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Report of the

Andean Group Mission to India*

Project UNIDO/VC/RLA/74/019

Organized by the United Nations Industrial Development Organization (UNIDO) in co-operation with Government of India (GOI) and Andean Development Corporation (CAF) under UNIDO-India Agreement on International Technology Transfer Programme

19 October to 5 November 1975 Andean Policy Group

19 October to 17 November 1975 Andean Technical Group

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* Report prepared by UNIDO Consultant Dr. J.C. Srivastava, scientist, Council of Scientific and Industrial Research, Rafi Marg, New Delhi 110001, India.

The views expressed in this report are those of the consultant and do not necessarily reflect the views of UNIDO, GOI and CAF. This document has been reproduced without formal editing.

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INTRODUCTION

Co-operation among developing nations is an acknowledged necessity and is increasingly receiving attention of the nations aspiring self-reliance, industrialization and higher overall living standards. This concept of co-operation among developing countries has been given place in the Charters, Declarations and Resolutions adopted by the Group of 77, the UN General Assembly Resolutions 2974 (XXVII) and 3177 (XXVIII). More recently, the concept of co-operation among developing countries was given further impetus in the Declarations adopted by the Sixth and Seventh Special Sessions of the General Assembly and the Second General Conference of UNIDO, 'The Lima Declaration and Plan of Action on Industrial Development and Co-operation' (Lima, Peru, 12 - 26 March 1975). Thus, the potential for the sharing of capacities for development among developing countries has been recognized and re-affirmed.

Prior to the above resolution and prompted by related considerations in the International Seminar on Transfer of Technology held in India in December 1972, an agreement 1/ was signed by the Government of India and UNIDO providing an avenue for translating part of such co-operation concepts into actual working propositions.

The impending visit of representatives of Andean Development Corporation (CAF) and Andean Group contries (Bolivia, Colombia, Chile, Ecuador, Peru and Venezuela) both senior policy/planning and technical/implementation bodies encouraged through and financed by UNIDO constitute a further practical step in stimulating technical co-operation among developing countries.

The above Andean Mission visited India during October - November 1975 for an exchange of information, sharing experience and familiarization with Indian capabilities, and formulation of specific proposals for co-operative activities in the field of industrial development in general and in a selected area of engineering industries and allied development institutions in particular.

The 'note of understanding' signed between the CAF, UNIDO and the Government of India at the conclusion of the above visit reflects the interest of Andean countries and India to establish a long term co-operative objective and technological porgrammes.

The present report describes the details of project (refer Aide Mémoire UNIDO Ref. OA 331 INT (6) of September 1975 VC/RLA/74/019) 'Andean Group Mission to India' organized by the United Nations Industrial Development Organization (UNIDO) in co-operation with Government of India (GOI) and Andean Development Corporation (CAF) under UNIDO - India Agreement on International Technology Transfer Programme.

1/ See annexure 1.

For convenience of study, reference and implementation, the report has been divided into three parts. Part one deals with the 'note of understanding' concluded between CAF/UNIDO/GOI, the specific recommendations of Technical Group and the proposed plan of their implementation. The second part covers the background information, details of discussions and visits, while the last part provides information about the industries visited by the delegation. A series of annexes, however, are supplementary to the statements made in the report.

ANDEAN GROUP MISSION TO INDIA

Part I

1. NOTE OF UNDERSTANDING

1.1 On the conclusion of the visit of Senior Policy Group and part visit of Technical/Implementation Group of the Andean Development Corporation (CAF) and the Senior Representatives of the Andean Countries, a 'note of understanding' (see annexure II) was signed on 4th November 1975 by Dr. Terry Suero, Vice-President of Programme, CAF, Dr. Abd-El. Rahman Khane, Executive Director, UNIDO, and Dr. Y. Nayudamma, secretary to Government of India and Director General CSIR, India.

1.2 The Technical Group on completion of its visit identified certain areas of future co-operation. Their final report supplements the above 'note of understanding'.

1.3 The areas of further consultation and co-operation as ascertained in the preliminary discussions are, in general, as follows:

a) Policy, planning and organization in regard to technology generation and transfer and utilization and related economic, industrial and social development.

b) Feasibility studies and Consultancy Services.

c) Exchange of information and expertise in regard to scientific, technological and industrial development.

d) Training of technical personnel from Andean Group of countries in selected areas in India.

e) Standardization and quality control.

f) Setting up of Industrial Research Centres, Technical Training Centres, Industrial Estates and ancillary units.

g) Co-operation in setting up of industries, such as metal-working industry - foundry forge, machine tools, automotive components, railway locomotives and rolling stock; sugar, paper and paper pulp, electronics, petro-chemicals, etc.

h) Supplementary list will follow on the completion of the visit of the Technical Group.

1.4 The areas of future co-operation as identified by all Andean Group countries are as follows:

i) Setting up of Industrial Research and Development Centres with emphasis on metal mechanic industries;

ii) Setting up of Technical Training Centres;

iii) Planning and organization in regard to Industrial Estates and Ancillary Units;

iv) Co-operation in setting up of basis infrastructure for metal/mechanic industry and automobile industry (Foundry and Forge);

v) Assessment and appraisal of the Andean Railway System;

vi) Mobile exhibition of science, technology and industry to be organized in rotation in capital city of each country.

These areas have been tabulated in table 1.

1.5 The areas of interest to individual countries as identified by the respective Representatives of these countries have been tabulated in table 2.

2. PLAN OF ACTION

2.1 The Andean Missions and their discussions with Senior Representatives of the Government of India, research organizations, industrial research and development institutions, professional organizations, and industries in India, have clearly demonstrated that effective co-operation among the countries concerned would be to their material benefit and greatly enhance their industrial and technological capability and development.

2.2 In planning the implementation of technology co-operation programme the following sequence seems to be essential:

i) Focal Point

ii) Identification of need and the matching co-operating institution

iii) Liaison Office

iv) Implementing team

v) Resources

vi) Role of local industrial R and D institutions.

2.3 Focal points - It was agreed that the CAF Secretariat on the Andean side and the CSIR on behalf of the Government of India will be the focal point of co-operation and all correspondence may be either routed through or endorsed to these offices:

i) Dr. Terry Suero
Vice-President (Programming)
Corporación Andina de Fomento
Apartado de Correo 5086
Caracas, Venezuela

ii) Dr. Y. Nayudamma
Secretary to Government of India and Director General
Council of Scientific and Industrial Research
Rafi Marg, New Delhi 110001, India

cable: CONSEARCH, New Delhi

2.3.1 The Representatives of Andean Group countries indicated the name and address of possible focal point (see annex 3) for correspondence and information with these countries. However, it was stressed that in the initial stages, correspondence should also be addressed or endorsed to the above authorities (paragraph 2.3).

2.4 Identification and analysis of needs - (In order to supplement the study and related projects CAF have provided the detailed list of final products allotted to each member country (see annexure IV)). The needs have been spelt out in previous chapter. While the 'note of understanding' only gives a general guideline of co-operation, the Technical Group has clearly identified the needs for all the countries and for individual countries. In order to explain the areas of possible co-operation, these needs have been tabulated to indicate the item, participating institutions in India, financial participation, action to be initiated.

2.4.1 The Council of Scientific and Industrial Research (CSIR) would co-ordinate implementation of the programme, and it could, however, sub-contract the specialized area of programme whenever necessary to other institutions in India.

2.4.2 The Technical Group has indicated the priority (refer table 1) of technical co-operation as follows:

i) Research and Development Centre on metal and mechanic industry;

ii) Feasibility study and technical assistance in setting up a unit of foundry and forge industry in all the Andean countries, and

iii) Railway stock manufacture in Chile.

2.4.3 Explanatory notes to the above needs.

TABLE 1

AREAS OF CO-OPERATION AND IMPLEMENTING AGENCIES - INTEREST OF ALL ANDEAN COUNTRIES

Item	Action by CAF	Action by India	Financial participation
1. Setting up of Industrial Research + Development Centre with emphasis on metal mechanic industries.	CAF would elaborate the need and scope and send the information to CSIR for study by . . . . . date. CAF will also indicate the location and availability of building, space, services available for such a Centre.	CSIR in co-operation with its constituent laboratories (National Metallurgical Laboratory and Central Mechanical Engineering Research Institute) would then prepare and outline and send it to CAF within . . . . months period. The report would cover scope + functions, infrastructure, laboratory equipment, staff etc.	1) CSIR would meet the cost of preparation of the project report, however, the cost of implementation of the recommendations and actual setting up of the Centre will have to be borne by . . . . . . 2) This will involve appointment of a project planning officer to implement the project. 3) It is likely that some CSIR scientists may work with Andean scientists in the Centre for on the job familiarization and training for 2-3 years.
2. Setting up of technical Training Centre	CAF would elaborate the need, type of training required, level of training, number of persons to be trained, and when the trainees would be available for organizing the training course.	1) On receipt of this information India (Technical Trade Centre, Min.of Labour and Development Commission Small Scale Industries) would prepare a project: 2) However, some of the Andean experts have to be trained in India to act as trainers in the CAF Centre.	1) India will prepare the project. 2) UNIDO would finance visit of an expert for 3 m/m 3) UNIDO to finance setting up of the Centre.

TABLE I cont'd

Item	Action by CAF	Action by India	Financial participation
3. Planning and organization of industrial estates and ancillary units.	1) CAF could prepare a small paper on the subject indicating the areas where they wish to set up such estates and in what areas they wish to specialize. 2) They would also reply in detail as far as possible India's questionnaire.	Development Commissioner, small scale industries, India would send a questionnaire to CAF for providing basic information to enable him to prepare the feasibility report.	India would prepare the project report but the implementation part has to be financed by . . . . . This will involve appointment of an expert for a period of two years.
4. Setting up of basic infrastructure for 1) metal/mechanic industry 2) automobile industry 3) foundry and forge		India would suggest appropriate consulting firms like M.N. Dastin and Co., MECON, for undertaking basic infrastructure study.	UNIDO
5. Assessment and appraisal of the Andean Railways System		Rail India Technical + Economic Services Ltd. India	International travel - UNIDO. Local hospitality - CAF. Reporting cost - India Number of expert required - one for 3 m/m.
6. Mobile exhibition on industrial technology familiarization and co-operation (science, technology and industry) to be organized in capital city of each country.		India in co-operation with CAF would prepare a detailed plan and work out financial and infrastructural details. This will be a joint project of UNIDO/INDIA/CAF and the Andean countries.	1) India - to meet transportation cost of exhibits. 2) UNIDO - to meet international travel from India to all the capitals of Andean countries. 3) CAF - a) to organize industries scientists - engineers, technologists get together during the exhibition; b) to give wide publicity 4) Andean countries - a) to meet the cost of hospitality of Indian staff, b) to bring in local industries to participate in the exhibition, c) to organize visitors to the exhibition, d) to provide

TABLE I cont'd

Item	Action by CAF	Action by India	Financial participation
6. cont'd			4) Andean countries - d) to provide supporting staff, services and facilities for the organization of exhibition.

TABLE 2

AREAS OF TECHNOLOGICAL CO-OPERATION AS INDICATED BY INDIVIDUAL COUNTRIES OF THE ANDEAN GROUP

Item	Name of country	Participating Institutions of India	Mode of Co-operation	Financial participation
1. Feasibility study and technical assistance for setting up a complex of a) foundry and forge, b) stamping, die and tool machine	Ecuador Peru Chile Bolivia	i) For heavy Engineering Corporation MECON, Ranchi, ii) Hindustan Machine Tools Ltd., Central Machine Tool Inst. Bangalore. a) These institutions would indicate their fee for the job, after ascertaining necessary information from these countries. b) Since this project involves four countries, it would be advisable to co-operate CAF in this for co-ordination.	1) These parties who are public sector undertakings would undertake the study and submit it to the concerned Governments. 2) These institutions could also undertake actual setting up of the complex.	UNIDO
2. Feasibility study and technical assistance for the implementation of 1) control and precision instruments (electric and electronics)	Ecuador	Instrumentation Ltd.Kota, Central scientific instruments organization, Chandigarh.		UNIDO
2) Cutting tools, shaping and planing machines hydraulic systems.	Ecuador	Hindustan Machine Tools Ltd. Central Machine Tool Inst. Bangalore.		UNIDO
3. Feasibility study and technical assistance for the production of alloy and special steel.	Ecuador	M.N. Dastin and Co. MECON, Ranchi.		UNIDO

TABLE II cont'd

Item	Name of country	Participating Institutions of India	Mode of Co-operation	Financial participation
4. Transfer of technology and technical assistance for setting up a plant for manufacture of rectifiers (electric)	Peru	Bharat Electronics Ltd., Bangalore GEC (India) Ltd.		UNIDO
5. Training of Peruvian engineers in India in the production of mechanical press and drills.	1) Peru - will send its request to CAF to be incorporated in project No.2 of table 1. 2) Peru could sponsor trainees to India	Hindustan Machine Tools Ltd. Central Machine Tool Inst. Bangalore.		CDC Programme
6. Transfer of technology in low cost metal structures	Peru	1) Central Mechanical Engineering Research Inst. Dungapur 2) Structural Engineering Research Centre, Madras.		India
7. Exchange of information and details in regard to indigenous model of tractor	Peru	1) Central Mechanical Engineering Research Inst. Dungapur 2) Punjab Tractors Ltd. Chandigarh.		

TABLE II cont'd

Item	Name of country	Participating Institutions of India	Mode of Co-operation	Financial participation
8. Feasibility study and engineering of projects related to the setting up of a plant for railway stock manufacture (i) electric and diesel locomotives, (ii) coaches.	Chile	Rail India Technical and Economic Service Ltd (RITE) 1) This project, however, could be incorporated in project No. 5 of table 1. 2) RITE could, however, discuss the details with Government of Chile before undertaking the preparation of feasibility report.	UNIDO would come into the picture when the actual agreement of the preparation of feasibility report is finalized.	
9. Technical assistance for the exploitation of coal - open pit mining - wash plants - metallurgical coke - distillation and gasification.	Chile. The Government of Chile would first prepare a paper indicating the need, scope, resources, etc. and send it to CSIR, New Delhi	1) Central Fuel Res. Institute Jealgora. 2) Regional Res. Laboratory Hyderabad.	Visit of experts (two for 6 m/m) to be financed by UNIDO	
10. Technical assistance for steel industry (i) pelletisation process (ii) direct reduction based on coal (iii) special steel and alloy steel	Chile	For 1) National Metallurgical Laboratory, Jaurshedpur MECON, Ranchi 2) -do- 3) National Metallurgical Laboratory, Jaurshedpur MN Dastun and Co., Calcutta These institutions would ascertain the needs of Chile Government and make a preliminary advice. If the technical assistance involves a sizable amount of work including setting up projects, this could be dealt with separately.		India UNIDO if the latter part has to be implemented

TABLE II cont'd

Item	Name of country	Participating Institutions of India	Mode of Co-operation	Financial participation
11. Training of Bolivian personnel in structural fittings	Bolivia. Bolivia should indicate the number of such trainees, their basic education and experience and when they could be available for training	1) Jessop and Co., Calcutta 2) Trireui Steel Structures Ltd. Nauri 3) Structural Engineering Research Centre, Madras 4) Central Mechanical Engineering Res. Institute, Dungapur		CDC-UNIDO
12. Feasibility study in petrochemicals programme in Bolivia	Bolivia	1) Indian Petrochemical Ltd., Baroda 2) Indian Institute of Petroleum Dehradun.		UNIDO
13. Exchange of information regarding	Bolivia			
- cutting machine		Hindustan Machine Tools Ltd., Bangalore		
- concentration of P_2O_5		National Metallurgical Lab., Jamshedpur		
- process for lead and metallic silver		- do -		
- indigenous survey instruments, theodelites, etc.		National Instruments, Calcutta		

TABLE II cont'd

Item	Name of country	Participating Institutions of India	Mode of Co-operation	Financial participation
14. - glass technology	In all these projects Bolivian Government would initiate correspondence as to what information they require	Central Glass and Ceramic Res. Institute, Calcutta		
15. Technical assistance in the development of iron and steel industry	Bolivia	MN Dastur and Co., Calcutta MECON, Ranchi		UNIDO

2.5 Establishment of Research and Development Institute - The Technical Group expressed the desire to secure Indian assistance for the development of R and D infrastructure in the Andean sub-region. The members of the team also felt that they should not entirely depend on technical and technological assistance from advanced countries. Therefore, as a measure of self-reliance, the Andean Group is actively considering the co-ordination of the technical know-how available in the region and co-relate the existing technologies and future developmental requirements with its own R and D organization. The Group, therefore, expressed their desire to secure Indian assistance for the establishment of R and D infrastructure in the Andean sub-region.

India is in a position to co-operate with Andean Development Corporation in this respect. However, keeping in view the expansion of metal-mechanical industries and foundry and forge projects, CAF may consider to initiate the establishment of an Andean Metallurgical Laboratory, which could be situated in any of the member countries.

The Council of Scientific and Industrial Research, India could assist and co-operate in this programme.

2.5.1 Role of technological institutions - It is suggested that while implementing the technological projects and programmes, the existing institutions of technology in Andean countries and matching institutions in India should be brought closer to each other.

This co-operation would not only assist the implementation of the projects already identified but will lead a way for a future permanent co-operation.

The technological institutions in Andean countries could play an important role in participating and undertaking many developmental functions as are needed in the co-operation programme under review on a complementarity basis. As a matter of fact the local technological and R and D institutions and their experts in the Andean countries should also be brought in as a partner to the co-operation programme.

2.6 Central Design, Engineering and Consultancy for the Andean Development Corporation - As indicated in previous paragraphs, the Technical Group has identified certain areas for technical co-operation with India like:

i) Metal-mechanical industries,

ii) Foundry and forge projects, and

iii) Petro-chemical industries.

During the discussions the Group also informed that a co-ordinated development programme of the iron and steel industry in the sub-region would be taken up during the year 1976-77. According to the plans, it is expected the Andean countries would install about 19 million tons of new steel capacity by 1985.

The industrial development of Andean countries of this magnitude would naturally require large technical inputs in the form of design, engineering, technical consultancy and research and development, etc. At the same time, the team members also indicated that as far as possible they would not like to depend on the services of advanced countries.

Therefore, as a measure of self-reliance, the Andean Group may consider setting up a full-fledged central design, engineering and consultancy organization with the Andean Development Corporation (CAF). It is felt that the requirements of the individual member countries will not be large enough to warrant the establishment of a design organization in each country and to sustain it on a continuing basis.

The participating organizations to implement this programme could therefore be:

Andean Group - Andean Development Corporation

India - 1. M.N. Dastur & Co., Calcutta
2. National Industrial Development Corporation, New Delhi
3. MECON, Ranchi

2.7 Training Centres - The Andean Mission evinced their interest in obtaining Indian co-operation for setting up industrial training centres in the Andean sub-region.

It is felt that this item needs further elaboration and discussion. The prerequisite to this is the policy of manpower, planning and development, training areas and requirements, recruitment techniques etc.

The Andean Development Corporation may therefore prepare a paper indicating:

i) The manpower requirement in different trades, and

ii) Training of trainers.

It is felt that it is after the training of the trainers, the Training Centre be established. The other alternative could be that Indian experts in association with Andean experts may start the training centre in the Andean sub-region soon.

This is the area where UNIDO should take the lead and liaise between the Andean Group and India.

2.8 Ancillary industries and industrial estates - The possibility of Indian organizations providing technical assistance to the Andean countries for the establishment of ancillary industries and industrial estates was also discussed in the final meeting.

The Technical Group has already visited a few of these industrial estates in Delhi and Hyderabad and the Group was convinced of India's experience in this field.

However, this subject would need a detailed study by an expert from India. The Development Commissioner, Small Scale Industries, Government of India, Nirman Bharvan, New Delhi 110001 would be of great assistance in this regard.

UNIDO has also built up competence in this area by their international association and participation in the establishment of industrial estates, common facility services, and integrated assistance programmes which includes availability of technical services and facilities, management counselling and training, assistance in domestic marketing, quality control and standardization and other specialized services.

This project should, therefore, be planned by UNIDO in association with India and CAF.

