theoric and practical studies concerned with the transfer of technology. Control of royalty payments. Indicate budget destined for this purpose.
- c) Institutes for technical standards: indicate structural administration and budget.
- d) Institutions for the registration and protection of industrial property: indicate structural organization and budget.
- e) Institutions which offer technical information services: include business enterprises with organized technical information services. Indicate budgets.
- f) Institutions concerned with the evaluation, prospection and research of resources and natural phenomena: indicate budgets.
- g) Institutions that are responsible for the preparation, establishment and/or promotion of the national, scientific and technological policies in the country: indicate structural organization and budget.

/h) Formal

- h) Formal and informal relations (and joint ventures) existing among all the above-mentioned institutions: it is recommended to prepare a diagram showing these interrelations; mention both the cooperative as well as the conflictive relations.
- i) Existing linkages among all of those institutions with the ministries, universities, academic centers, the public sector, the private sector and the international organizations: describe such relations, mentioning both the cooperative as well as the conflictive relations.

**C. HUMAN RESOURCES (AVAILABLE
AND POTENTIAL)**

- a) Present and potential inventory of human resources on science and technology.
- b) Existing relations between the government's educational system and the private sector's system: describe the conflicts, if any.
- c) Describe the existing relations between the educational and scientific policies as well as the technological and employment policies.
- d) Inform about the prevailing orientations for training and specialization of human resources at different level: scientific, technological, others.
- e) Describe the magnitude, origin, and consequences of the brain drainage the studies carried out in the past by UNCTAD and others should be updated.
- f) Explain the policies and opportunities existing at a national level for the repatriation of scientists and technicians: provide a critical analysis about this matter.
- g) Advise in which foreign countries are the scientists and technicians trained: indicate professional levels and forms of training (post-graduate studies, professional inservice training, others). Describe if there exists an established policy and criteria for the selection of candidates as well as for the selection of institutions of higher learning and countries where training should be taken.

/D. NATIONAL

D. NATIONAL POLICY ON SCIENTIFIC RESEARCH AND DEVELOPMENT

- a) Apprize the financial resources destined for basic & applied research and for research on technological developments (R & D).
- b) Describe the links between R&D and the users of technologies. Also describe relations between supply and demand of scientific and technological know-how generated in the country.
- c) Comment on the links existing between R&D and the educational system.
- d) Write about the basic research policy. The role it plays in national development, its nature and whether it is free or controlled.
- e) Inform about the sectors where human resources and general infrastructure exist for R&D: international standard terms and concepts should be used in order to allow the utilization of internationally accepted glossaries (for example, the one prepared by CACTAL).
- f) Apprize the existing degree of specialization by sectors and R&D problems.
- g) Mention the criteria used for the selection of priorities and the allocation of resources for R&D.
- h) Explain the quantitative and qualitative R&D results obtained.

E. NATIONAL POLICIES ON TECHNICAL STANDARDS

- a) Inform about the institutional arrangements for the elaboration and approval of national technical standards (NTS).
- b) Describe the mechanisms utilized to foment the use of national technical standards: mention which of them are compulsory and which are optional.
- c) Comment on the priority selection system utilized for the preparation of the national technical standard.
- d) Inform about the participation of the national R&D activities in the preparation of the technical standards.
- e) Explain the influence of normalization patterns upon international trade.

/f) Inform

- f) Inform about the influence of normalization patterns upon national trade.
- g) Explain the existing policies and actions in the field of metrology: legal, industrial and scientific.
- h) Describe the main sources of bibliography, consultations and advisory services used in the preparation of the national technical standards: for example, mention the origin of the international technical standards consulted.
- i) Explain which is the position of the country with regard to international standards: both, in the political and in the operational senses.
- j) Appraise to financial resources available for this purpose.
- k) Explain about the existing links with the educational sector.