2.8.1 Ancillary industrial development - A positive programme for fostering the growth of ancillary industries around big industries assists the development of small and medium industries and encourage small entrepreneurs. This requires identification of items of equipment and materials to be off-loaded to the ancillary industries and providing assistance both technical and material to the entrepreneurs and also concluding long-term contracts, wherever possible, for continued supply from the ancillary.

2.8.2 India has considerable experience in this area and experts could be made available to initiate the programme, in association with the Development Commissioner Small Scale Industries and the Bureau of Public Enterprises, Government of India.

2.9 Training in standardization - During discussions between the Policy Group and the Indian Standards Institution (ISI), it was indicated by the leader of the Andean Mission that two persons from each of the six member countries would be identified for training in standardization, quality assessment and control, testing and analysis and certification.

2.10 Scientific culture and technological approach - An essential component of the national strategy for self-reliance is technology. The aim of technology development is to try and bear a total technological approach in co-ordination with the national R and D institutions, Government agencies, public and private sector industries and

other agencies. Industrial areas in which induction of foreign technical know-how is still necessary for updating existing obsolescence in technology in the country as well as for modernization, import substitution and export generation, have to be identified in depth.

There is, therefore, scope for an endeavour to develop a scientific culture and community of co-operative working by bringing organizations, economists, managers, scientists, technologists and engineers together on a common platform under the form of "Andean Academy of Science and Culture" for organizing their annual meets, undertaking studies on short or long-range sectoral and industry-wise planning, technological updating, capacity utilization, R and D needs, and various and other topics related to the technological and scientific development of the nation or sub-region.

The Andean Development Corporation could finance such activities and provide recognition to such an organisation. Such academies could also act as scientific and technical advisers to the nation. */

2.11 The liaison office in CAF - Implementation of the co-operative programmes would first require a control office in CAF with an Indian and CAF expert to maintain a very close and interwoven relationship with CAF, the Governments of Andean countries, India and UNIDO, etc.

In view of this an Indian expert should be posted in Caracas initially for a period of three years with the following functions:

i) Help in the implementation of the agreed programmes of co-operation;

ii) Develop an intimate knowledge of the needs, its profile;

iii) Undertake visits to member countries and discuss the areas of further co-operation;

iv) Tie up matching industrial R and D institutes of India and Andean countries;

v) Act as focal point for transfer of technology;

vi) Provide technological assistance to CAF in relation to the area of understanding;

vii) Main links with each country's research institutions, universities, etc.;

viii) Submit periodical reports on the progress of each project.

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*/ The writer of the report was earlier associated with the setting up of the 'East African Academy' for Kenya, Tanzania and Uganda as an UNESCO expert during 1969-1971.

2.11.2 A senior person with scientific and technological background and knowledge of over-all Indian industrial infrastructure and R and D could be recruited on the UNIDO's rolls in consultation with CAF and India.

2.11.3 The Government of India will protect the service consideration and meet the salary and allowances, CAF will provide accommodation, telephone, local transport and secretariat services.

2.12 Visit of Indian delegation to Andean countries. So far all the delegations which visited from India to the Latin American countries were aimed at trade and commerce. However, to establish a scientific and technological co-operation, to appreciate the achievements and capabilities of Andean countries and to explore the areas of co-operation from Andean side, it is felt that an Indian mission should visit the member countries of the Andean Group and the head-quarters of the Andean Development Corporation (CAF). Here the actual point of co-operation would be CAF and Government of India.

The Indian delegation could consist of high-level experts from the following areas:

i) Industrial management and training;

ii) Industrial R and D;

iii) Petrochemicals;

iv) Metallurgical engineering;

v) Industrial policy and planning;

vi) Small scale industries;

vii) Consultancy organization.

2.13 Resources - The resources needed for the successful operation of the programme include:

- Technological

- Financial, and

- Managerial

2.13.2 While India would provide technological resources by way of under-taking feasibility studies, organizing inplant training programmes, implementation of technological projects and certain other services of national/sub-regional scope, there is need to spell out the financial need and source of its availability.

2.13.3 In cases where a study team has to visit, the international travel cost may be met by UNIDO, while the host country should arrange for local hospitality.

2.13.4 Finances for some technological projects could be worked out on a bilateral basis between India, CAF and the respective member country of the Andean Group.

2.13.5 The training programme could be organized under any of the UNIDO resources.

2.13.6 Finally, the structure, method, resources and time-table for the implementation of these projects should be analysed in advance with a view to maximizing their actual contribution to UNIDO, CAF and India. Priorities in the implementation of the projects shall be based on the potential needs of each country.

PART II

1. THE ANDEAN GROUP [1]

A notable change in the international economic scene in the past few decades has been the emergence of regional groupings with the objective of regional economic integration. The Andean Group agreement is one of the examples.

1.2 To promote close co-operation in development with a view to sub-regional economic integration an agreement was signed in May 1969 by five South American countries (within the Latin American Free Trade Association and consisting of countries around the Andes ranges) namely Bolivia, Chile, Colombia, Ecuador and Peru, all sharing basic economic features, geographical infrastructure as well as socio-statistical characteristics. Later the Government of Venezuela also joined this group in February 1973.

1.3 Initially the declared activities of the Andean Group aimed at

- accelerating the economic and social development of the sub-region in a way which will reduce the existing disparities among member countries;
- strengthening the abilities of the sub-region, to compete with Latin American Free Trade Association integration programme, and
- thereby to expedite formation of a Latin American Common Market.

1.4 The highest (political) body of the Andean Group is called the COMMISSION which is composed of one plenipotentiary representative from each member government. The Commission has finalized sectoral industrial development programmes,[2] prepared by Junta del Acuerdo de Cartagena (JUNTA) and the Board which is the permanent technical body for integrated programming of the sub-region.

1/ For a detailed description see, "General Information - Andean Development Corporation" - official publication of CAF. Apartado de Correos 5086, Caracas, Venezuela.

2/ See annexure IV.

1.5 The Andean Development Corporation (CAF), headquartered in Caracas, is the main financial institution whose functions are to foster and strengthen the integration process. This institution has a solid administrative and technical organization, for attracting resources and generating new activities both within and outside the sub-region.

1.6 "The main objectives of CAF is to contribute and co-operate in the financing of projects, which will aid the integration process. As the financial entity of the Andean Group, the Corporation plays a primary role in the planning and in the implementation of projects and which accelerate the integration activities of the six member countries and their solidary dynamic development".

1.7 The CAF functions as the sub-regional organization for the co-operation and promotion of industrial projects and programmes in the member countries where economies of 'complementarity' exists and on the basis of criteria specified and mutually agreed upon.

1.8 The CAF inter alia involved in the process of establishing and developing engineering industries in the member countries where interchangeability of parts could be introduced, approached UNIDO to assist in establishing appropriate engineering industries in general and metal working industry in particular. It is this proposal that helped in the promotion of the project under report.

Interesting studies undertaken by the United Nations pertaining to Latin America:

1. The Railway Rolling Stock Industry in Latin America (E/CN.12/508)
2. The manufacture of industrial machinery and equipment in Latin America (No. 63. II. G.2)
3. The economic development of Latin America in the post-war period (No. 64. II. G.6)
4. The process of industrial development in Latin America (No. 66. II. G.4)

2. EXPERIENCE OF INDIA IN INDUSTRIALIZATION 3/

Industries in India can look back to a growth period over nearly seventy years although it is only during the last decade and a half, the very significant development has taken place and the country has succeeded in laying foundation of a sound manufacturing base. It has a tradition of industrial technology covering a wide spectrum from cottage scale to large steel plants.

2.2 The implementation of development programmes undertaken through a series of Five Year Plans since 1951 has enabled the expansion and diversification of the industrial structure including public undertaking. These enterprises produce products such as steel, heavy and light engineering goods, fertilizers, basic chemicals, drugs, minerals, petroleum products, locomotives, aircrafts and ships.

2.3 India's strength in industrialization is also based on its infra-structural development. Along with the production capability, it has acquired conspicuous capabilities in the fields, inter alia, of technical consultancy, engineering design and research and development. These capabilities enabled the growth of indigenous technology and the adaptation of imported technology.

2.4 Scientific and industrial research in India is carried out mainly through the Council of Scientific and Industrial Research (CSIR). It has a network of thirty national laboratories and seventy-three field stations. Most of these are industry oriented relevant to coal, glass and ceramics, mechanical, civil, and structural engineering, food, metallurgy, electro-chemical, leather, electronics, textiles, cement etc.

These institutions have developed professional competence and established highly versatile resources to undertake job on contract for sponsored research, technical assistance and consultancy, feasibility studies, design development, project implementation, etc. In view of the special advantage of industrial research and development experience, these laboratories also serve as centres of training and technical assistance in their specific fields.

3/ For a detailed account on this and other related facilities see "Co-operation among developing countries - a profile of India's offer". Fifth Regional Seminar on UNIDO operations, January 1976. Copies available from Secretary, Ministry of Industry, Government of India, Udyog Bhavan, New Delhi 110001.

2.5 Facilities are also available in India for specialized and subject matter training in a skill, trade, technology, sophistication, quality control, standardization policy and planning, productivity, monitoring and financing.

2.6 Notable rise in volume of production of engineering goods has been accompanied by diversification in the structure of engineering industries. Extending from simple engineering items, manufacturing capabilities has been built up for comprehensive ranges of sophisticated industrial plant and machinery, machine tools, heavy electrical items, railway rolling stock and other items considered to be basic precondition for an accelerated industrial growth of any country.

2.7 In reaching the present stage of industrialization India has passed through several phases and experience. Under UNIDO-India technology familiarization and transfer programme, India has clearly exposed its experience and economic development projects to various foreign missions and delegations.

Today India, as a developing nation, has generated capacity and technology to share experience and expertise in various sectors of industry and technology with other countries.

2.8. India's capabilities based on its experience failures and successes, has relevance to other developing countries in fields that involve:

i) limited market capacity,
ii) obviate need of sophisticated instrumentation and automization,
iii) initiative in adaptation of imported technology, equipment, tools, instruments and know-how,
iv) climatic conditions, and
v) employment generation.

2.9 During the last two decades India has thus built up considerable expertise in technical, engineering, and technological fields in diverse areas. By virtue of her earlier start in industrialization and well developed infrastructure, India could share the technological experience and know-how with the Andean Group countries. The technologies that have been developed or adapted in India, are of the type which can

very well fit into the conditions obtained in Andean countries and at the same time these are sufficiently advanced to make it attractive even for the most developed among developing countries. This would ensure that the technology selected is most appropriate and is suitable for raw materials, equipment and size of operations.

2.10 Because of similarity of economic conditions and development problems, India is in a better position to appreciate the needs of co-operation among developing countries and is in a better position to share its experience with other developing and least developed countries.

3. BACKGROUND INFORMATION ON ANDEAN GROUP VISIT 4/

3.1 On 2 September 1974 UNIDO approved under UNIDO General Trust Fund (CVC) the project "Assistance to the Andean Development Corporation and the Andean Group of countries, technological training in India".

3.2 In view of Andean Group countries emphasis on industrial development programmes and the degree of maturity attained by a developing nation like India in industrialization in general and specific sectors in particular, a programme of sharing of experience was considered to be very useful as a means to utilize each other's experience to the best advantage and in a co-ordinated manner.

3.3 It was, however, thought that positive long term co-operation and details of activity could only be evolved after sufficient exchange of views and accordingly under the above project Mr. B.M. Sen from the Government of India was deputed to visit Andean countries as UNIDO consultant (13 May - 7 June 1974) with a view to assessing the requirements of the Andean Group countries and suggest possible areas of India/Andean countries co-operative activities with specific reference to technology transfer from India.

4/ See for reference "Andean Group Mission to India". Aide memoire - UNIDO Project No. VC/RLA/74/019, Vienna September 1975.

3.4 Based on the discussions with the Government of India, UNIDO, and the Andean Development Corporation, Mr. Sen submitted a report 5/ highlighting the possible areas of India/Andean Group co-operative activities, and the proposed visit of Andean Group officials to India.

3.5 In pursuance to above mission Andean Development Corporation was advised by UNIDO to act as co-ordinating body for the selection of the participants of the member countries to form a delegation to visit India.

3.6.1 Objectives of the project - within the agreement between the Government of India and UNIDO on transfer of technology UNIDO established a project by which members of the Andean Group, co-ordinated by the CAF, would visit India to familiarize with the competence and capabilities of India in the field of ancillary industry development and standardization of components in metal working sector with special reference to the manufacture of machine tools, automobile industry, tractors, engines and metal fabricated items. The Andean representatives could also study planning of such industries, its development needs and requirements for running the industry and other institutional requirements from the engineering point of view.

3.6.2 After the visit to India, the Policy and Technical Group, would have had an exchange of information and sharing of experience as well as formulate proposals for the establishment of a co-operative programme between India and the Andean Group of Countries, either individually or through the integration bodies.

5/ Refer "Final report of proposed visit of Andean Group officials to India" (VC/RLA/74/019/30 - 1.02/Rev.2) by Mr. B.M. Sen, UNIDO consultant, 1974. UNIDO document no. UNIDO/ITD.292 September 1974

3.7 Participants [6]

The mission was composed by two different groups.

3.7.1 Policy Group - although this group was supposed to be integrated by four members, only two could attend, namely Dr. T. Suero, Vice President of Programming at CAF, as leader and Mr. Fausto Vinces, Peruvian Representative at the CAF Board. For this group meetings were scheduled starting 19 October up to 5 November 1975. The detailed programme of visits of the Policy Group is enclosed.[7]

3.7.2 Technical Group - the Technical Group was supposed to be composed by one member of each one of the Governments of the Andean Group of Countries and led by one member of CAF. On 19 October 1975 the Technical Group was composed only by the representative of CAF, Mr. José Luis Ascanio as a Group Leader, the representatives of Ecuador, Mr. Jorge Vela, Chile, Mr. Oscar Morel and Mr. Ernesto Flores, Peru. Later on the representative of Bolivia, Mr. A. Criales, was integrated.

3.7.3 Representatives of Colombia and Venezuela were not present.

3.7.4 Also on 5 November 1975 the Vice Minister of Industries from Bolivia, Mr. Rolando Pereira, who was the original participant for Bolivia to the Technical Group, arrived in New Delhi. After consultations with Dr. Nayudamma, Director General of the Council of Scientific and Industrial Research (CSIR) it was agreed to prepare a different Programme of Visits for the Vice Minister of Industries which were more related to policy and planning subjects.

The programme of visits for the Technical Group [8] and of Mr. Pereira [9] are enclosed.

6/ See annexure 5 for list of participants.

7/ See annexure 6.

8/ See annexure 7.

9/ See annexure 8.

3.8 Co-ordinating agency

The co-ordinating agency in India for this programme, as designated by the Government of India was the "Council of Scientific and Industrial Research" (CSIR), New Delhi 110001 and Dr. Y. Nayudamma, Secretary to the Government of India and Director-General CSIR was the Government of India counterpart officer, Dr. J.C. Srivastava, Chief Technology Utilization CSIR has been the Project-Co-ordinator. Mr. B.M. Sen who had earlier visited Andean countries (ref. para. 3.4) accompanied the Technical Group throughout its stay in India.

3.9 UNIDO staff

While Mr. R. Polgar Resident Representative UNDP and Mr. V. Kolchin Sr. Industrial Development Field Advisor, New Delhi were associated with the project, Mr. V. Viltze Michel UNIDO staff member from Vienna also joined the programme. He attended meetings and visits of both the Groups. Later on, at the specific request of the Government of India, Mr. G.S. Gouri, Deputy Director ITD, UNIDO Vienna also joined the final negotiations.

3.10 Follow-up actions

Both the Groups visited Vienna on their way back home and had discussions with UNIDO staff members. It was agreed that these Groups would provide their notes to UNIDO for the preparation of a final report, to make a basis to establish a co-operative programme. However, till finalizing this report the Andean report was not received.

3.11 Dr. J.C. Srivastava, a senior scientist of the Government of India (CSIR) was hired (February 1976) as UNIDO consultant under special service agreement to prepare the project report.

3.12 Meetings and discussions

3.12.1 Keeping in view the tentative programme elabo ated by Mr. B.M. Sen (ref. 3.4), the interest of the Andean mission, background and experience of the Indian delegations visit to Latin America in the past, a detailed programme of visits

to industries and an itinerary [10/] to accommodate the interest of each of the Andean Group countries, was prepared. It was, however, kept in view that both Policy and Technical Group meet together to indicate the specific areas of co-operation between India and Andean countries.

3.12.2 This chapter would give the trend of discussions, exchange of views, and statements made in the meeting. In order to maintain the original philosophy of the speaker, the texts have been reproduced at most of the places. At other places only the summary of discussion has been highlighted.

3.12.3 To maintain the link, the discussions and meetings have been grouped as

i) Joint meetings - where both Policy and Technical Groups participated including the final and concluding meeting;
ii) meetings of Policy Group
iii) meetings of Technical Group
iv) meetings of Vice Minister of Industries, Bolivia
v) Concluding discussions.

3.12.4 The visit of Andean mission, their discussions with industries and other institutions were widely covered by the following Indian newspapers:

1975

i) The Economic Times - 19 October, 6, 9 and 15 November
ii) Financial Express - 19 and 26 October
iii) Business Standard - 19 October and 6 November
iv) Free Press Journal - 29 October
v) The Times of India - 29 October
vi) The Hindu - 26 October
vii) The Sunday Standard - 26 October
viii) The Statesman - 6 November
ix) The Hindustan Times - 6 November
x) Amrit Bazar Patrika - 7 and 13 November

10/ See annexures VI, VII, VIII.

3.12.5 Some of the above coverage relate to the statements made of the leaders of Policy/Planning and Technical Groups; these have been reproduced in the report to make the substance effective and informative.

3.12.6 As far as possible the meetings and discussions have been recorded date wise as indicated in the programme framed for each Group. Here effort has been made to provide complete address, telephone number and telegraphic (cable/gram) address of the parties. However, further information about any party would be supplied on reference to

The Chief,
Technology Utilization,
Council of Scientific and Industrial Research
Rafi Marg, New Delhi - 110001. India

Gram: CONSEARCH, New Delhi
Tel : 384210
381321 New Delhi

4. Joint meetings of Policy and Technical Groups

4.1 October 20, 1975 (1030)

The Andean delegation arrived Delhi on Sunday 19 October 1975. On the first working day, Monday 20 October an introductory meeting was held in the Conference room of the Council of Scientific and Industrial Research under the Chairmanship of Mr. B.K. Sanyal, Secretary, Ministry of External Affairs, Government of India. The meeting was also attended by Prof. Y. Nayudamma, Secretary to the Government of India and Director-General, CSIR, Mr. R. Polgar Resident Representative UNDP, and the representatives of the Embassies of Colombia, Peru and Chile in India, officials of the Government of India, CSIR, UNDP and UNIDO.

4.1.1 Welcome by Mr. B.K. Sanyal

Welcoming the Andean delegation Mr. Sanyal expressed appreciation of UNIDO in arranging and financing the visit of Andean delegation to India and thus providing opportunity both to the Andean Group of countries and India to appreciate each others technological progress with special relevance to their economic development. He thanked Mr. R. Polgar

UNDP Resident Representative in India for his help in providing technological co-operation among developing countries and co-ordinating United Nations activities for the betterment of the developing countries.

He further referred to the resolutions of the Limia Conference held in August 1975 and the pledges of the developing countries for unreserved mutual co-operation in the programme of development. He added that in this context the visit of the Andean delegation was most welcome. He also mentioned about memories of his stay in South America and the cordial relations of India with Latin American countries and how India was keen to develop closer and friendlier bonds with Latin American countries and sponsored some commerce and industry oriented delegations.

After the visit of Prime Minister of India to Latin America in 1962, an Indian Economic and Trade delegation visited Latin America [11] in 1969, a mixed delegation of Consultancy Engineering Organizations visited [12] in 1971, another delegation dealing with fishing visited in 1972, Engineering Export Promotion Council delegation to Caribbean and Latin American countries in 1973, a pharmaceutical delegation in 1974 and Steel Industry delegation visited in 1975.

Concluding his welcome address, Mr. Sanyal mentioned that India is keen to further strengthen its relations with Andean countries and expressed the desire for an observer status in the Andean Group.

11/ Refer report by the Federation of Indian Chambers of Commerce and Industry (FICCI), New Delhi - 1 August 1969.

12/ Refer report by Engineering Export Promotion Council, Kasturba Gandhi Marg, New Delhi - 1.

4.1.2 Welcome by Dr. Nayudamma

Dr. Nayudamma welcoming the goodwill mission mentioned that this visit of the Andean Group mission will help in exchange of ideas and foster mutual co-operation. India's experience is coupled with social justice and aimed at socio-economic development of oommon man. India's effort has been to create self-confidence in the people and involve them in the national reconstruction programmes.

Stating about the UNIDO/INDIA agreement, he said that the role of India is to catalize the scientific and technological progress among developing countries. All programmes under the agreement are of mutual co-operation with a spirit of give and take. India would be glad to adopt relevant technological, ideas/processes from Andean countries. As a matter of fact sponge iron project emanates from Brazil. He presented the following points for the consideration of the delegation:

i) identification of definite items of co-operation.
It would be desirable to delineate specifically what India could offer and what Andean could give;

ii) follow-up.
A follow-up programme should be formulated so as to bring Andean specialists, scientists, technologists and engineers to India in their specialized fields and vice versa; and

iii) India and CAF could use Andean Corporation for general planning of mutually agreed multi-national programmes.

These activities Dr. Nayudamma added, could be worked out either directly between the interested countries or through UNIDO/UNDP. He repeated, to say, that efforts should be made to formulate some concrete proposals of technological co-operation at the final meeting.

4.1.3 Reply of the leader of the Andean Group delegation

Replying to the welcome address of the Government of India, Dr. Terry Suero, Vice-President, Andean Development Corporation (CAF) and leader of the delegation said that the visit of this delegation is a step forward towards fostering co-operation among developing countries for development.

"It was a great pleasure to bring cordial greetings on behalf of the Andean Development Corporation and the member countries of the Andean Integration Agreement. Our visit to your interesting and hospitable country fills us with satisfaction and permit us firm hope that the mission with which we have been charged, will be most successful with the sincere and efficacious co-operation that we are sure you will give us.

The closer relationship between India, the Andean Development Corporation and its member countries, constitutes, in our opinion an important step towards strengthening of the institutional and economic ties which will be most beneficial to both parties.

The scientific and technological development attained by you, particularly during the last 15 years and which has enabled India to establish a solid industrial base is of special interest to our countries and for the Andean Development Corporation. We are most interested in familiarizing ourselves and analyzing this development in order to acquire a knowledge that will be of great value to the countries of the Andean area.

The integration process that has been taking place in the Andean countries since 1969, is advancing steadily and is allowing us slowly but surely, to overcome traditional deficiencies in our industrial production, to attain a diversification of our exports and a considerable increase in trade. Integration is a strong instrument in Latin American development. It also requires co-operation and assistance from other countries such as yours which has already made important advances in industrial, scientific and technological fields.

The readiness shown by the Government of India to furnish us with this co-operation is most welcome. It is our opinion that exchange programmes such as the one which has brought us here today, requires our full backing and we are willing to give this.

The imbalance between the third world and the highly industrialized countries can only be overcome if countries such as ours for solid blocks may take firm decisions and make consistent efforts which may lead to the change from dependent economies to industrial economies.

He concluded by saying that the Andean delegation's visit aims at the following things:

i) technical assistance from India in specialized sectors, for whole of the Andean region,

ii) technical assistance to be given to individual countries,

iii) technical assistance from Andean countries,

iv) programme of training, and

v) interchange of information." 13/

4.2. October 20, 1975 (1600)

The above meeting was followed by the meeting of entire delegation with the Railway Board of the Ministry of Railways, Government of India.

4.2.1 The following were present:

1. Dr. T. Suero, Leader of the delegation.
2. Mr. Fanstro Vinces, Director CAF.
3. Four members of Technical Group.
4. Dr. J.C. Srivastava, Chief, (Technology) CSIR.
5. Mr. B.M. Sen, Deputy Director, CMERI.
6. Mr. S.N. Sharma, Scientist, CSIR.

Railways:

1. Mr. M.N. Bery, Chairman, Railway Board.
2. Mr. A.L. Gupta, Secretary, Railway Board.
3. Mr. P.N. Bhaskaran Nair, Managing Director, RITES.

4.2.2 Mr. M.N. Bery while welcoming the members of the delegation, explained the progressive development of transport communication and engineering systems of Indian railways. It was a challenge before the Indian railways to meet the country's ever increasing needs both for passenger traffic and transportation of goods specially with the fast industrial development in the country. Till early fifties i.e. in 100 years of existence of railways, the total traffic was to an extent of 90 million tonnes - today this pressure had crossed 200 million tonnes.

13/ Verbatim text.

In order to meet this growing need and demand, Indian railways had to keep pace with the scientific and technological developments and at the same time had to be selective in such technologies consistent with local conditions, manpower, indigenous materials and equipment to the maximum extent possible.

The railways implemented this challenging task in successive Five Year Plans of development to carry the forecast traffic and other objectives. The fifth plan of the railways has an outlay of Rs.2350 crores for a target of 300 million tonnes of freight traffic.

India is a vast country. There were 60,234 Kms of railway lines in 1973-74. In addition there were 12,304 Kms with two or more parallel tracks. This figure covers both meter guage and standard guage. More capacity is being created every year.

Emphasis has also been placed on electrification of principal trunk lines with extra high traffic density. Up to the end of 1974 the electrified section totalled 4,191 Kms.

The railways have embarked on a programme of modernization and improvement of signalling and telecommunication facilities in order to increase the safety of operations and line capacity and to provide greater operational flexibility. Electronic systems were initially imported but ultimately we are now self-reliant on the country's own production.

India has its own telephone industries. This assisted the railways in making a steady growth in its telecommunication network. By 1974, it had a microwave coverage of 7,500 kms. The scarce copper wire is now being replaced by indigenously manufactured aluminium conductor steel reinforced wire.

Mentioning about the contribution of Indian railways in rolling stock manufacture, maintenance and development, Mr. Berry informed that India has set up its own production units f' the manufacture of locomotives, coaches, wagons, signalling equipment and specialized steel castings. In the earlier stages India manufactured steam locomotives (2000 numbers) but subsequently it is being replaced by high powered diesel locomotives. This is produced in collaboration with ALCO of the United States of America with 85 per cent indigenous material. Generator and traction motors are produced by BHEL, Bhopal a public sector undertaking. The electric locomotives are being manufactured at Chittranjan in collaboration with ACLAG groups, started with monomotor and then to normal traction motors manufactured indigenously by railways.

Railway originated with wooden sleepers on the tract, which has now been replaced by cast iron and cement concrete sleepers.

The Integaral Coach Factory, Madras, is capable of manufacturing any type of coach, electrical multiple units, etc. Similarly the wagon building industry has been successfully created both in public and private sectors. The delegation could see their activities during their visit to ICF, Madras, Chittranjan Locomotive, at the factories of Bharat Earth Movers, Jessop & Co., Calcutta etc.

Setting up these important activities and components of technological development and evolving own design had been possible due to the railways own Research Design and Standards Organization (RDSO) and other national laboratories and research institutes of India. RDSO alone employs over 2,000 engineers and specialists.

Indian Railway have a network of its own institutes for imparting training to its personnel of different disciplines.

Speaking about speed of the trains, the Chairman remarked that in India the demand is more for growth of freight oriented (75 per cent) and mass transportation. However, India has been running trains in some sectors to a maximum speed of 130 km/hour. India has the experience that in high speed it eats away a lot of railway capacity and thus we are not only in favour of high speed but efficient, punctual and steady speed.

The little success India achieved in making it self-reliant in railway industry attracted attention of many developing countries and they approached Indian railways for undertaking consultancy work for them involving supply of technical expertise and equipment. We noticed that technical and commercial problems of those countries were similar to those faced by us. India was also keen to share its experience with other developing countries. Indian railways have so far collaborated with Jordan, Saudi Arabia, Syria, Iran,* Zaïre, Thailand, the Philippines and East Africa. Thus keeping in view the growing demand of co-operation from the developing countries, Indian railways set up a Rail India Technical and Economic Services Ltd. (RITES) in 1964 as a public sector company. During a short span of a few years, RITES have already secured important contracts from various countries. This company is listed as a recognized consultants with the Asian Development Bank, UNIDO, UNDP and Inter-American Development Bank.

4.2.3 Dr. Terry Suero the leader of the Andean delegation thanked Mr. Berry for his enlightened description of the progress of Indian railways and congratulated him and his colleagues and India in making her best better. He advised his fellow delegates in the technical group to make an intimate study of the subject in relation to the needs of the Andean countries and bring forth their views for discussion during the concluding session of the programme.

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* Original spelling in text "Iraw".

The Chairman of the Railways Board, Government of India, informed that a delegation of RITES is visiting Latin American countries in the near future and this would be an excellent opportunity for them to have an appreciation meeting in Andean countries with the co-operation of CAF.

4.3 October 20, 1975 (1700)

The delegation made a courtesy call on the President of India in his office at Rashtrapati Bharan. After the tea with the President the delegation visited the famous Mogal Gardens in the premises of President Estate.

4.4 At this stage the Policy and Technical group were split while the Policy group continued discussions in Delhi, the Technical group left Delhi for the out-station visits.

5. Meetings of the Policy Group

The areas of interest of the Policy Group were:

i) Establishment of R & D infrastructure;
ii) Training in R & D/Industrial Management;
iii) Training in special fields of technology;
iv) Areas of technological co-operation and assistance;
v) Joint ventures in industry;
vi) Exchange of scientists, technologists, engineers and specialists in selected fields;
vii) Setting up of an Institute for standardization and quality control;
viii) Visit of an Indian delegation to Andean countries; and
ix) Any other point.

5.1 October 21, 1975

5.1.1 1030 Indian Standards Institution (ISI)
Manak Bharan, 9 Bahadin Shah Zafar Marg,
New Delhi 110001

Tel: 270131 (20 lines)
Telegram: Manakaanstha

Mr. Y.S. Venketeswaran, Deputy Director General (DDG) welcomed the Andean mission and explained the development in the fields of quality control, certification mark and standards. Giving a typical example of the impact of standardization DDG informed that in 1960 there were produced in India 70 different

batteries for automotive, while today there are only seven standard batteries according to ISI specification. He informed that ISI is the member of International Organization for Standards (ISO).

ISI also operates training programmes of four months duration for developing countries.

Taking into account the need of Andean region in the area of standardization, quality control and certification marks it was agreed to include in the list of projects to be negotiated for further co-operation between Andean countries and India. It was suggested by the Policy Group that to begin with twelve participants (two from each country) could attend the regular training course in standardization at ISI.

5.1.2 The Policy Group visited the following two institutions, details of which have been given in Part III of the report.

1400 Prototype Development and Training Centre
Ministry of Industries,
Okhla Industrial Estate Area
New Delhi

1630 Kirloskar Show room at Parliament Street, New Delhi

5.1.3 2000 Dinner meeting at Ashoka Hotel with
M.N. Dastur & Co., (P) Ltd.,
Consulting Engineers
No. 2 Rajdoot Marg, Chanakyapuri
New Delhi 110021

Registered office: P-17 Mission Row Extn.
Calcutta - 13

Mr. T.V.S. Ratnam, Technical Director, explained the area of specialization of his company in steel industry. He mentioned about his visit and experience of the Andean and other countries of Latin America. While Colombia* has coal, Venezuela has iron ore, Bolivia has steel plant and Ecuador has no major raw material. He therefore suggested the need for an exploratory mission for a study of steel industry in the Andean countries. He narrated many instances of his experience of both India and Andean countries.

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* Not clear on original text - Cambodia/Colombia

He also suggested that the Andean Group (CAF) could consider setting up a sub-regional design and engineering nucleus to assist the interest of members countries. M.N. Dastur have initiated to set up a Central Design Centre in Arab countries and could also help in the same way the Andean countries as well. He informed that Dastur's have already submitted such a proposal to Director UCUNTAN in Peru.

Dr. Suero suggested that M.N. Dastur may send him a memorandum [14] on the subject.

5.2 October 22, 1975

5.2.1 1030 The Projects and Equipment Corporation of India Ltd., Chandralok, 36 Janpath, New Delhi

Telex ND 2167-68-69
Cable ESTICI
Telephone 46002
(a Government of India undertaking)

Mr. M.M. Luther, Chairman, PEC gave an introduction on the activities of the Corporation, one of the important exports being railway equipment. It was stressed that all the export goods correspond to the international standards.

Mr. Luther said that after studying the proposed industrial development programmes, projects initiated by CAF, Andean countries own priorities, PEC could co-operate in promoting the following projects:

i) There is possibility of minority participation in projects by way of supply of equipment,

ii) Projects for manufacture of capital goods could be promoted on the basis of progressive reduction of import level,

iii) PEC and CAF could exchange information on import of engineering goods, and a summary of broad profiles for projects which are identified as capable of being put up in Andean countries with Indian assistance could be made available, (since delivered),

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14/ See annexure IX

iv) There is a heavy stress on construction of railways and development of transport infrastructure. A preliminary proposal could be made for offering services and goods for construction of railway lines,

v) Another area of Andean interest is the setting up of a complete telecommunication system. If details are available, PEC could associate with the Ministry of Communications to frame out a feasibility study or at least a project profile,

vi) There is a possibility of PEC working on sub-contract from Japanese and American firms who are setting up large projects in these countries. CAF may send information on projects and prime contractors/consultants engaged for them,

vii) Scope has been identified to set up small-scale industries and industrial estates, PEC can assist in this.

Replying to the above proposals and offers Dr. Suero, leader of the delegation informed that projects have been identified and defined in chemicals, petrochemicals, automotive, metal and mechanical sectors. These projects have been duly assigned to different countries based on their home market demand. Items not produced have also been defined and assigned to different countries. He added that it is for the Technical Group to identify the projects for co-operation.

Mr. Luther suggested that the aspect of adequate provision of shipping will need careful study because of the long distances. However, if trade develops PEC could establish its office in one of the Andean countries. He handed over a copy of the Five Year Plan of India to Dr. Suero.

5.2.2 1530 The National Industrial Development Corporation Ltd.
Consultants and Engineers
Chanakya Bharan, Vinoy Marg,
NMDC Complex, New Delhi - 110021

Cable: NIDCORPON
Telex: 031-2871
P.O. Box: 5212
Telephone: 670153

(a Government of India enterprise)

Mr. Kan D. Mariwalla, Chief Consultant NIDC explained the activities of the Corporation indicating its aim to assist in the formulation

and development of economic programmes and industrial projects. NIDC have undertaken consultancy services for the development of infrastructural facilities, establishment of new industrial ventures including expansion and diversification of existing units. Today NIDC has over 300 professionals who are working in infrastructural programmes like construction of highways, modern harbour, airport as well as in engineering industries, electronics industries, metallurgical, chemical, aluminium, pulp and paper, sugar plants, textile mills, agro-based industries, mining and others.

The main aim of the enterprise is to determine the projects according to a previous evaluation of the technology to be used for every factor. This leads later to the planning of the industries with the appropriate technology. In 1966 the institution became a consultancy office of international rank.

Mr. Mariwalla indicated three main functions of NIDC:

i) economic development services (for resource development, leading up to feasibility study);

ii) design and engineering of specific plants (for manufacturing industries as well as for metal mechanic tools); and

iii) the management services.

Dr. Suero, appreciating the competence and good work of NIDC suggested Mr. Mariwalla to give him a short note.15/

At the meeting it was suggested to include in the tentative programme of NIDC to seek for further consultation in the following items:

i) taking into account the needs of a co-ordination of consultation firms in the Andean countries, NIDC may be able to make a survey of the present facilities and prepare a programme to be followed aiming at establishment of a co-ordinated body of Andean Group consultancy firm;

15/ See annexure X

ii) determine methods and systems in the establishment of evolution of technology in selected items.

Mr. Mariwalla mentioned that these suggestions could be followed after a channel of communication has been established. Mr. Mariwalla handed over the set of literature to Dr. Suero.

5.2.3 1700 Metallurgical & Engineering Consultants (India) Ltd., (MECON)
Ranchi - 834002 (Bihar)

Telephone: 20053
Telex: 024-209
Gram: MECON

Present: Mr. A.C. Banerjee, Chairman
Mr. K.C. Mohan, Managing Director
Mr. A.B. Banerjee, Manager Sales
Mr. D.K. Sengupta, Resident Manager (Delhi office)

The Chairman informed that the Steel Authority of India is an autonomous body which belongs to the Government of India, while MECON is its holding company for government enterprises which produces steel plants, as well as has consultancy services available for others. MECON has the services of 1300 engineers. MECON has developed other activities subsidiary to the steel industry such as production of refractories and construction, design and production of equipment for steel plants and consultancy for aluminium production units. Dr. Suero inquired about the training facilities of engineers for the steel industry.

The Chairman informed that MECON could provide advice on training in steel technology to the Andean Group and could also prepare specific training programmes at different levels for steel industry.

Mr. Rolando Pereira, Under Secretary of Industries, Bolivia (a member of Technical Group) visited the MECON office at Ranchi. At his instance a note 16/ was given to him about the competence and activities of MECON. He was also supplied with detailed literature.

16/ See annexure XI.

During discussions at Ranchi, it was indicated that MECON could provide complete consultancy and engineering services for ferrous and certain non-ferrous metallurgical plants from the concept to commissioning and render the following services to the Andean Group countries:

i) ferrous metallurgical industries,
ii) aluminium industries,
iii) coke oven batteries and certain chemical plants, and
iv) supply of rolling mills equipment.

5.3 23 and 24 October 1975

The delegation visited the following institutions and industries:

1. Bhartija Electric Steel Co. Ltd., Faridabad
2. Gedore Tools, Faridabad
3. Escorts Tractors, Faridabad
4. Regional Res. Laboratory, Hyderabad
5. Small Industries Extension Training Institute, Hyderabad
6. Electronics Corporation of India Ltd., Hyderabad

Details about above have been given in part III of this report.

5.4 25 October 1975

5.4.1 1130 Association of Indian Engineering Industries (Southern Region), Madras

AIEI had arranged a luncheon meeting for the delegation. The report appeared in "Hindu" (newspaper dated 27.10.1975) Madras Edition, is reproduced below:

Chances of transfer of technology from India are excellent especially in industries where there are good export possibilities of labour-oriented low volume engineering production technology.

This is the major point that emerged from the discussions which the Association of Indian Engineering Industry had yesterday with a visiting senior policy planning delegation from the Andean group of countries from Latin America, which is on a visit to India for assistance in transfer of technology.

Giving this information to newsmen, Mr. S. Muthukrishnan, Chairman, Southern Region of the AIEI, said the delegation leader, Dr. Terry Suero, told the Association that six countries - Peru, Bolivia, Ecuador, Venezuela, Colombia and Chile were mainly interested in developing common engineering and industrial expertise in the region.

Dr. Suero told the Association members that the Andean Development Corporation - a sort of Industrial Development Bank for the region - had been set up for the benefit of securing industrial development of the countries. A technical group of specialists from these countries would be arriving in India within the next few days and discuss with Indian industrialists, the types of industries which they would like to set up in their countries. The delegation recommended that there should be an exchange of industrialists between India and the Andean countries. The team was happy to note that Indian industries used a very large percentage of indigenous components and in some cases it was 100 per cent. The Andean countries were importing engineering goods from Japan and the United States.

Dr. Suero said it would not be advantageous for these countries to import sophisticated technology from highly advanced countries and would rather prefer India to provide the know-how.

Mr. Mutnukrishna said, the members got the impression that the two delegations would explore the idea of a common market among the Andean countries so that any flow of technology could be used in such a manner to strike a balance in industrial development utilizing the vast labour potential available in some of the countries.

Both the groups would be visiting, Bangalore, Bombay, Calcutta and finally reach Delhi, where talks would be held with the Prime Minister, Mrs. Indira Gandhi, Senior Ministers of the Government and Officials of the Commerce and Industries Ministries.

Mr. C.G. Devayya, Deputy Chairman of the Association who proposed a vote of thanks pointed out that this was perhaps the first opportunity for the industry in South India to discuss with representatives of Andean countries, prospects of mutual co-operation and co-ordination in engineering and industrial fields

5.4.2 1430 Ashoka Leyland Ltd.,
Ennore. Madras - 58

Tel: 59341/59291

Mr. K.V. Varadarajan, Executive Director and

Mr. R. Ramakrishnan, Chief Engineer (Product development)

received the visitors showed all the manufacturing shops, such as engine, gear box, assembly and followed by discussions.