F. NATIONAL POLICY ON INDUSTRIAL PROPERTY

- a) Give an analysis of the existing legislation: constituent elements of the industrial property that are protected, period of protection, cost of registration, levels of approval, and compulsory licenses should be commented.
- b) Appraise the administrative, economic and technical advantages that are given to national trademarks.
- c) Inform about the operational, administrative and legal restrictions that are imposed according to the sector or origin: for example, on which sectors are patents unacceptable.
- d) Appraise the financial resources available for this purpose.
- e) Explain the existing links with the educational sector.
- f) Explain the existing links with technological research.
- g) Explain the existing links with the import and trade of technology.
- h) Describe the national position prevailing with regard to international agreements on industrial property: for example, mention the types of agreements signed and ratified, etc.

/1) Mention

- 1) Mention the number of patents and trademarks registered, giving information regarding their origin and also what percentage of them are really utilized.

G. NATIONAL POLICY ON SCIENTIFIC AND TECHNOLOGICAL INFORMATION

- a) Comment on the financial resources available.
- b) Mention the existing links with the educational sector.
- c) Explain the existing links with research and development and the national standard system.
- d) Explain about the methods of obtention and dissemination of scientific and technological information.
- e) Comment on the contacts and interactions carried out with information and documentation centers of other countries: describe the type of contacts and provide statistical information on results obtained from this inter-exchange.
- f) Describe the methods used for industrial extension.

H. GENERAL INFORMATION ON IMPORT AND TRADE OF TECHNOLOGY

- a) Provide an analysis of the national legislation on import and trade of technology: describe its evolution and its effectiveness, as well as its nature and application at a national level.
- b) Give a description of the different mechanisms utilized for registration and authorization of technologies, as well as an analysis of the way they operate.
- c) Give an evolutionary analysis of the technology contracts that have been ratified, showing the variations of the national legislation and the administrative arrangements that have been produced in the following aspects:
 - i) Royalties agreed upon.
 - ii) Restrictive clauses (disaggregated by clause).
 - iii) Type of payment.

/iv) Number

- iv) Number of contracts ratified, by sector.
- v) Amount of patents assigned and being actually used.
- vi) Amount of trademarks licensed.
- vii) Amount of contracts that do not license either patents or trademarks.
- viii) Other arrangements that are considered important to mention in this report.

NOTE: A double classification of technologies should be made: one according to the productive sector where it is utilized and, the other, according to the country of its origin.

- d) Describe how the import of technology is linked to the management and treatment of foreign investment and to the national scientific and technological system.
- e) Describe the main type of technology imported and the degree of innovations and adaptations made on these technologies.
- f) Comment on which are the most important examples of technology imported in the industrial sector.
- g) Explain the experiences that exist, at a national level, with regards to the disaggregation of technological packages.
- h) Inform on the country's experience regarding the export of technology: to which countries are these technologies exported? and under what conditions?

I. NATIONAL POLICY ON THE USE OF NATURAL RESOURCES

- a) Describe the existing legislation and administrative factors related to the prospection, beneficiation and use of natural resources.
- b) Comment on the present legislation and administrative components related to the study of climate, natural phenomena and meteorology in general.
- c) Appraise the financial resources available to carry out the activities described under a) and b) above.
- d) Describe the interactions of such activities with the scientific and technological research scheme as well as with the national bureau of technical standards.
- e) Advise on the degree of importance given to the environmental problems and to the questions related to natural resources with regards to the national budget and the large investments and also in relation to the import of technology.

/J. NATIONAL

J. NATIONAL POLICY ON INTERNATIONAL COOPERATION

NOTE: This section refers to international, multilateral, bilateral, regional, subregional, public and private cooperation.

- a) Comment on the type of legislation and administrative structure as well as the forms through which the different type of cooperation is received.
- b) Describe the experience acquired by the country with regard to the extent or the scope that international cooperation has really assisted in the planning and developing of programs and projects.
- c) Inform about the criteria used for the acceptance or rejection of international cooperation: different points of view should be taken into account: technical, political, ideological, other aspects which the country considers of importance should be included.
- d) State if the country has planned for the improvement and diversification of technical cooperation.
- e) Describe the origin of the technical cooperation: classifying it in order of importance; stating the sum of money that it amounts to, the national organizations responsible for the reception of the cooperation, the international organizations, countries or other ways from which the technical cooperation comes.
- f) Inform about the technical cooperation which the country renders to other countries or organizations.
- g) State which are the most important programs of international cooperation, both received by the country and rendered to other countries.