Mr. K.V. Varadarajan explained to the members of the delegation, regarding the existing terms of collaboration, their export performance and future plans. Dr. Suero evinced keen interest in their collaboration details, adaptation of technology etc. The visitors were very much impressed by the performance of the company.

The products manufactured by Ashoka Leyland are as follows:

i) "Power Plus" Comet truck, tipper, tractor and passenger full-forward chassis.

ii) "Power-Plus" heavy duty range chassis.

iii) Industrial diesel engines,

iv) Marine diesel engines.

5.5 27 October 1975

5.5.1 1000 Earthmoving Equipment Plant
Hindustan Motors Ltd.,
Trivellore, Tamil Nadu

Tel: 202, Trivellore

Messrs. A.N. MacLeod, Vice-President, R.K. Daga, Divisional Manager and M.L. Gulati, Assistant Quality Control Manager, received the visitors followed by a discussion. M/s. Jim Moffat, Manufacturing Manager, Bill Lamb, Quality Control Manager and Mr. Walter Marshall also took part in the discussion. Mr. MacLeod explained their manufacturing programme and collaborative aspects in detail, as the delegation was interested. They also discussed regarding the supply of raw materials, bought out items and finished products.

The delegation was taken round all the manufacturing shops of the plant. The leader of the delegation was highly pleased with the indigenous production of such equipment.

Products manufactured at the Trivellore factory

In collaboration with General Motors Corporation of USA, being administered by Scottish subsidiary of General Motors, the

following earthmoving equipment is manufactured:

i) R-25 rear dumper (Model H4 TD)
ii) 72-21 front end loader
iii) 82-40 crawler tractor
iv) Motorised scraper.

5.5.2 1500 Council of Scientific and Industrial Research Complex Madras.

The members of the delegation visited the CSIR campus on Monday afternoon to acquaint the activities of MERADO. Mr. A. Chakravarty, Deputy Director-in-Charge, MERADO, and his senior colleagues received the visitors. The visitors were introduced to Prof. G.S. Ramaswamy, Director Structural Engineering Research Centre and Co-ordinating Director, CSIR Madras Complex and had a long discussion. Prof. G.S. Ramaswamy explained to the visitors the role of R & D activities in general. Dr. Suero showed considerable interest in the R & D management with particular reference to the medium and small scale industries. Then the delegation visited MERADO. Mr. Chakravarty showed the different sections of the unit and the members of the delegation were explained in detail about the development of the machines and equipment and the R & D facilities utilized by the industries. The visitors showed considerable interest in the activities of the Centre.

It may be mentioned in passing that Dr. Suero mentioned about his interest in paper and jute and also in the mining industry, which he regretted, because of the short time at his disposal, could not be fitted in the tour programme.

5.6 28 October 1975

Association of Indian Engineering Industry [17]
Western Region
Brabourne Stadium
87, Veer Nariman Road,
Bombay - 400020

Telephone: 295858/258220
Telegram: BUILDPOWER

17/ See annexure XII for the list of participating members of engineering industries.

Prior to the meeting of Policy Group, the Technical Group had already met [18] the member of the Association on 25 October 1975. The discussion held with Policy Group on 28 October 1975 and recorded by the AIEI is enclosed. [19] However, the press report about the above meeting appeared in "The Times of India", Wednesday, 29 October 1975 is as follows:

"Scope for Indian engg. units in Andean group"
by a staff reporter

Dr. Terry Suero, leader of the senior policy planning mission from the Andean group of countries, addressing the members of the Association of Indian Engineering Industry, western region said in Bombay on Tuesday, that co-operation between developing nations was necessary and the Andean group and India can work together to mutual advantage in many areas. He felt that to foster closer economic relations, it was necessary to breach the communication gap. He was happy that a professional voluntary organization like the Association of Indian Engineering Industry was co-operating with the government agencies to promote contacts with the developing countries.

Dr. Suero said the Indian engineering industry had a large scope in the Andean group of countries. He suggested that representatives of the industry may visit to explore possibilities of transfer of technology from India. He assured full co-operation from the Andean Development Corporations, an agency for economic integration in the Andean group of countries.

Mr. Jayant H. Shah, chairman of the AIEI, western region, welcoming Dr. Suero and his team said that the Indian engineering industry can offer a wide range of technology. The industry could actively participate in the development of the Andean group of countries by making available technical assistance in the specific areas, he added.

5.7 29 October 1975

1600 Record note on a meeting [20] between AIEI and the Policy Planning Group from Andean Development Corporation held at 4 p.m. on Wednesday 29 October 1975 at India International Centre, New Delhi.

18/ See Chapter 6

19/ See annexure XIII

20/ See annexure XIV for the list of industries attending the meeting.

5.7.1 Opening the meeting, the AIEI President, Mr. K.G. Khosla [21] welcomed Dr. Terry Suero and his colleagues and said that the Indian Engineering Industry today represented an industrial base which could not easily be compared with any one of the developing countries; growth of Indian Engineering Industry had been spectacular and it had competence, skill and capacity not only to produce an entire range of engineering goods but to undertake export of sophisticated high standard technology through joint ventures. Observing that this visit by Andean Group was the beginning of a long term co-operation programme between India and Andean countries, Mr. Khosla offered AIEI assistance to fulfil the Group's objectives by way of in-plant training programme, deputation of engineering and technical experts, consultancy services, market feasibility studies, etc. and recommended:

1. Setting up of a sub-regional design and engineering nucleus and a Central Design and Engineering Organization which could take into account the requirements as well as the natural endowments of each country.
2. CAF should publish an inventory of its technology requirements and Indian Engineering Industry would provide an inventory of technologies available; at present the transfer of technologies between the developing countries was limited mainly due to lack of information and data.

Mr. Khosla then requested Dr. Suero to address the meeting about the objectives of the Mission and sought his clarification on the following points:

1. The possibilities for
   a) Exporting equipment to Andean countries,
   b) Organizing manufacturing programme in Andean countries with Indian know-how,
   c) Joint participation in third countries.

21/ See annexure XV for the text of the address of AIEI President.

2. A forecast of the commercial possibilities in the Andean countries in respect of the Industries identified by the Andean Group including the scope for transfer of know-how, in the Chemical Engineering Industry, export of equipment for metal transformation etc.

3. Clarification on the commercial terms for such transfer of technology.

5.7.2 Dr. Suero, responding, thanked AIEI for the opportunity given for a full-scale meeting with representatives of the Indian Engineering Industry. Explaining the Group's objective of examining the scope of technology transfer between India and Andean countries, he added that this Group along with another Technical Group had been sponsored by UNIDO with a view to seeing the India Engineering Industry's development over the last 25 years and examining the scope of technology transfer between India and Andean countries. He said that the possibilities discussed by his Group would necessarily have to be decided in the light of Technical Group's report before any decision was taken.

In regard to India's development in the Engineering Industry and allied fields, he observed that the country had made remarkable progress in technology and there was good co-ordination between technology adapted in a particular industry with its employment orientation. India had great scope for industrial collaboration and investment in Andean Group countries and opportunity existed in almost all fields, especially petro-chemical and automotive.

Clarifying the points raised by the AIEI President, the Group members observed that:

1. India could export equipment to Andean countries but there were problems like shipping schedules and high freight rates which need to be sorted out on mutual basis.

2. There was good scope for export of Indian know-how under a phased manufacturing programme. The forthcoming AIEI Trade Mission to Latin America should be well prepared on this aspect so that specific areas could be identified.

3. A report listing different areas of commercial possibilities in Andean countries including the scope for transfer of know-how would be provided to AIEI.

4. UNIDO had undertaken an integrated development programme in various sectors based on a specific list of projects for the six countries (Ecuador, Chile, Peru, Colombia, Bolivia and Venezuela) in the Group; this programme was being co-ordinated through CAF - its principal objective being to bring about a new economic situation in Latin America by way of:

   - Harmonious development of all the six countries
   - Achieving high standard of living
   - Harmonization of policies
   - Assistance to the less developed countries in the Group like Ecuador and Bolivia, by way of preferential treatment
   - Forming a common market.

5. Three programmes which had already been approved by the Government were mining, automotive and petrochemicals. Three other fields where agreement of the respective Governments was expected were electronics, paper and pulp and fertilizers. India could be of great help in implementing these programmes.

6. India had been selected because of its remarkable development in the industrial sector.

7. India's advancement in steel industry was considerable and it could help Andean countries.

8. Technology, advancement of India could be compared with that of the developed countries.

9. For exporting to the Andean countries, India would have to take special care about the quality of goods; a certification scheme need to be evolved if not already in vogue.

10. There was lack of information between India and the Andean countries and AIEI-Andean Group co-operation would be of considerable help in bridging this gap.

11. Conditions of foreign investment in all the six countries were the same; overseas entrepreneurs involved in foreign investment would be categorized under three groups:

		Ratio between National and Foreign capital
a)	National Enterprise Local Government management	- 80 : 20
b)	Mixed Enterprise Local Government management	- 51 : 49
c)	Foreign Enterprise Foreign management	- Foreign investment over 51%

Repatriation of return on foreign investment should not exceed 14 per cent. Any return on investment above 14 per cent up to 50 per cent has to be re-invested in the country. AIEI would be provided with more details.

5.7.3 The President then invited those present for their views, inquiries and suggestions. The points raised by the representatives of the Indian Engineering Industry and replies thereto by the Policy Planning Group are listed below:

1. On being inquired as to which industries were earmarked for foreign investment, it was pointed out that there was a special provision in Government Law and details would be provided to AIEI.
2. For an effective communication system between India and Andean countries, it was agreed that AIEI would act as the focal point.
3. It was clarified that there were no restrictions on movement between the member countries of the Andean Group.
4. Discussing the taxation policy, it was agreed that AIEI will be given more details.

The meeting terminated with a vote of thanks to Dr. Terry Suero and his colleagues by Mr. Vijai Kapur, Chairman, AIEI (Northern Region).

5.8 30 October 1975

5.8.1 1030 Indian Investment Centre (IIC)
Jeevan Vihar, Parliament Street
New Delhi 110001

Mr. S.C. Vajpai, Secretary, IIC informed about the activities of the Centre.[22/] He stated that IIC is quite keen to co-operate and collaborate with the Andean Group and as a matter of fact it was associated with the two Indian delegations viz. Project and Equipment Corporation Ltd. (March 1972) and Engineering Export Promotion Council (June 1973) which visited Andean countries. The latter delegation was mainly from private sector. Both the delegations prepared their report and identified certain projects for co-operation with some of the countries, but due to lack of follow-up action on both reports nothing mover further.

Dr. Suero, leader of the Andean mission desired to receive a copy of each of the reports.

Dr. Suero then elaborated the aims, objectives and functions of the Andean Group. One of the important functions of CAF is to select projects which could be beneficial to the six partner countries and provide financial assistance where needed to implement these projects. Andean Development Corporation have financial assets of $400 million out of which a portion is given by each country.

The Technical Group has divided technologies in three sectors:

i) mechanical engineering,
ii) petrochemicals,
iii) automobile.

22/ See also part III.

Under the above sectors a list of industries has been prepared by the Group for each of the countries, keeping in view the local demand and resources of the region. Where investments are high two or more countries have joined.

Basic industries like mining, petroleum, etc., are to be looked after by individual countries themselves.

Explaining about the manner in which foreign capital is allowed in Andean Group countries, Dr. Suero said that in this care is taken to discourage monopolistic attitudes. Foreign capital/equity shares have to be liquidated in 15-20 years time. The repatriation limit of the profit of the foreign companies is 14 per cent.

Dr. Suero said that due to lack of communication between India and Andean Group countries both the sides so far have lost many opportunities. He hoped that there will now be better exchange of knowledge and information between the two sides.

5.8.2 1500 Federation of Indian Chamber of Commerce and Industry
Federation House,
Bara Khambha Road, New Delhi - 1

Mr. Harish Mahendra, Chairman of FICCI welcomed the delegation and informed FICCI Economic and Trade delegation had visited Latin America in April-May 1969. According to the report, industrial development in most of the Latin American countries has been horizontal. The delegation was of the view that the situation then prevailed in Latin America, the intermediate type of technology which have already been established by India, might be more suitable as these are not capital intensive.

The delegation identified certain areas of co-operation but nothing materialized. The distance and lack of follow-up could be the main reason.

Dr. Suero, leader of the Andean Mission informed that the present visit is a joint mission of India/CAF/UNIDO and they are determined to take up these programmes in a planned manner. We are quite clear in our mind as to what we want but it would take some time and plan of action. The prime importance is to build up a channel of flying information both ways. There are promotors of industry in each country however, a suitable mechanism has to be decided. We have chosen India to gain out of its experience. We know the conditions in which India has developed and improved itself - today we find tremendous change since I visited last for my honeymoon in India. We want to study how India has handled its vast population, how they have combined people with industry, industry with technology and technology with science. With this information many programmes could be built up with you.

We have already dealt with sectoral programmes in

i) metal - mechanical engineering,
ii) petrochemicals,
iii) automotive sector,
iv) chemical sector, and
v) pulp and paper sector.

From these many projects could be worked out. CAF would co-ordinate these from the Andean side while CSIR would co-ordinate from the Indian side.

The representatives of the following firms explained their activities:

i) Engineering Projects (India) Ltd.,[23/]
Himalaya House,
Kasturba Gandhi Marg,
New Delhi - 110001

Telephone: 42325 (4 lines)
Gram: PLANTIND

23/ See annexure XVI.

ii) Bharat Heavy Electricals Ltd.,[24]
18-20 Kasturba Gandhi Marg,
New Delhi 110001

Telephone: 382087
Gram: BHARATELEC

5.8.3 Other important meetings

The Andean mission had important meetings with the following and exchanged views with regard to India's experience in industrialization, industrial planning, labour and employment problems, future areas of co-operation, etc.,

1 November 1975 -	1530	Minister of Finance Government of India
4 November 1975 -	1100	Prime Minister of India
	1600	Deputy Chairman Planning Commission (Vice-President, CSIR)
4 November 1975 -	1200	Final meeting of Policy and Technical Group with officials of Government of India, CSIR, UNDP/UNIDO and finalization of the general areas of co-operation.[25]
	2000	Signing of the "note of understanding"

24/ See annexure XVII

25/ See annexure II and Chapter 8.

6. Meetings of Technical Group

The areas of interest of Technical Group were:

(i) Machine tools
(ii) Foundry forge
(iii) Metal working machinery
(iv) Engineering centres for assisting industry
(v) Manufacture of diesel engines and pumps
(vi) Tractors and auto-components
(vii) Sewing machines
(viii) Railway rolling stock manufacture.

The delegation discussed with the manufacturing units the following:

(a) Economic planning of the unit;
(b) Integration of manufacturing of components and assembly operation;
(c) Standardization and quality control;
(d) Possibilities of utilization of technologies; and
(e) Transfer of technology.

However, during the discussion Mr. B.M. Sen[26/] had with the Andean Group, apart from the above interest in the engineering sector, it was suggested that possibilities could be explored for future co-operative activities in the following broad areas considered important in respect to economic development of the Andean Group:

(i) Petro-chemical industries,
(ii) Fertilizer and chemicals,
(iii) Pharmaceuticals,
(iv) Pulp and paper,
(v) Special steel and non-ferrous metallurgy,
(vi) Agro-industries,
(vii) Leather goods,
(viii) Capital industrial machinery of special types and other items of engineering industrial establishments,
(ix) Setting up of applied research establishments.

26/ Op.cit.

6.1 21-25 October 1975 Bombay and Poona

The Group visited the following industries:[27]

1. Mahindra and Mahindra Ltd.
2. International Tractor Co.
3. Bajaj Auto Ltd.
4. Bhanat Forge Co. Ltd.
5. Kriloskan Oil Engines Ltd.
6. Kriloskan Pneumatic Co. Ltd.
7. Indian Tool Manufacturers Ltd.
8. Godrej and Boyce Mfg. Co. Pvt Ltd.
9. Sahney Kirkwood Pvt Ltd.
10. New Standard Engineering Co. Ltd.

The Group also visited the National Chemical Laboratory (NCL), Poona, a research organization of CSIR and had a detailed meeting with engineering industries.[28]

25 October 1975

Dr. Ascanio, leader of the Technical Group told the members of the Association of Indian Engineering Industries, Western Region that Andean countries offer unlimited opportunities for transfer of technology from India. Andean Development Corporation (CAF) which has been established to integrate the industrial development of the six member countries, is looking forward to obtaining technical know-how and collaborations from India in areas such as machine tools, foundry forge, metalworking machinery, manufacture of diesel engines and pumps, tractors, auto-components and such other items.

Mr. M. Bhaskare, the Deputy Chairman of AIEI told the delegation that India being a developing country, would have a much better understanding of the problems of Andean countries. The Indian industry had built up competence to measure up to the expectations of the CAF and Andean countries.

Dr. Ascanio said that industrial climate in these countries is very favourable.

27/ See annexure XVIII for details of each firm.

28/ See annexure XIX for a detailed report by AIEI.

27-28 October 1975 — Hyderabad

In Hyderabad the Group visited

1. The Regional Research Laboratory, P (a CSIR research and development organization)
2. Orgaroma (India) Pvt Ltd.
3. Bharat Heavy Electricals Ltd.[29/]
4. Praga Tools Ltd.
5. Industrial Estate.

Details about these institutions are given in the third part of the report.

29 October-1 November 1975 — Bangalore and Madras

On 29 October, the Group visited the National Aeronautical Laboratory and were received by Dr. S.R. Vellini, Director. In addition to the Laboratory activities the members were also shown round the Wind Tunnel Testing Laboratory, Bangalore.

30 October

1000 Central Machine Tool Institute (CMIT)
Tumkur Road, Bangalore 560022

Mr. Visweswaran, Director, CMIT explained the activities of the Institute. He informed that so far about 25 major designs have been sold to industries. An agreement has been signed by the Government of India and Government of Iran to set up a similar Institute in Iran and a beginning has been made. Service facilities for N.C. machines in the country are available. CMTI conducts Machine Tool Design Course for 10 weeks, and also CMTI has the nucleus for metal cutting institute. The members of the delegation showed keen interest in the activities of CMTI. As they are keen in setting up Machine Tool industry in their region, Institutes like CMTI will have to be set up. This point was also stressed by Dr. S.M. Patil, Chairman and Managing Director of HMT Ltd. in a subsequent discussion. They were shown the Design Division, Prototype Building Shop, Computer, Metrology and Library.

1200 Indian Institute of Science (IIS)
Foundry Division
Bangalore 560012

The Group visited the Mechanical Engineering Laboratory of IIS. Prof. L.S. Srinath, Head of the Laboratory brief the following:

29/ See annexure XVII on.cit.

(i) Problems referred by industry which are taken for investigation
(ii) Short-term courses in foundry technology conducted by the Institute
(iii) Preparation of students in post-graduate and doctoral degrees.

The Group was taken round the foundry shop where they took much interest.

1500 Motor Industries Co. Ltd. (MICO)
Hosur Road
Bangalore 560030 Tel.: 55701

MICO manufacture spark plugs, diesel pumps for trucks, tractors, etc. and filters. Mr. Fred-Holger Guenther, General Manager (Works), Mr. Gopinath, Public Relations Officer received the delegation and was shown the manufacturing and assembly shops. Mr. Guenther explained that their collaborator BOSCH of West Germany are already having their two subsidiaries, one in Venezuela, about 20 km. from Caracas and the other in Peru. The delegation discussed financial participation, investment climate, etc. It was indicated that they wish to increase the production in the esisting factories in the Andean region, and after their return, they would visit the existing Bosch factories.

1700 Hindustan Machine Tools Ltd. (HMT)
36, Cunningham Road
Bangalore 560052

The Delegation was received by Dr. Patil, Chairman and Managing Director, Mr. N.K. Krishan Kutty, Director (Marketing) and Mr. V.A.S. Setty, Manager (Exports). The area of specialization of HMT is manufacture of various machine tools, both metal cutting and metal forming. And also a range of machine tools, like, Centre Lathes, Milling, Drilling, Hobbing, Gear Cutting, Special Purpose Machine Tools, Presses, N.C. Lathes, etc. Dr. Patil explained in detail about the activities of HMT and they have collaboration with almost every country in Europe and USA. He stressed the importance of setting up the machine tool industry in a developing country. They are interested in interregional collaboration with Latin America, Middle East and South East Asian countries in transfer of technology. They are establishing a machine tool industry at Manila, Phillipines and turnkey jobs in Sri Lanka and South Korea. Dr. Patil illustrated that it would be cheaper to get technical know-how from India rather than USA and European countries. He also stressed that training of technical personnel, i.e. operators, etc. is very important. He expressed that HMT is not in a position to financially participate. Dr. Patil assured the delegation to help in setting up machine tool industry in ANDEAN region.

31 October 1975

Visit to HMT continued

Mr. M. Hussain, Deputy General Manager, Materials (Telephone 30131) and Mr. Bhavani Shankar, Engineer (Export) took them round the various units. This was followed by a visit to HMT Ancillary Industrial Estate.

The Group also visited HMT watch Factory in the afternoon.

1 November 1975

1000 Integral Coach Factory (ICF)
Perambur, Madras 38
Tel.: 661920

The Group was received by Mr. J. Matthan, General Manager, who took them round the shell and furnishing divisions of the factory. ICF manufactures all types of BG and MG passenger coaches, including Electric Multiple Units.

From the trend of the discussion it was noted that Chile was interested in the know-how for the manufacture of Diesel locomotives.[30]

1200 Meeting with engineering industries
Association of Indian Engineering Industries
Southern Region
Dare House Annexe,
Madras 600001
Tel.: 20404

Members of the delegation also took part in the discussion asked pointed questions to know the state of industry, tax structure, investment climate, etc., in the Andean countries. The Teohnical Group noted some questions and promised to send information.

Prof. G.S. Ramaswamy, Co-ordinating Director, CSIR Complex, Madras, also attended the meeting. This list of industries and their specialization, who participated in the meeting is enclosed.[31]

5 November 1975 Calcutta[32]

1100 M.N. Dastur and Co. (Pvt) Ltd.

1530 Bhantuja Electricals Steel Co.

The Technical Group met the press on Wednesday, 5 November 1975. The press reports were covered by popular dailies; one of the reports is placed below (Business Standard 6.11.1975).

30/ Mr. Pereira, Vice Minister of Industries, Bolivia visited Diesel Locomotive Works, Vananasi.

31/ See annexure XX.

32/ See annexure XXI for details of each firm visited by Technical Group.

Business Standard Thurs Nov 6, 1975

Andean countries keen to receive Indian technology

By A Staff Reporter

The conditions in the Andean countries are quite suitable for the application of Indian technology for the task of integrated development that the Andean Development Corporation has undertaken for its six constituent countries, Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela.

Indicating this to newsmen at Calcutta on Wednesday Dr. Jose Luis Ascanio, Deputy Director of the Corporation, who is leading a technical team now on a visit to India under the UNIDO-India technology transfer programme, stated that a note of intent has been signed between the corporation and the CSIR on November 4, 1975 at Delhi for promotion of collaboration ventures and technical co-operation projects in fields like foundry and forge equipment, metal-mechanical industries and establishment of research and development centres.

The Andean Development Corporation team which has already visited more than 25 industrial units in Bombay, Bangalore, Hyderabad, Poona, Madras and Delhi will visit a few factories in Calcutta, Durgapur, Jamshedpur and Chittaranjan before finalising some concrete proposals in Delhi. The group visited the office design and engineering offices of M. N. Dastur and Company and discussed the possibilities of assistance to the Andean countries in setting up a design and engineering organisation for the entire Andean subregion.

The Andean group countries are expected to instal about 19 million tonnes of new steel capacity by 1985. The Andean Development Corporation having an authorised capital of 400 million dollars has already financed to the tune of 150 million dollars till July 1975 various development projects for the six countries in the metal-mechanical- petro-chemical, automobile and several other fields and it proposes to extend a further aid of 350 million dollars by the end of 1976.

There is a similarity of development problems and conditions between India and the Andean countries and the former, an earlier starter, with its rich experience is in a better position among the developing countries to offer the right type of technological assistance to the latter, Dr. Ascanio said.

On the export market Bolivia has big trade in tin, Chile in copper, Colombia in coal and coffee, Ecuador in banana and oil, Peru in sugar and cotton and Venezuela in oil and iron. These countries together have a favourable balance of trade with India.

Indian technology has already made some mark in Venezuela, Chile and Colombia and Peru through the work done on various steel projects by the Dasturs since the forties. The scope of steady flow of Indian technical expertise and engineering consultancy in these countries is becoming ever wider the Andean group leader said. An India mission is expected to visit the Andean region in February next year.

6 November 1975 — National Instruments Ltd. Calcutta

7 November 1975* — Durgapur

(i) Central Mechanical Engineering Research Institute (CMERI)
(ii) DMAP Ltd (Forging Corporation)

8 November 1975* — Chittaranjan Locomotive Works

10 November 1975* — Jamshedpur

(i) National Metallurgical Laboratory
(ii) Tata Engineering and Locomotive Co. Ltd.
(iii) Indian Tube Co. Ltd.

*** See details in part III.**

11-12 November 1975 — Calcutta

1. Jessop and Co. Ltd.
2. Guest Keen Williams Ltd.
3. Development Consultants Pvt Ltd.

13 November 1975 — Association of Indian Engineering Industries (AIEI) Eastern Region, Calcutta

Mr. Om Khosla, Chairman of AIEI welcomed the Group and gave a short history of the development of industries in the eastern part of India. Mr. S.S. Varma, Industries Commissioner and Secretary Government of West Bengal was also present in the meeting.

Replying to the welcome address, Dr. Ascanio, Leader of the Technical Group apprised the members the aim and interest of the mission. He said that some of the fields of interest of the Andean countries where the scope of technology transfer is existing are metal working, petrochemicals and auto industry. The projects that are under consideration relate to electronics, paper and steel industry. Dr. Ascanio further informed that he had already handed over a detailed list indicating the requirements with the Andean countries need in different sectors of industries in the next ten years.

A press report covering the details of above meeting is placed below (Economic Times 15.11.1975).

Economic Times Saturday Nov 15, 1975

TECHNICAL KNOW-HOW FOR ANDEAN NATIONS URGED

FROM OUR CALCUTTA BUREAU

CALCUTTA, November 14. Mr. Jose Luis Ascanio, deputy director Andean Development Corporation, asked Indian entrepreneurs to aid the Andean countries to establish a wide range of basic industries.

Mr. Ascanio told members of the Association of Indian Engineering Industry (eastern region) here that his assessment, after having spent two weeks as a member of the delegation from his country was that India was in a position to help other developing nations in the field of technology for setting up a number of industries.

Speaking on the occasion, the president of AIEI, Mr. Om Khosla, said the biggest investment of Indian engineering industry is in the eastern region. The companies in this region were in a position to offer collaboration in the setting up of industries in the Andean countries—Peru, Bolivia, Ecquador, Venezuela, Columbia and Chile.

Dr. Ascanio said that the Andean countries are laying emphasis now on the development of three basic industries—metal making, chemical and automobiles. For implementing these projects, there will be need for undertaking the manufacture of items like machine tools and forgings.

An investment of $ 5,000 million is visualised in the next 10 years. He said there was also scope for Indian participation in the manufacture of diesel engines, tractors and railway rolling stock. There are also plans to set up projects in the field of electronics, paper and steel.

The Andean Development Corporation, he said, provides financial assistance to the tune of 20 per cent of project costs and the member-countries are required to raise 60 per cent of the cost. The foreign participants will have to put up at least 20 per cent of the capital outlay. Answering a question, he said that foreign equity participation can be to the tune of 49 per cent.

Mr. E. F. Costa, representing Peru, said that 70 per cent of the country's population depends on agriculture. Hydel power forms 90 per cent of power generation. There are five sugar mills and newsprint is produced from bagasse.

Mr. Oscar Morel, representing Chile, said that his country is abliged in minerals and copper is the principal export, representing 95 per cent of the country's production. New copper mines are being opened up and foreign participation is welcome. The country is planning to set up a steel plant with a capacity of 1 million tonnes a year and most of the production will be for internal consumption.

Dr. Ascanio said that Ecuador has plans to raise power production substantially and it is also planning to set up a steel mill. The country will invite global tenders for the requisite machinery for the steel mill. This country has also paper and glass plants and sugar mills.

In Bolivia, 70 per cent of the people depend on agriculture. The country has rich deposits of tin and produces gas and oil. It has six sugar mills and produces cotton and woollen fabrics.

Dr. Ascanio said that in Venezuela there are now 15 automobile assembling plants and the production is around 15 million vehicles. The Andean countries are planning to undertake the manufacture of automobiles in a phased manner.

A representative of the association of the Indian engineering industry said that Indian can offer technological help for setting up copper and aluminium plants and building coal washeries.

Mr. Sen, representing CSIR, said that UNIDO and the India has signed an agreement for the transfer of technology. The onus is on our side to provide help to the Andean countries. He was sure that something fruitful would merge as a sequel to the visit of the delegation.

Mr. Om Khosla said that India has a strong base for electrical machinery. There was good scope for collaboration in this field, he felt.

The delegates visited the Office of Development Consultants Private Ltd. whose subsidiary, Development Consultants International Ltd., is already associated in a big way in Venezuela as consultants to a billion dollar steel complex for CVG-Sidor. A team of Indian engineers is working on the project for the expansion of the integrated steel making facility.

15 November 1975

1000 Electronics Commission
IPAG Headquarters
Policy Planning and Analysis Division
C 5/18 Safdarjang Dev. Area
New Delhi - 110016

After the discussion the Technical Group requested Dr. R. Devanathan, Senior Scientific Officer, of the Commission to send a note on the Indian companies who could assist in the production and R and D of the various electronic items.

The note sent by Dr. Devanathan is enclosed.[33/]

1500 Association of Indian Engineering Industries (AIEI)
172 Jor Bagh
New Delhi - 110003
Telephone: 621555/624620/615147

The meeting was organized in the head office of AIEI. The list of industries who participated in the meeting is enclosed.[34/] The speech given by Mr. K.G. Khosla, President AIEI is also enclosed.[35/]

7. Meetings held by Mr. Rolando Pereira, Under Secretary of Industries, Ministry of Trade and Tourism, P.O. Box 1142, La Paz, Bolivia

Mr. Pereira, Vice Minister of Industries from Bolivia arrived in India on 5 November 1975. He was originally a member of the Technical Group. After consultation with Dr. Y. Nayudamma, Director-General, Council of Scientific and Industrial Research (CSIR), it was agreed that a different programme[36/] may be prepared for the visit of Mr. Pereira which may be more related to subject other than the one covered by other groups. His discussions were thus confined to technical consultancy in the railway industry, co-operation in science and technology, metallurgy and engineering, scientific instruments, tractors, heavy engineering, material handling equipment, locomotives etc.

Some of the important meetings and visits held by Mr. Pereira were as follows:

(i) Central Scientific Instruments Organization (CSIO)
Chandigarh

Interest has been shown in the production of Theodolite including stage microscope for Bolivia. Bolivia is introducing optical area and would look forward to co-operation from India.

33/ See annexure XXII.

34/ See annexure XXIII.

35/ See annexure XXIV.

36/ See annexure IV.

(ii) Punjab Tractors Ltd.
10, Sector 9-A, Chandigarh
Telephone 28475 (3 lines) Gram: SWARAJ

Fiat have been making tractors with 20 per cent indigenous parts and 60 per cent imported from Argentina. These tractors are of 25, 35 and 45 HP. and average sale price is US$15,000 (without tax). Tractor industry has been assigned to Venezuela (Massey Ferguson), Peru (Jondej) and Colombia (Fiat).

Bolivia makes trucks from 4.5 to 9.5 tonnes with General Motors and Mercedez Benz collaboration. Here Bolivia has used truck motors for tractor of 90-12 HP. The problem in Bolivia is as to how to control the price in competition with monopoly groups.

(iii) Atlas Cycle Industries[37]
Sonepat, Haryana State

(iv) Bharat Gears Ltd.[37]
Express Towers, V floor
Nariman Point, Bombay 4000021
Telephone 295472

(v) Metallurgical and Engineering Consultants (India) Ltd.[38]
Ranchi

(vi) General Manager
Diesel Locomotive Works
Varanasi, U.P.
Telephone: 221004 Gram: DIESELOCO

(vii) Rail India Technical and Economic Services Ltd.[39]
First Floor, New India House
27, Barakhamba Road
New Delhi 110001
Tel.: 42903 and 43209 Gram: RITESRAIL

(viii) Development Consultants Pvt Ltd.
Consulting Engineers
24-B, Park Street, Calcutta - 700016
Telephone: 248153 Gram: ASKDEVCONS

Mr. Pereira discussed regarding pulp and paper industry from bagasse. The company has shown interest in the project and have sent necessary information regarding their competence in this field. At the instance of Mr. Pereira, M/S Development Consultants submitted to him a note.[40]

Details about these institutions have been dealt with in part III of the report.

37/ See part III of this report.

38/ See annexure II.

39/ See annexure XXV for more details.

40/ See annexure XXVI.

8. Record note of discussions between the Delegations from Andean Development Corporation and Inter-Ministerial Committee of the Govt. of India and representatives of other public sector undertakings held on Tuesday, 4 November 1975 at 1200 hrs. in the CSIR Conference Room

The list of participants in the discussions is given in the Annexure XXVII.

Prof. Y. Nayudamma, Secretary to the Govt. of India and Director General CSIR (Chairman) welcomed the members of the delegations. He said that the meeting coincided with Dewali - the festival of lights which in India meant wealth, wisdom, health and happiness and was also a period of starting new accounts. He hoped that this may also open a new era of relations between India and the Andean countries. He was sure that the members of the Delegation had formed their views about the levels and status of technology and industry India after their visit to various research and industrial establishments in India and discussions with the President of India, Prime Minister and officials of the Govt. of India. This will also help them in identifying areas in which India and their countries could fruitfully co-operate to mutual benefit. He was glad that the Policy Group and the Technical Group have come back with very valuable suggestions. Since the Policy Group was leaving back tomorrow, this meeting had been arranged to discuss the following:

1. We might have some sort of Note of Understanding. The Note of Understanding may comprise that the Andean countries and India individually and jointly would consider co-operation/collaboration in the fields of Science, Technology and Industry. It was a general policy statement indicating the willingness and feeling that both the parties will do something.

2. We would like to find out the modalities and mechanism on the basis of which Understanding could be implemented. It could be between country to country or through CAF or through UNIDO and CAF. It could also identify the agencies/ agency in each country which shall be acting as a nodal point for any correspondence in future. Once the modalities are settled, we could identify areas and some of these could be spelt out later by the Technical Team. We could also consider priorities, country-wise, CAF wise and this list should contain what India and Andean countries could do for each other. If we agree on this procedure, follow-up action could be taken later to send a Delegation from India to the Andean countries. He was hopeful that something concrete will emerge out of this visit.

Prof. Nayudamma then invited the Leader and Members of the Andean Group to express their views.

Dr. Terry Suero (Leader of the Policy Group) thanked the Indian side for the arrangements made for their visit and said that he was very much impressed with the progress made by India.

The Leader of the Technical Group said that on the basis of their visit to various industrial units and other establishments, they have been able to broadly identify the following areas for co-operation:

(i) Foundry and forge;

(ii) Infrastructure facilities - training facilities for personnel; and

(iii) Setting up of research centres to provide help to small and medium scale industries in Andean countries.

The member from Chile said that his country was interested in co-operation with India in the fields of coal mining, coal utilization and recovery of chemicals from coal etc.

The member from Peru was interested in co-operation in the fields of foundry forge, metalworking plants, machine tools, petrochemicals, sugar technology etc.

The member from Bolivia desired co-operation in the areas of sugar, paper, rice processing, petrochemicals, spares and components through specific institutions like National Finance Corporation and the Planning Ministry of Bolivia.

Prof. Nayudamma clarified that we should work out priorities and if we could start one and if it succeeds, it could multiply.

The member from Chile clarified that his country could assist India in copper mining and extraction.

Dr. Terry Suero praised India's progress in development and particularly for building a big technical force. He also had a good word about the process of planning in India which had taken care of employment and other aspects although there were still some problems. He wanted Indian assistance in the policy planning and organizational matters.

Mr. Vinces, Director, CAF, wanted to know about India's experience in adaptation of foreign technology and organizations dealing with this aspect. He also wanted investment from India to flow in the Andean countries. He believed that the visit of the delegations is a great experience to start close co-operation.

Prof. Nayudamma said that India has gained much from its experience of dealings with multinationals, technology transfer, foreign investment etc. and India would be glad to share this experience with the Andean countries. He said that the Indian Investment Centre would be able to tell as to what could flow from India.

Prof. Nayudamma then invited the Indian colleagues to express their views.

Shri M.N. Bery, Chairman, Railway Board, described in detail the experience of Railway Board in the purchase of technology and the manner of adaptation and continuous improvement of imported technology to make it totally indigenous to suit the Indian conditions.

Prof. Nayudamma said that even for evaluating the foreign technology there was need for competence.

Dr. A. Ramachandran seconded the views of Prof. Nayudamma that for evaluating the foreign technology there was need for indigenous capability and India would assist the Andean countries in building up this capability which could be through the consultants who could judge the choice of technology, local raw materials as also financial and managerial expertise. As regards the centre for small scale industries, Dr. Ramachandran said that in India we had extension services which have been coupled with the national R and D Centres so that the small scale units could update their technology. Indian competence in the policy planning matters could also be made available to these countries. He also made a reference to the need for adaptation of imported technology to suit the local raw materials and needs.

Shri K.D. Mariwalla of NIDC said that he had detailed discussions with the Policy Group on the role which NIDC could play based on their experience of 25 years. They could work shoulder to shoulder with the people in these countries and try to strengthen the local machinery for evaluation of technologies and also help in exchange of information and data.

Mr. Gouri of UNIDO said that he was glad that it was possible to bring together the CAF and India and have this delegation to see for themselves the achievements of India. He was sure that a certain amount of co-operation would come about. The UNIDO would also make available finances to the possible extent to implement some projects.

Shri Luther of PEC said that he had detailed discussions with the Group and had made them aware of the services provided by PEC. PEC could help in setting up manufacturing units based on local raw materials and even minor equity participation. The PEC could help in export of engineering goods from India and with the co-operation of NIDC could set up plants from concept to commissioning stage. They could also help in building training facilities for the local personnel. The PEC could also help in building ancillary units. He said that some project profiles have been identified and PEC would be able to complete some others before the departure of Technical Group. He was even prepared to open a PEC office in Caracas.

Dr. Terry Suero said that CAF is co-ordinating a programme of co-operation between institutions which belong to different countries. The role of CAF was limited and what they could do was to put the Indian organizations in contact with the organizations in the Andean Group.

Shri Vajpai of Indian Investment Centre said that two delegations from India, one under the auspices of Public Sector Undertakings and the second from Engineering Export Promotion Council had already visited these countries. He said that there was need for constant exchange of information.
Dr. Nayudamma said that there was need for some information centres - maybe CAF have a small cell and we have also a small cell for the purpose.

Shri B.K. Sanyal welcomed the efforts on behalf of the Ministry of External Affairs on building co-operation between India and the Andean Group. He however pointed to the difficulties and circumstances as also the language problem. He said that these countries have worked very closely with USA and as a result of this have made excellent progress. There is, however, now a distinct change and these countries would like to assume real ownership of industries. These countries were rich in mineral and other natural resources. Their products are based on specifications of USA and other West European countries and to change those specifications is a major operation. The ISI could possibly help in this direction.

Summarizing the discussions, Dr. Nayudamma said that all of us in India enjoyed the visit of the delegations and expected that some concrete proposals of co-operation would emerge out of the visit. Some areas would be identified in which close co-operation could be established. He also hoped that there will

be some sort of a Note of Understanding before the Policy Group leaves. This Note of Understanding will serve as an instrument for further action. The visit would be a moving spirit for co-operation in the fields of science, technology and industry. As regards difficulties pointed out by Shri Sanyal, Prof. Nayudamma said that if determination to co-operate is there, these difficulties could be surmounted. He said that the delegations might have noted that like Andeans, the Indians are also large-hearted people and would like to welcome their guests. He had no doubt that something definite will come out of the visit for both the parties to oo-operate and collaborate. On our part, CSIR will be acting as the focal point.