K. EXISTING LINKS BETWEEN SCIENCE AND TECHNOLOGY AND THE NATIONAL POLICY ON DEVELOPMENT

- a) Describe the distinctive policy patterns and the course of economic development: providing a historical and prospective analysis.
- b) State the relative importance, by production sector, given to:
 - i) Foreign investment.
 - ii) National private investment.
 - iii) Public investment.

/c) Comment

- c) Comment on the existing type of business enterprises, organizations and their range of action.
- d) State the implicit or explicit preferences given by the development policy of the country to the use of locally acquired technology and to the national bureau of technical standards.
- e) Appraise the incidence and the impact that technology training has produced on productivity.
- f) Comment on the influence of the public sector's buying power on the use of national technological standards and locally acquired technologies: either on a direct or an indirect form, with favorable or unfavorable results.
- g) Comment on the foreign investment, nature, magnitude, regulation, results, etc.
- h) Describe the participation of national engineering and consulting firms in national and foreign investment projects.
- i) State the degree of interaction and participation of the national engineering and consulting firms with the scientific and technological system: also inform the interaction and participation of similar firms from abroad.
- j) Appraise the correlation existing between the funds used to import technology and the local budget assigned for research, development, adaptation or innovation of technologies.

L. EVALUATION AND POTENTIAL PROJECTIONS OF THE NATIONAL POLICY AND STRUCTURE OF THE SCIENTIFIC AND TECHNOLOGICAL SYSTEM OF THE COUNTRY

- a) State the degree of coherence and the rational use of resources both, for the scientific as well as for the technological systems.
- b) Describe the formal and the real structure of the scientific and technological systems.
- c) Comment on how comprehensive are the scientific and technological policies: where do they come from? and to which an extent are they executed at the different institutional levels, where are they used?

/d) Comment

- d) Comment on the balance between the imported and the locally generated technologies.
- e) Describe the sectors dominated by foreign technology.
- f) Comment on the existing levels of decision: formal and real with regard to scientific and technological decisions.
- g) Comment on the importance of social factors in the decision making for science and technology: with regard to generation and import of technologies.
- h) Comment on the degree of importance of the foreign sector (sellers of technology) with regard to the introduction and diffusion of technological innovations, by sectors.
- i) Describe the real and the desired situations on science and technology in the country, within the context of national development: indicators such as general expenses, number of technicians and scientists, and evolution of the productive structure of the country and others should be used.

M. IDENTIFICATION OF PRIORITY AREAS OF DEVELOPMENT

- a) State the links existing between national priorities and regional and subregional subject areas for development.
- b) Comment on a proposal for the preparation of a United Nations World and Regional Plans of Action in the field of science and technology for development: providing a scheme which includes your ideas on the subject.

The following table shows the results of the regression analysis. The dependent variable is the number of employees in the company. The independent variables are the company's size, age, and industry. The results show that the company's size, age, and industry are all significant predictors of the number of employees. The company's size is the most significant predictor, followed by the company's age and industry.

Variable	Coefficient	Standard Error	t-statistic	p-value
Company Size	0.15	0.02	7.5	< 0.001
Company Age	0.08	0.01	8.0	< 0.001
Industry	0.05	0.01	5.0	< 0.001

The results of the regression analysis show that the company's size, age, and industry are all significant predictors of the number of employees. The company's size is the most significant predictor, followed by the company's age and industry. The coefficient for company size is 0.15, which means that for every unit increase in company size, the number of employees increases by 0.15 units. The coefficient for company age is 0.08, which means that for every unit increase in company age, the number of employees increases by 0.08 units. The coefficient for industry is 0.05, which means that for every unit increase in industry, the number of employees increases by 0.05 units.

The p-values for all three variables are less than 0.001, which indicates that the results are statistically significant. The t-statistics for all three variables are greater than 5.0, which also indicates that the results are statistically significant.