PART III

INDIAN INDUSTRIES, RESEARCH AND DEVELOPMENT ESTABLISHMENTS AND OTHER ORGANIZATIONS AND INSTITUTIONS VISITED BY ANDEAN MISSION

In view of the interest of the members of the Andean Mission the programme was laid in such a way that they may have a spectrum of experience of India in the engineering industries. However keeping in view the possible future needs (which came true during discussion and which was also prominently highlighted in the list of areas of co-operation) viz. research and development, consultancy organizations and heavy and public sector industries, the programme of visit was made to those institutions as well. Although these programmes were of the nature of familiarization yet they aroused much interest among the group.

In order to provide some information about these institutions, this chapter has been written. Detailed information about these institutions could thus be had from them direct or by writing to the Chief Technology Utilization, Council of Scientific and Industrial Research, Rafi Marg, New Delhi 110001, India.

1. Hindustan Motors Ltd., Calcutta-1.

While Hindustan Motors continues to make the largest number of cars, its production range of motor vehicles now covers trucks buses, drive-away chassis for various commercial uses. Further diversification has brought in excavators, earth-moving equipment and heavy duty cranes. Forgings and structural work are being done by its Heavy Engineering Division.

2. Bharat Electronics Ltd.

Jalhalli - Bangalore 560013
Tel: 30521 (30 lines)
Telex: 043/244.

Bharat Electronics Ltd. started in 1956 today produces over 250 items to meet the electronic needs of defence, police, railways, television and broadcasting, aviation industry and medicines. These range

from a giant radar to a tiny transistor. Some of the significant items of products are storm warning radars, HF and VHF transreceivers, VHF pocket receivers, console tape recorder, and a host of components like receiving values, transmitting tubes, germanium and silicon semi-conductor devices.

3. Materials Handling Engineering Co.

1, Sidhpura Industrial Estate,
Masrani Lane, Kurla, Bombay 400070.

MHE a Government of India undertaking and is specialized in industrial design and fabrication of materials handling equipment, fabrication of jacketed vessels, storage tanks, tank stirrers, cyclone, etc. The manufacturing is also undertaken as per clients drawings and specifications. Some of the items of manufacture are bucket elavators, screw and vertical conveyors, slat and flight conveyors, ribbon blenders, vibraty feeder, overhead cranes monorails and chain conveyors, hoppers, impact testing machines, trolleys and handling equipment for textile industries.

4. Project and Equipment Corporation of India

Chandralok,
36 Janpath, New Delhi-110001
Tel: 46002
Gram: ESTICI

The Project and Equipment Corporation of India undertakes export of all types of railways and engineering equipment. It also undertakes turn-key projects for railways from initial survey to final operation, for all industrial process plants from feasibility reports to working operation. Manned by experts and engineers with wide experience in their specialized fields and in commercial operations. it is fully equipped to render complete engineering services to the customers.

PEC also sets up joint collaboration ventures, and undertakes turn-key projects viz.cement plants, electrical sub-stations, power projects, sugar factories, textile mills, rolling mills, oil mills, chemical and fertilizer plants, refineries engineering units for manufacture of machine tools, diesel engines, etc.

Other areas of specification is in the export of engineering equipment, precision made industrial machinery, electrical equipment, telecommunication and automobile equipment, building and construction material, castings and forging, textile machinery, railway equipment, wagons, coaches, locomotives.

It has twenty overseas offices in different parts of the world.

5. Development Consultants PVT. Ltd. (Consulting engineers).

24 B, Park Street, Calcutta 700016.

Industrial fields - Thermal power generation, nuclear power generation, light and heavy engineering projects, mining, hydro-electric plants, power, transmission and distribution, iron and steel, ferrous and non-ferrous, metallurgical projects, refineries and petroleum coal washeries, textiles, water front engineering, irrigation and flood control, warehousing, mineral beneficiation, pulp and paper, bridges, industrial structures, etc.

Staff - Technical - 350.

6. Metallurgical and Engineering Consultants (India) Ltd.

Ranchi 834002, Bihar.

Industrial fields - Engineering and consultancy services for iron and steel industry covering integrated iron and steel plants, iron ore miner, lime stone, pelletizing plants, sponge-iron plants, refractory plants and alloy and specialized steel plants, aluminium plants, design and supply of rolling mills and auxiliary equipment.

The organization has a strength of 1400 engineers and technical personnel.

7. M.N. Dastur and Co. PVT. Ltd. (Consulting engineers).

Faraday House
P-17, Mission Row Extension,
Calcutta-700013.

Industrial fields - Raw material evaluation mining and processing iron and steel, ferro-alloys, non-ferrous metals, refractories, cement and process industries, light and heavy engineering plants, fertilizers, chemicals and agro-industries, power generation and distribution, nuclear fuels industrial structures, bridges and architecture, transportation and material handling, natural resources and regional development economic studies and management services.

8. The National Industrial Development Corporation Ltd.

Chanakya Bhavan,
Vinay Marg, New Delhi-110021.

Industrial fields - Engineering industries, electronics, industries, metallurgical industries, chemical industries, aluminium, paper and pulp, forest based industries, sugar plants, textile mills, agro-based industries, mining and allied industries, urban development.

9. Water and Power Development Consultancy Services (India) Ltd.

L-18 South Extension, Part-II,
New Delhi-1100049.

Industrial consultants for - development of water power and land resources, dams, barrages, tunnels, irrigation, drainage, hydrology, geology, groundwater, hydro-electric and thermal power, and transmission, foundations, etc.

10. Hindustan Motors Limited
Earthmoving Equipment Division
Trivellore
(Facts as on 27 October 1975)

Plant

Land aquired:	230 acres
Covered area:	100,000 sq. ft. (9,900 sq. mtr.) 3 bays - each 100 ft. wide x 300 ft. long

Manufacturing facilities:	Assembly Machine shop Structural shop Tool room Apprentice training Experimental engineering Stores Inspection Laboratory Heat treatment Generator room Sub station
Power self generated:	300 KVA at 3.3 KV
Tamilnadu State Ele. Board:	Maximum 750 KVA at 11 KV
Expansion:	4500 sq. mtr. during 1976-1977 for structural processing shop.

Product

(a) R-25 rear dump 25 T payload - 305 HP - Kirloskar Cummins engine

Production started: December 1971

1971-72	1972-73	1973-74	1974-75	1975-76
3	65	53 (Incl. 7 Exp)	97 (Incl. 15 Exp)	100 (Incl. 20 Exp)

Indigenous content

At start 70 per cent

Current 80 per cent

Approx. local sale price Rs.9,26,000 (excluding taxes)

(b) 72-21 Loader - 2 cu. yd. - 114 HP - Ashok Leyland engine

Production started: February 1972

1972-73	1973-74	1974-75	1975-76
1	17	30 (Incl. 1 Exp)	56

Indigenous content

At start 58 per cent

Now 70 per cent

Approx. local sale price Rs.6,00,000/-

(c) 82-40 Crawler tractor 275 HP

Production started: January 1975

1974-75	1975-76
3	20

Indigenous content 40 per cent

Approx. local sale price Rs.13,30,000/-.

Materials

No. of suppliers

Tamil Nadu 81

Other state 53 No. of parts 1522

Approx. value of bought outs Rs3.3 crores (1974-75).

Exports

1973-74 7 dumpers to New Zealand

1974-75 12 dumpers to United Kingdom
3 dumpers to New Zealand
1 loader to Kenya

1975-76 1 crawler to Kenya

Components exported to General Motors Scotland Rs.2,00,000.00.

People

Employed	1971-72	1974-75	1975-76
Workmen	26	215	154
Staff	57	230	256
Apprentices	-	10	6
Engineers	-	55	55
Engineers trained at General Motors	-	15	20

11. Bharat Gears Ltd.

Express Towers, 5th Floor,
Nariman Point, Bombay 400021

Tel: 295472
Cable: GEARMAKERS

Bharat Gears are the manufacturers of precision automobile gears in India with an installed capacity of 1,250 tonnes per annum. The firm manufactures spur, helical, worm, spiral, bevel and hypoid gears.

12. Gedore Tools (India) Pit. Ltd.

151 Golf Links, New Delhi
Tel: 618265

They are specializing in forged hand tools with an installed capacity of 6,320 tonnes per annum.

13. Bhartija Electric Steel Co. Ltd.

Bharat Yuvan Bharam,
Jai Singh Road, New Delhi
Tel: 3..715

They are engaged in foundry special castings with a capacity of 100 tons per month.

14. Escorts Ltd.

18/4 Mathura Road,
Faridbad, Haryana State

The firm is engaged in the manufacture of farm equipment, motor cycles, scooters, cranes, auto-ancillary, etc. The company produces 35 HP tractors.

15. Atlas Cycle Industries Ltd.

Sonepat, Haryana State

They are producing bicycles with a target capacity of 10,000 numbers. Their per-day production is 2,000 cycles (1975).

16. Punjab Tractors Ltd.

10, Sector 9A,
Chandigarh
Tel: 28475 (3 lines)
Gram: ?

The firm established commercial production in 1974 with a production of 200 tractors a month. The firm owns 600 works and 110 technical staff. Total capital investment is Rs.37 crores. (R 370 millions).

17. The Indian Tool Manufacturers Ltd. (ITM)

101 Sion Road, Sion,
Bombay 400022

The Indian Tool Manufacturers offer a comprehensive range of precision tools, viz. dagger saacke, gear hobs and shaper cutters, dagalloy carbide tips, tools and indexable inserts, dagger twist drills, seamers, cutters, taps, tool kits and micrometers, etc.

18. Indian Standards Institution (ISI)

Manak Bhavan,
9, Bahadur Shah Zafar Marg,
New Delhi - 110001

Tel: 270131 (20 lines)
Gram: MANAKSANSTHA

The Indian Standards Institution was established in the year 1947 and its objectives include preparation of standards relating to products, commodities, materials and processes and the promotion of their general adoption on national and international level. Promotion of standardization, quality control, registration of standardization makes applicable to products, commodities, etc.

To help the developing countries in overcoming the shortage of experienced standards engineers, the Institution provides facilities for training their technical personnel in principles, procedures, methodology and organization of standardization.

19. Larsen and Toubro Ltd.

Ballard Estate
P.O. Box 278
Bombay 400038

Tel: 268181
Gram: LARSENBRO

Larsen and Toubro is a multi-product company. The product range handled by the company are:

(i) Earthmoving, agricultural and material handling equipment,
(ii) Petroleum and drilling equipment,
(iii) Pumps,
(iv) Cement and chemical plants,
(v) Paper and pulp,
(vi) Steel plant,

(vii) Food processing,
(viii) Switchgear,
(ix) Electronic controls,
(x) Electric furnace,
(xi) Brown Boveri, instruments, electric valves and machinery.

Its principal activities are the design and manufacture of industrial plants and machinery, etc.

20. National Institute of Foundry and Forge Technology

P.O. Hatia, Ranchi - 834003
Tel: 8357/0308
Telegram: NIFFT

It is a training, research and development institute for foundry and forge technology.

21. Small Industry Extension Training Institute, Hyderabad

SIET
Yousufguda,
Hyderabad, 45

It is a Government of India Society and was established at Hyderabad in 1962 to assist in the promotion and modernization of small industry by offering training, research and consultancy services in the three inter-related fields of small industry development, management and extension.

Each year more than 25 regular programmes are organized at the institute covering areas in development, documentation, extension and management. The courses offered include rural industrialization, small industry development and promotion, feasibility survey and analysis, information and communication for development, information storage and retrieval, industrial extension, entrepreneurial motivation, industrial management, production planning and control, marketing, etc.

22. Indian Institute of Technology, Madras

I.I.T. P.O.,
Madras, 36

This is one of the outstanding higher educational institutes in the field of technology. The education system is German based giving emphasis on empirical knowledge. First year students are acquainted with practical work in many workshops and laboratories enabling them to gain early appreciation and the 'Fuel' for hard work in practical situations.

23. Electronic Corporation of India Limited, Hyderabad

Cherpalli,
Hyderabad-240

Formed in 1967, it is a Government owned electronic industrial organization and belongs to the Department of Atomic Energy. It produces on commercial scales a large variety of electronic components and equipments utilizing mostly indigenous raw materials and indigenous know-how. The items of production include control panels, electronic components like resistors, capacitors, transistors, nuclear detectors, counters and oscilloscopes (operatable up to 59 MH). It is also engaged in the production of digital counters and T.V. receivers.

24. Kirloskar Oil Engines Ltd., Poona

11, Koregoan Road
Poona-411001

It produces marine engines and water pumping engines in joint venture with Messrs. Cummins Engine Co., Inc., mainly for agricultural and farm utility.

25. Hindustan Machine Tools Ltd., Bangalore

HMT P.O.,
Bangalore, 31

The Institute is engaged in the production of watches, printing machines, tractors, lathes, heavy machineries and tools etc. The factory has its own design facilities and equipment, drawing rooms and laboratories. It is fully national operated works on a collaboration basis with Germany, France USA etc. with efficies in Australia, Luxembourgh etc. Each of its factories has its own R and D, besides a central R and D in Bangalore.

26. Tata Iron Steel Company, Jamshedpur

The firm is engaged in steel production, the capacity being 2 million tonnes steel per annum. It produces steel bars and sheets from iron ore. The process is continuously being modernized and extended. It employs 30,000 people.

27. The Indian Tube Co. Ltd., Jamshedpur

The company is engaged in the production of various types of pipes - square tubes, welded pipes, seamless pipes etc., annual capacity being 250,000 tonnes. It employs 4,000 people. Both the steel and pipe factories acquired their technologies through collaboration with Germany, in case of pipes - United Kingdom.

28. Orgarama Industries, Hyderabad

Its know-how and technology was developed in RRL, Hyderabad.

This plant produces chlorcompounds of toluene, benzylchloride, capacity is Ca 350 tonnes per annum. The plant consists of glass colourness and domestically made vessels, apparatus and linings.

The products are marketed as intermediate for the production of chemicals.

CSIR and its laboratories

29. Council of Scientific and Industrial Research, New Delhi

Rafi Marg,
New Delhi, 110001

The Council of Scientific and Industrial Research (CSIR) constituted in 1942 by a resolution of the then Central Legislative Assembly, is an autonomous body registered under the Registration of Sooieties Act XXI of 1860.

The functions assigned to the Council are:

1. Promotion, guidance and co-ordination of scientific and industrial research in India including the institution and financing of specific researches;

2. Establishment of development and assistance to special institutions or departments of existing institutions for scientific study of problems affecting particular industries and trades;

3. Establishment and award of research studentships and fellowships;

4. Utilization of the results of the researches conducted under the auspices of the Council towards the development of industries in country;

5. Establishment, maintenance and management of laboratories, workshops, institutes and organizations to further scientific and industrial research and to utilise and exploit for purposes of experiment or otherwise any discovery or invention likely to be of use to Indian industries;

6. Collection and dissemination of information in regard not only to research but also to industrial matters generally;

7. Publication of scientific papers and journals; and

8. Any other activity or activities to promote generally the objects of the resolution. The Department of Science and Technology in the Cabinet Secretariat provides the administrative link between the Government of India and the Society.

Society

The Society of the Council of Scientific and Industrial Research consists of the following members: (1) the Prime Minister of India as the ex-officio President of the Society; (2) the Minister-in-Charge of the Portfolio under which the Council of Scientific and Industrial Research is included as the ex-officio Vice-President of the Society; (3) the members of the Governing Body; and (4) any other person or persons appointed by the Government of India.

Research establishments

At present there are 30 research establishments which include national laboratories, institutes, organizations and regional laboratories. These establishments with 73 field stations attached some of them are distributed all over the country. Some of the research establishments like the National Physical Laboratory, New Delhi and the National Chemical Laboratory, Poona, are engaged on research activities which are basic to industrial advancement. Other laboratories deal with the nation's general needs with regard to food, fuel, buildings and roads. Some are concerned with problems of interest to specific industries like electronics, glass and ceramics,

leather, minerals and metals, marine chemicals, drugs, scientific instruments, etc. There are establishments concerned with research in mechanical engineering, aeronautical engineering, public health engineering, electrochemistry, geophysics, oceanography, experimental medicine and toxicology. The regional laboratories are concerned with problems of industrial development in their respective geographical areas.

Research associations

The Council has taken active interest in the formation of research associations of industries. It renders assistance to industries which are desirous of forming research associations, by way of technical advice, preparing plans and procuring materials and experts wherever necessary. The Council provides financial assistance towards both capital and recurring expenditure. On the recommendation of CSIR, the Government of India have exempted funds spent on research from the computation of profile for income tax and excess profit tax; certain categories of research equipment are also exempted from impert duty.

There are at present eleven research associations functioning under the auspices of CSIR.

30. Central Leather Research Institute, Madras

Adyar
Madras, 600 030

A national laboratory under CSIR, is engaged in the research activities covering wide range of leather industries. It is not only concerned with the leather manufacturing but also in developing chemicals for the leather processing, economic aspects of the leather, leather industry and design, etc. Leather tanning studies, demonstration machineries, development of emulsifiers and various chemicals, use of bones, hairs, intestines etc. are the main field of activities.

31. National Chemical Laboratory, Poona

N.C.L.
Poona, 8

The CSIR laboratory is engaged in the R and D work in the field of physical, inorganic and organic synthesis, polymer chemistry, bio-chemistry, chemical engineering and process development. It also houses the national collection of industrial micro-organizations.

32. Regional Research Laboratory, Hyderabad

Regional Research Laboratory
Hyderabad, 9

Main function of this laboratory under CSIR is to study the possible utilization of agricultural and other raw materials and resources available in the region. RRL carries out research and development work for establishing new industries, and also undertakes pilot plant and sponsored work to supply process know-how, project and feasibility reports, consultancy and design services to industries. It renders assistance and advice to various Government Departments on scientific matters. It organizes specialized courses in chemical, physical, biological sciences, etc. Basic research is also carried out. It has groups for research management, documentation, liaison, co-ordination, science policy and planning.

33. National Metallurgical Laboratory (CSIR), Jamshedpur

Burma Mines,
Jamshedpur-831007

Researches are carried out on utilization of low quality raw materials through beneficiation e.g., production process of sponge-iron, manganese beneficiation processing etc. This has been developed to pilot plant scale. Investigations on copper substitutes have also been carried out. The laboratory also provides advisory consultancy services on problems in the selection of production processes, identification of appropriate machineries and equipments, etc.

34. The Central Scientific Instruments Organization, Chandigarh

Sector 39,
Chandigarh-20

It is a national laboratory under CSIR. The function of CSIO is to promote and develop indigenous manufacture of scientific instruments for teaching, research, industry and essential services. It is also engaged in transfer of technology to local industries.

It conducts research on design and development of instruments, provides service for their repair and offers consultancy service on technical problems. On the job training is also accorded to technical personnel

sponsored by Government institutes. Sphere of activities of the institute being - applied physics, electro-mechanical, electro-chemical, electronics, mechanical, medical, metallurgy, optics and photo-reproduction.

35. CSIR Complex, Madras

Adyar
Madras, 20

It consists of a vast research complex in which seven institutes representing seven disciplines are located, having and sharing joint services. This is a bold experiment on the multi-disciplinary approach between such disciplines as electro-chemistry, structural engineering, environmental engineering, mechanical engineering, instrumentation etc.

36. Mechanical Engineering Research and Development Organization, CSIR, Madras

MERADO,
Adyar,
Madras, 20

It is one of the extension centres of CMERI, Durgapur. The main aim of MERADO Centre is to assist the industries in respective regions in their day to day problems of production, quality control and design development. They also serve as links between the industries in these areas and the parent laboratories.

Annexure I

A NOTE ON UNDERSTANDING BETWEEN THE GOVERNMENT OF INDIA AND UNIDO CONCERNING THE PROGRAMME OF CO-OPERATION IN INDUSTRIAL TECHNOLOGY

Following the consultations between the Government of India and UNIDO it has been agreed to establish a programme of co-operation in industrial technology which will bear the name of the 25th Anniversary of Indian Independence. In this connexion, the plans and programmes undertaken by the various Government agencies as well as the work of UNIDO were noted. It was agreed that UNIDO could make a useful contribution to these plans and programmes.

The Objective of the programme of co-operation is to develop and improve the industrial technological capability in India and to make available to the extent possible Indian industrial and technical experience to other developing countries.

It is agreed that there will be mutual consultations and continuous dialogue between the Government of India and UNIDO on matters of common interest and on problems in specific areas to be mutually agreed upon. Such consultations and dialogue, it is hoped, will lead to an annual event which may take the form of a group discussion, seminar, symposium, etc. Some of the areas suggested are:

(a) Technological planning;
(b) Export of manufactured goods and services; and
(c) Small and medium-industries.

There may be other areas which could be selected by mutual consultation. It was felt necessary that there should be a follow-up of the results arising out of the Seminar on Technology Transfer held in New Delhi on December 11-13, 1972.

In order to facilitate continuous consultations and evolve programmes of action it was agreed to indicate focal points both on the side of the Government of India and the UNIDO. Within this framework informal groups could be constituted to discuss and review on a continuing basis the selected fields which may result in the organization of a seminar or a meeting in January 1974.

Such joint consultations may help to enhance the value and co-operation not only of UNIDO's Technical Assistance Programmes in India financed by UNDP but also of other multilateral and bilateral arrangements. This may also lead to complementary programmes where India could co-operate with other developing countries under UNIDO's auspices.

The programme of co-operation envisaged in this note will be subject to further development and/or modifications by mutual consent, on the basis of experience gained in the course of implementation over the years.

(Signed)
Dr. Y. Nayudamma
Secretary to the Government of India
and Director General, Council of
Scientific & Industrial Research,
Rafi Marg, New Delhi.1

(Signed)
Dr. I.H. Abdel Rahman
Executive Director
United Nations Industrial
Development Organization

December 12, 1972

Annexure II

NOTE OF UNDERSTANDING
BETWEEN ANDEAN DEVELOPMENT CORPORATION (CAF)
UNIDO AND THE GOVERNMENT OF INDIA (CSIR)

Considering the importance of economic, industrial and technical co-operation among the developing countries and for sharing of experience in technical and industrial development for mutual benefit under Government of India-UNIDO agreement, a visit of a Mission consisting of senior personnel at policy and technical level from Andean Development Corporation and the Andean Group of Countries to India was organized from 18 October to 19 November 1975.

The Mission was received by the President and the Prime Minister of the Republic of India, as well as by the Minister of Finance and the Deputy Chairman, Planning Commission and Vice-President, CSIR.

The Mission visited various public and private sector industries and held discussions with various organizations, institutions and individuals. The details of the visit and discussions will be subject of a separate detailed report elaborating on possible areas of co-operation.

The Mission's visit and their discussions with senior representatives of the Government, industry and professional organizations in India have clearly demonstrated that effective co-operation between the countries concerned would be to their mutual benefit and greatly enhance their industrial capability and development. The current consultations should be considered only as the initial step and they should be pursued and further intensified with UNIDO playing a catalytic role.

It is considered necessary to establish means and mechanisms for co-ordination and co-operation which should be as simple and practical as possible. The CAF secretariat on the Andean side and the CSIR on behalf of the Indian Government will be focal the point is of co-operation. It is further suggested that each of the Andean countries interested in their co-operation programme, will similarly designate a focal point. Each organization will designate, through exchange of letters - with copy to UNIDO, the names of

senior officials who will deal with matters of such co-operation. UNIDO may provide the necessary resources within the framework of its approved programme and budget for promoting such co-operation.

A detailed report of the Mission will indicate observations, suggestions and potential areas of co-operation. The report will be circulated to all the concerned countries and Indian organizations involved by the end of 1975.

The areas of further consultation and co-operation as far as ascertained in the preliminary discussions are, in general, as follows:

1. Policy, planning and organization in regard to technology generation and transfer and utilization and related economic, industrial and social development.
2. Feasibility studies and consultancy services.
3. Exchange of information and expertise in regard to scientific, technological and industrial development.
4. Training of technical personnel from Andean group of countries in selected areas in India.
5. Standardization and quality control.
6. Setting up of industrial research centres, technical training centres, industrial estates and ancillary units.
7. Co-operation in setting up of industries, such as metal-working industry - foundry forge, machine tools, automotive components, railway locomotives and rolling stock; sugar, paper and paper pulp, electronics, petrochemicals, etc.
8. Supplementary list will follow on the completion of the visit of the Technical Group.

It is suggested that a concrete programme be drawn by February 1976 and a review of the Co-operative Programme be made in February 1977.

Modalities and implementation of the joint CAF/Andean Group of Countries and India Programme on the areas of co-operation indicated above are subject to the approval of the higher authorities involved.

Done in New Delhi on 4 November 1975.

(Signed)
Dr. Terry Suero
Vice-President of
Programme CAF

(Signed)
Dr. Abd-El Rahman Khane
Executive Director,
United Nations Industrial
Development Organization,
Vienna

(Signed)
Dr. Y. Nayudamma
Director-General,
Council of Scientific &
Industrial Research and
Secretary to the
Government of India

Annexure III

Focal points

Dr. Oscar Espinoza Presidente
Corporacion Financiera de Desarrollo, COFIDE
Av. Garcilazo de la Vega
1456, Lima, PERU, SOUTH AMERICA

Dr. Alberto Quevedo Gerente
Comision de Valores - Corporacion
Financiera Nacional
Rosles 731 Casilla 163
Quito, ECUADOR, SOUTH AMERICA

Vice Presidente Cnel. Danús
Corporacion de Fomento de la Produccion, CORFO
Ramon Meto 920
Santiago de Chile, CHILE, SOUTH AMERICA

Lic. Hector Ormachea
Director Ejecutivo Instituto
Nacional de Financiamiento, INDEF
La Paz, BOLIVIA, SOUTH AMERICA

Presidente Instituto de Comercio Exterior
Centrol Comercial
Los Cedros, Av. Libertador
Caracas, VENEZUELA, SOUTH AMERICA

Presidente Instituto de Financiamiento Industrial (IFI)
Bogota, COLOMBIA, SOUTH AMERICA

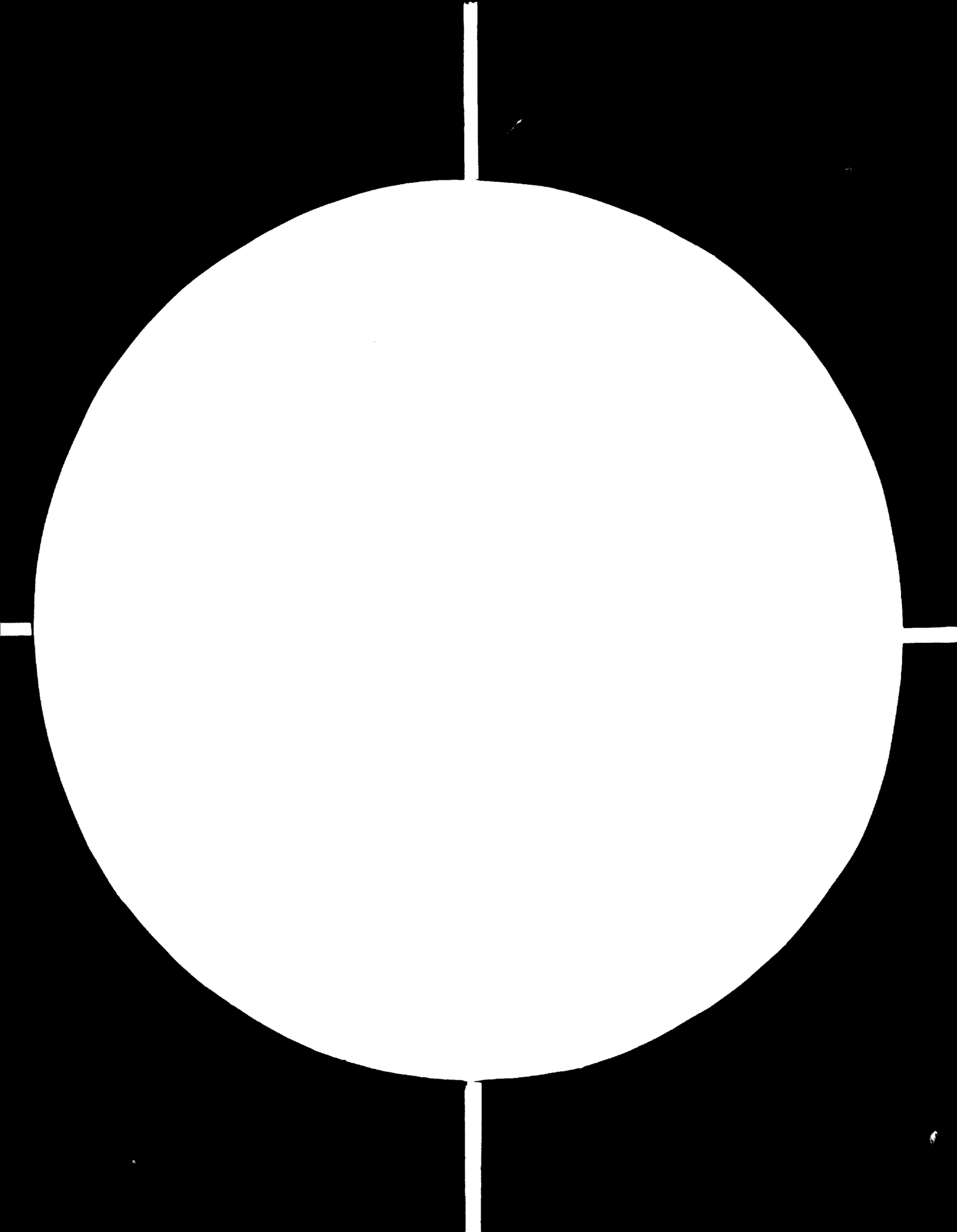
Annexure IV

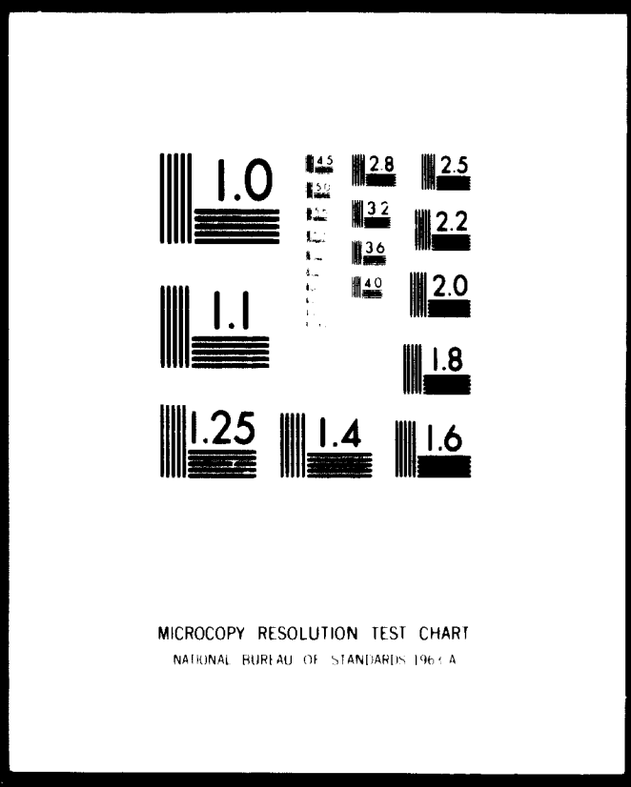
A. Final Products Allotted

Specification No. (1)	Product (2)	Country (3)
84.06.02.00	Engines for vessels, of internal combustion (diesel and semi-diesel) up to 40 HP	Colombia
84.06.02.00	Engines for vessels, of internal combustion (diesel and semi-diesel) of more than 40 HP, with specifications corresponding to the motors of subregional production	Those favoured with the allotment of the respective products
84.06.03.00	Engines for vessels, of explosion, up to 5 HP	Bolivia
84.06.03.00	Engines for vessels, of explosion, of more than 5 to 10 HP	Bolivia-Colombia
84.06.03.00	Engines for vessels, of explosion, of more than 10 to 30 HP	Colombia
84.06.03.00	Engines for vessels, of explosion, of over 30 HP, with specifications corresponding to the motors of subregional production	Those favoured with the allotment of the respective products
84.06.07.00	Stationary engines, of internal combustion (diesel & semi-diesel), up to 40 HP	Colombia
84.06.07.00	Engines stationary, of internal combustion (diesel & semi-diesel), of over 40 HP, with specifications corresponding to the motors of subregional production	Those favoured with the allotment of the respective products
84.06.08.00	Stationary engines, of explosion, up to 5 HP	Bolivia
84.06.08.00	Stationary engines, of explosion, of more than 5 to 10 HP	Bolivia-Colombia
84.06.08.00	Stationary engines, of explosion, of more than 10 to 30 HP	Colombia
84.06.08.00	Stationary engines, of explosion, of more than 30 HP, with the specifications corresponding to the motors of subregional production	Those favoured with the allotment of respective products

G-331

77.09.23





We regret that some of the pages in the microfiche copy of this report may not be up to the proper legibility standards, even though the best possible copy was used for preparing the master fiche

1	2	3
84.09.00.00	Steamrollers with mechanical propulsion	Peru
84.22.04.01	Self-propelled cranes (retroexcavators)	Venezuela
84.23.11.00	Loading frontal shovels	Chile-Peru
84.23.11.00	Bulldozers and angledozers	Colombia
84.23.11.00	Bulldozers	Venezuela
84.23.11.00	Rest of the machinery for excavation, levelling & similar jobs	Colombia
84.01.02.00	Wheel tractors	Colombia-Peru-Venezuela
87.01.03.00	Caterpillar tractors	Colombia
87.04.89.00	Chassis and motors for wheel tractors	Colombia-Peru-Venezuela
87.04.89.00	Chassis and motors for caterpillar tractors	Colombia
87.07.01.00	Lift motor trucks & traction motor trucks	Bolivia
87.09.00.00	Motor cycles and velocipedes with auxiliary motor; sidecars	Colombia-Peru

B. Vehicles allotted

1	2	3
	I.Category A-1 comprises vehicles with motors of 1200 c.c.	Colombia-Chile
87.02.01.00	Motor vehicles for transporting persons or for both (passengers and goods) with a maximum of 9 seats including the driver's	
87.02.02.00	Motor vehicles for transporting persons, with ten or more seats including the driver's	
87.02.03.00	Ambulance, prison and mortuary vans	
87.02.04.00	Motor vehicles for transporting goods	
87.02.05.00	Cabin chassis	
87.04.01.00	Chassis and motors for vehicles at sub-items 87.02.01 & 87.02.03	
87.04.89.00	Chassis and motors for vehicles at sub-items 87.02.02, 87.02.04 and 87.02.05 and item 87.03	
	II.Category A-2 comprises vehicles with motors from more than 1200 to 1500 cc	Ecuador-Chile
87.02.01.00	Motor vehicles for transport of persons or both (passengers and goods) with a maximum of 9 seats including the driver's	
87.02.02.00	Motor vehicles for transport of persons with ten or more seats including the driver's	
87.02.03.00	Ambulance, prison and mortuary vans	
87.02.04.00	Motor vehicles for transporting goods	
87.02.05.00	Cabin chassis	
87.04.01.00	Chassis and motors for vehicles at sub-items 87.02.01 and 87.02.03	
87.04.89.00	Chassis and motors for vehicles at sub-items 87.02.02, 87.02.04 and 87.02.05 and at item 87.03	
	III.Category A-3 comprises vehicles and motors with more than 1500 to 2000 cc	Colombia-Peru-Venezuela
87.02.01.01	Motor vehicles for transport of persons or both (passengers and goods) with a maximum of 9 seats, including the driver's	Peru will be able to produce two basic models in this category

1	2	3
87.02.02.00	Motor vehicles for transport of persons with 10 or more seats including the dirver's	
87.02.03.00	Ambulance, prison and mortuary vans	
87.02.04.00	Motor vehicles for goods transport	
87.02.05.00	Cabin chassis	
87.04.01.00	Chassis and motors for vehicles at sub-items 87.02.01 and 87.02.03	
87.04.89.00	Chassis and motors for vehicles at sub-items 87.02.02, 87.02.04 and 87.02.05 and item 87.03	
	IV.Category A-4 comprises vehicles with motors of more than 2000 cc	Venezuela
87.02.01.00	Motor vehicles for transporting persons or both (passengers and goods) with a maximum of 9 seats including the driver's	Venezuela will be able to manufacture two basic models in this category
87.02.02.00	Motor vehicles for transporting persons with ten & more seats including the driver's	
87.02.03.00	Ambulance, prison and mortuary vans	
87.02.04.00	Motor vehicles for goods transport	
87.02.05.00	Cabin chassis	
87.04.01.00	Chassis and motors for vehicles at sub-items 87.02.01 and 87.02.03	
87.04.89.00	Chassis and motors for vehicles at sub-items 87.02.02, 87.02.04 and 87.02.05 and at item 87.03	
	V.Category B-1 comprising vehicles with a gross vehicular weight of up to 4500 kgs	Chile-Ecuador
87.02.01.00	Motor vehicles for transporting persons or both (passengers and goods) with a maximum of 9 seats including the driver's	
87.02.02.00	Motor vehicles for transporting persons with ten or more seats including the driver's	
87.02.03.00	Ambulance, prison and mortuary vans	
87.02.04.00	Motor vehicles for goods transport	

1	2	3
87.02.05.00	Cabin chassis	
87.04.01.00	Chassis and motors for vehicles at sub-items 87.02.01 and 87.02.03	
87.04.89.00	Chassis and motors for vehicles at sub-items 87.02.02, 87.02.04 and 87.02.05 and at item 87.03	
	VI.Category B-2 comprising vehicles with a gross vehicular weight from more than 4500 to 9500 kgs and road tractors corresponding to these derived from the basic models in this category	Bolivia
87.01.01.00	Road tractors	Bolivia will be able to manufacture two basic models of this category
87.02.01.00	Motor vehicles for transport of persons or both (passengers and goods) with a maximum of 9 seats including the driver's	
87.02.02.00	Motor vehicles for transporting persons with ten or more seats including the driver's	
87.02.03.00	Ambulance, prison and mortuary vans	
87.02.04.00	Motor vehicles for goods transport	
87.02.05.00	Cabin chassis	
87.04.01.00	Chassis and motors for vehicles at sub-items 87.02.01 and 87.02.03	
87.04.89.00	Chassis for vehicles at sub-items 87.02.02, 87.02.04 and 87.02.05 and at item 87.03	
	VII.Category B-3 comprising the vehicles with a gross vehicular weight of more than 9500 kgs and road tractors corresponding to those derived from the basic models in this category	Colombia: two basic models Chile: two basic models Peru: three basic models
87.01.01.00	Road tractors	
87.02.01.00	Motor vehicles for transporting persons or both (passengers and goods) with a maximum of 9 seats including the driver's	Venezuela: two basic models
87.02.02.00	Motor vehicles for transporting persons with ten or more seats including the driver's	
87.02.03.00	Ambulance, prison and mortuary vans	

1	2	3
87.02.04.00	Motor vehicles for goods transport	
87.02.05.00	Cabin chassis	
87.04.01.00	Chassis and motors for vehicles at sub-items 87.02.01 and 87.02.03	
87.04.89.00	Chassis for vehicles at sub-items 87.02.02, 87.02.04 and 87.02.05 and item 87.83	
	VIII.Category C comprising vehicles with a four-wheel traction system with a gross vehicular weight below 2500 kg	Venezuela Colombia
87.02.01.00	Jeeps for all terrains for transporting persons or both (passengers and goods) with a maximum of 9 seats including the driver's	
87.02.02.00	Motor vehicles for transporting persons with ten or more seats including the driver's	
87.02.03.00	Ambulance, prison and mortuary vans	
87.02.04.00	Motor vehicles for goods transport	
87.02.05.00	Cabin chassis	
87.04.01.00	Chassis and motors for vehicles at sub-items 87.02.01 and 87.02.03	
87.04.89.00	Chassis and motors for vehicles at sub-items 87.02.02, 87.02.04 and 87.02.05 and at item 87.03	

With a view to achieving maximum efficiency in truck production as per category B3, Colombia, Chile, Peru and Venezuela have agreed to reduce to the minimum possible the marks (the makes) of the basic models mentioned, which have been allotted to them and for this purpose they will observe agreements on co-production or complementing, on final products and on components.

The four countries mentioned above will promote, with the co-operation of the Group, the arrangement of agreements on co-production or complementing with Bolivia and Ecuador as regards the components required by these two countries as a condition for national manufacture for the production of the models in category B3.

The member countries have agreed to exchange information that will enable them to change the terms of negotiation and contract as laid down by Article 48 of resolution 24.

METAL WORKING UNITS THAT CAN BE ALLOTTED
IN TERMS OF THE SPECIFICATION

Specification 1	Product 2
	1.1 Sprayers
84.21.01.01	Motorized sprayers and dusters including those with auto-propulsion
	1.2 Agricultural machinery
84.24.02.00	Machines, devices and implements used for sewing and tilling
	1.3 Machinery for pastures
84.25.01.00	Mowers
84.25.01.00	Binding sweep rakes and baling sweep rakes
84.25.03.00	Roughage balers and straw baling presses
84.25.03.00	Self-propelled turf cutters
84.25.80.00	Parts and components for mowers, binding sweep rakes and baling sweep rakes
84.25.80.00	Parts and components for roughage balers and straw binding presses and for turf cutters
	1.4 Combine harvesters
84.25.01.00	Harvesting machinery (combine harvesters and the like) including harvester-threshers and other combine harvesters with the exception of mowers, binding sweep rakes and baling sweep rakes
84.25.02.00	Threshers and shellers
84.36.02.00	Cotton gins
84.25.90.00	Parts and components for machines at item 84.25 with the exception of parts and components for mowers, binding sweep rakes, baling sweep rakes, roughage balers and straw baling presses and turf cutters
84.36.90.00	Parts and components for cotton gins

	2.1 40 HP (or above) compressors
84.11.02.00	Compressors, motor compressors and turbo-compressors, excepting those for refrigeration, of 40 HP or above
84.11.90.00	Parts and components for compressors, motor compressors and turbo-compressors, excepting those for refrigeration, of 40 HP or above
	2.2 Pneumatic tools
84.49.01.02	Pneumatic tools for putting and removing screws, bolts and nuts
84.49.90.00	Parts and components for pneumatic tools for putting and removing screws, bolts and nuts
	3.1 Machines for filling, sealing etc.
84.19.01.00	Machines and appliances for cleaning or drying bottles and other containers
84.19.02.00	Machines and appliances for filling, sealing, labelling or capsuling bottles, boxes, bags and other containers, for gasifying beverages
	3.2 Packing, canning and baling machines
84.19.03.99	Machines and appliances for packing, canning or baling goods excepting those for cellophane packing of cigarettes
	4. Machinery for ceramic industry
84.56.03.00	Machines and appliances for mixing and molding, special for ceramics industry
84.56.04.00	Machines and appliances for agglomerating, shaping or molding ceramic pastes
	5. Lifting machines, hoisting tackle, winches and capstans
84.22.01.00	Hoisting tackles, winches and capstans, manually operated
84.22.01.00	Other hoisting tackles, winches and capstans
84.22.91.00	Parts and components for hoisting tackles, winches and capstans

	6. Machinery for mill industry
84.29.02.00	Machinery for milling or grinding grain
84.29.90.00	Parts and components for machines for milling or grinding grain
	7. Machinery for dairy industry
84.15.01.01	Cream separators
84.26.01.00	Milking machines
84.26.89.00	Other machines and dairy appliances
84.26.90.00	Parts and components for milking machines and other dairy machines and appliances
	8.1 Generators and motors
85.01.01.00	Dynamos
85.01.02.00	Alternators
85.01.03.00	Generator units
85.01.04.00	DC motors of more than 10 HP
85.01.05.99	Single-phase motors of more than 10 HP
85.01.06.11	Multiphase motors above 10 HP and up to 20 HP
85.01.06.15	Multiphase motors above 20 HP and up to 100 HP
85.01.06.99	Other multiphase motors
85.01.07.00	Rotary converters
	Note: Motor speed variators are excluded from this unit that can be allotted
	8.2 Rectifiers
85.01.98.00	Static converters
	8.3 Transformers
85.01.10.00	Other transformers, of more than 10,000 kva
85.01.11.99	Reactance and self-induction coils for working voltages above 260 volts and for nominal currents above 30 amp
85.02.01.00	Electromagnets

85.02.89.00	Disks, mandrils and other similar magnetic or electro-magnetic attachment devices; couplings, clutches, gearshifts and electromagnetic brakes; electromagnetic heads for hoisting machines
85.02.90.00	Parts and components for elements and devices at item 85.02
90.28.04.00	Automatic voltage regulators for working voltages above 260 volts and for nominal currents above 30 amp
	9.1 Machinery for bakery and cocoa industries
84.30.01.00	Machines and appliances for baking, pastry and biscuit industries
84.30.02.00	Machines and appliances for food dough industry
84.30.03.00	Machines and appliances for confectionary industry
84.30.04.00	Machines and appliances for manufacturing cocoa and chocolate
	9.2 Machinery for oil and soap industry
84.59.11.00	Machines, appliances and mechanical devices for oil, soap and fat industries
	10. Foundry equipment
84.56.01.00	Screening and sifting devices for foundry
84.56.08.00	Sand mixers for foundry
84.56.04.00	Mold shapers for foundry
	11. Shears, clasping knives etc.
82.01.02.04	Pruning or trimming shears
82.03.04.00	Shears for sheet metal cutting
82.04.07.00	Implements for masons, founders, cementers, plaster makers, painters, such as trowels, palettes, polishers, erasers etc.
82.04.08.00	Special tools for carpentry and cabinet work, such as brush, jack plane, chisels etc.
82.04.09.00	Special tools for jewellers and watch makers

82.04.10.00	Tools for boring, drilling, threading and making diestocks, such as bitstocks, drills, diestocks etc.
82.04.89.00	Other implements and hand tools
82.09.01.01	Folding knives for pruning and grafting
82.09.01.00	Other pen knives and folding knives
82.10.09.00	Other blades for knives at item 82.09 except blades for table knives
82.12.00.00	Shears and their blades
82.13.01.01	Pruning shears
82.13.01.04	Tools for manicure, chiropody and the like
	12.1 Drills, drill bits, reamers etc.
82.05.02.00	Drawplates for wiredrawing and metal extrusion
82.03.04.00	Drills, drill bits and reamers
82.05.09.00	Other tools interchangeable with machine tools and with hand tools except threading tools
	12.2 Threading tools
82.05.89.00	Tools for threading
	12.3 Sintered plates, rods etc.
82.08.89.00	Other plates, rods, heads and similar metal carbide objects except those of tungsten carbide
	13. Mechanical presses
84.45.08.00	Presses except hydraulic presses
	14. Hydraulic presses
84.45.08.00	Hydraulic presses
84.47.05.00	Hydraulic presses
84.48.00.00	Parts and components for hydraulic presses at items 84.45 and 84.47
	15. Milling machines for metals
84.45.05.00	Milling machines

	16. Alternate machines for chip removal
84.45.02.00	Brushing machines and shaping machines
84.48.00.00	Parts and components for brushing and shaping machines
	17. Forging machines
84.45.09.00	Hammer and drop hammers
	18. Surface finishing machines
84.45.01.00	Grinding machines and facing tools
	19.1 Drilling machines
84.45.08.00	Drilling, boring and similar machines (except radial drilling machines)
	19.2 Radial drilling machines and threading machines
84.45.03.00	Radial drilling and boring machines and similar machines (except those included in the first section of the Common List)
84.45.04.00	Threading and tapping machines
84.48.00.00	Parts and components for threading and tapping machines
	20. Sawing machinery
84.45.06.00	Saws
84.48.00.00	Parts and components for saws
	21.1A Mining drills
82.05.01.00	Drills for mining
	21.1B Integral drill bits
82.05.01.00	Integral drill bits
	21.2A Tricones with metal carbide inserts (for use in mining)
82.05.01.00	Tricones with metal carbide inserts (for use in mining)
	21.5 Conical crushing machines
84.56.02.00	Cone rotary breaking machines
84.56.90.00	Parts and components for cone rotary breaking machines

	22.1 Machines for plastic industry
84.59.12.00	Machines and mechanical devices and appliances for industries of plastics, rubber and similar materials except hydraulic presses for compression moldings
84.59.90.00	Parts and components for machines and mechanical appliances and devices for industries of plastics, rubber and similar materials excepting hydraulic presses for compression molding
	22.2 Shaping (molding) presses for plastic industry
84.59.12.00	Hydraulic presses for compression molding of plastic, rubber and similar materials
84.59.90.00	Parts and components for hydraulic presses for compression molding of plastic, rubber and similar materials
	21.2B Other tricones for use in petroleum production
82.05.01.00	Other tricones for use in petroleum production
	21.3B Ring* devices
84.43.01.00	Machines and devices for extraction, wrenching and boring
84.23.00.00	Parts and components for machines and devices for extraction, wrenching and boring
	21.4 Crushing and other machines
84.56.01.00	Machines and appliances for grading, sieving or washing except mold-lifting or corelifting devices used in foundry
84.56.02.00	Machines and appliances for breaking, crushing or pulverizing except cone rotary breaking machines
84.56.90.00	Parts and components for machines and appliances for breaking, crushing or pulverizing except for cone rotary breaking machines

* Boring devices (?)

	23. Railway equipment
86.02.00.00	Electric locomotives (on accumulators or on outside power)
86.03.00.00	Other locomotives
86.04.01.00	Railway motor coaches
86.04.89.00	Other motor vehicles for assembly, erection, maintenance or inspection of railway lines
	24. Controlling and measuring instruments (electrical or electronic)
90.28.01.00	Electrical or electronic instruments and appliances for measuring electrical values except osciloscope and oscillograph
90.29.05.00	Parts and components for electrical or electronic instruments and appliances for measuring electrical values
	25.1 Centrifugal and turbine pumps
84.10.03.00	Pumps, motor pumps and rotary, positive displacement turbine pumps
84.10.04.00	Pumps, motor pumps and centrifugal turbine pumps except those with only one phase and the outlet diameter less than 100 mm
84.10.05.00	Pumps, motor pumps and turbine fuel injection except those for motors
84.10.90.00	Parts and components for pumps, motor pumps and rotary, positive displacement turbine pumps
	25.2 Fuel pumps
84.10.01.00	Pumps, motor pumps and turbine pumps for fuel supply
84.10.90.00	Parts and components for fuel pumps, motor pumps and turbine pumps
	26. Centrifuges
84.18.01.11	Centrifugal machines and centrifugal dryers for laboratory
84.18.01.21	Centrifugal machines and centrifugal dryers for sugar production industry
84.18.01.99	Other centrifugal machines and centrifugal dryers
84.18.90.01	Parts and components for centrifugal machines and centrifugal dryers

27. Elements for fluid passage

84.61.02.00	Pressure reducing valves
84.61.11.00	Spherical valves
84.61.12.00	Sluice valves of nominal diameter higher than 100 mm
84.61.89.00	Other faucet articles, except globe valve with nominal diameter up to 100 mm and automatic valves of this item included in the first section of the General List

28.1 Cutting and sectioning apparatus of less than 1000 volts

85.19.01.00	Switches for working voltages between 260 and 1000 volts and for nominal currents between 30 and 400 amperes
85.19.06.00	Disconnecting switches for working voltages between 260 and 1000 volts and for nominal currents between 30 and 400 amperes
85.19.11.00	Change-over switches for working voltages between 260 and 1000 volts and for nominal currents between 30 and 400 amperes
85.19.16.00	Relays for working voltages higher than 260 volts and nominal currents higher than 30 amperes
85.19.21.00	Fuses for working voltages between 260 and 1000 volts and nominal currents between 30 and 400 amperes
85.19.31.00	Wave dampers
85.19.36.00	Joining and connecting apparatus for working voltages between 260 and 1000 volts and for nominal currents between 30 and 400 amperes
85.19.51.00	Rheostats for working voltages higher than 260 volts and nominal currents higher than 30 amperes

28.2 Cutting and sectioning apparatus of more than 100 volts

85.19.01.00	Switches for working voltages higher than 1000 volts and nominal currents higher than 400 amperes
85.19.06.00	Disconnecting switches for working voltages higher than 1000 volts and nominal currents higher than 400 amperes
85.19.11.00	Change-over switches for working voltages higher than 1000 volts and nominal currents higher than 400 amperes

85.19.21.00	Fuses for working voltages higher than 1000 volts and for nominal currents higher than 400 amperes
85.19.36.00	Joining and connecting apparatus for working voltages higher than 1000 volts and for nominal currents higher than 400 amperes
	29.1 Drawing and calculation instruments
90.16.01.00	Pantographes
90.16.01.02	Geometry boxes (compass boxes)
90.16.01.03	Rulers, circles and cylinders for calculation
90.16.90.00	Parts and components for drawing, tracing and calculation
	29.2 Machines, apparatus and instruments for measurement, testing and control
90.16.02.01	Dynamic and static machines for balancing mechanical parts
90.16.02.02	Micrometers and other gauges
90.16.02.03	Instruments for linear measurement
90.16.02.04	Planimeters
90.16.02.05	Profile projectors
90.16.02.99	Other machines, apparatus and instruments for measurement, testing and control
90.16.90.00	Parts and components for machines, apparatus and instruments for measurement, testing and control and for profile projectors
	30. Light aircraft
88.02.02.00	Aerodynes working on propeller engine
88.03.02.00	Parts and components of Item 88.02
	31.1 Odontological apparatus
90.17.02.01	Mounted dental equipments and their parts and components
90.17.02.11	Dentists' machines and their parts and components

31.2 Kit of surgical instruments

90.17.01.01	Needles
90.17.01.11	Bougies, cannula, drainage tubes
90.17.01.21	Syringes and their parts and components
90.17.01.99	Other instruments and apparatus used in medicine and human surgery and their parts and components
90.17.02.21	Fraises, discs, polishers and brushes used in odontology
90.17.02.99	Other odontological instruments and apparatus and their parts and components
90.17.03.00	Veterinary instruments and apparatus and their parts and components

32. Clock and watch making

91.01.01.00	Pocket watches, wrist watches and similar devices with precious metal or ordinary metal cases with precious objects including precious and semi-precious stones
91.01.02.00	Pocket watches, wrist watches and other similar ones with ordinary metal, gold-plated, silver-plated or platinum-plated cases
91.01.89.00	Other pocket, wrist and similar watches
91.02.01.00	Other electrical watches (including alarm clocks) with "small volume mechanism"
91.08.89.00	Panel watches and the like for airships, ships and other vehicles, except automobiles, etc.
91.04.89.01	Navigation chronometer, etc.
91.04.89.02	Astronomical observatory and similar regulatory
91.04.89.03	Apparatus of clock and watch making industry for time distribution and unification system (master and secondary)
91.05.00.00	Control apparatus and time motors with watch-mechanism or a synchronized motor except the parking meters
91.06.00.00	Apparatus provided with a watch mechanism or a synchronized meter which permits the working of a mechanism at a given moment
91.07.01.00	Finishing mechanisms of small volume for watches at Item 91.01
91.07.02.01	Finishing mechanisms of small volume for electric watches at Item 91.02

	33. Speed variators
84.63.04.00	Speed reducers, step-up gears and variators
85.01	Motor speed reducers, motor variators and motor step-up gears except with single-phase or three-phase motors of more than 1 up to 10 HP inclusive
	34. Hydraulic systems
84.22.02.00	Jacks for motor dump trucks and similar devices
84.59.89.99	Hydraulic apparatus for working of machines and apparatus such as hydraulic presses, etc.
84.22.91.00	Parts and components for the jacks for working of dump trucks
	35.1 Gas containers
73.24.01.00	Iron or steel containers for compressed or liquified gases, without soldering
73.24.02.00	Iron or steel containers for compressed or liquified gases, with soldering, for normal working pressures more than 20 atmospheres
	35.2 Sealed compressors for refrigeration
84.11.08.00	Sealed motor compressors of power less than $\frac{1}{2}$ HP
	35.3 Semi-sealed compressors for refrigeration
84.11.08.00	Semi-sealed motor compressors
	35.4 Open compressors for refrigeration
84.11.08.00	Compressors, motor compressors and turbine compressors except the sealed motor compressors and semi-sealed compressors
	35.5 Evaporators (roll bond)
84.15.90.00	"Roll bond" evaporators
	35.6 Sealed absorption units
84.15.03	Sealed absorption units
	35.7 Dry cleaning machines
84.40.01.03	Dry cleaning machines and apparatus
84.40.01.04	Machines and ironing presses

35.8 Sewing machines

84.41.01.00	Sewing machines for domestic use
84.41.03.00	Tops for domestic sewing machines
84.41.04.00	Tops for industrial sewing machines
84.41.90.00	Parts and components

35.9 Hand looms

84.87.11.00	Rectilinear knitting looms for domestic use
	Note: For this purpose the domestic looms mean those which possess 1 or 2 cams of less than 7 needles per linear inch
84.88.90.00	Parts and components for rectilinear looms for domestic knitting

35.10 Fixed-focus cameras

90.07.02.01	Fixed-focus (box type) cameras for other uses

35.11 Apparatus for still projection

90.09.01.99	Apparatus for still projection except for microfilms

35.12 Manometers

90.24.01.00	Manometers

35.13 Thermostats

90.24.02.00	Thermostats
90.20.02.99	Thermostats

35.14 Taximeters and parking meters

90.27.01.00	Taximeters
91.05.00.00	Parking meters

35.15 Toys

97.03.00.00	Electric toys and miniature models
97.03.00.00	Mechanical (spring, friction, etc) toys and miniature models
97.03.00.00	Other metallic toys and miniature models
	Note: Metallic toys and miniature models which contain more than 50% by weight of metal parts are considered for this purpose

35.16 Machines for footwear and other leather goods

84.42.02.00	Machines and apparatus for footwear and other leather goods manufacture
84.42.90.00	Parts and components

Annexe II

Products allotted

BOLIVIA

Specification	Product
29.01.05.12	Styrene (Vinylbenzene, styrelene, styrol)
29.02.01.07	Ethylene chloride (1,2-dichloroethane)
29.02.02.01	Vinyl chloride (monochloroethylene)
29.04.03.02	Propylene glycol (Propanediol)
29.06.01.01	Phenol (Phenic acid)
29.08.04.03	Dipropylene glycol
29.08.04.99	Propylene glycol ethers
29.09.01.02	Epoxipropane (propylene oxide)
29.15.21.04	Phthalic anhydride
39.01.07.00	Polypropylene glycols
39.02.01.00	Polythylene of low density
39.02.01.00	Polyethylene of high density
39.02.02.00	Polystyrenes
39.02.05.00	Polyvinyl chloride, suspension type, without charge, plasticizers, dyes and other additions
39.02.07.00	Polyvinyl chloroacetate, without charge, plasticizers, dyes and other additions
39.02.09.00	Polypropylene
	COLOMBIA
28.03.00.00	Carbon (mainly, gas black)
29.02.01.07	Ethylene chloride (1,2- dichloroethane)
29.02.02.01	Vinyl chloride (monochloroethylene)
29.15.05.02	Maleic anhydride
29.15.21.03	Teraphthalic acid (p. phthalic acid)
29.15.21.04	Phthalic anhydride
29.15.21.51	Dimethyl terephthalate (DMT)
29.35.11.01	Epsilon caprolactum
39.02.01.00	Polyethylene of low density
39.02.02.00	Polystyrenes
39.02.03.00	Acrylonitrile - butadiene - styrene copolymers (ABS resins) and styrene - acrylonitrile copolymers (SAN resins)

39.02.05.00	Polyvinyl chloride, suspension type, without charge, plastioizers, dyes and other admixtures
39.02.07.00	Polyvinyl chloride, suspension type without charge, plasticizers, dyes and other additions
39.02.08.00	Polyacrylonitrile
40.02.02.00	Styrene polybutadiene rubber (SBR)
40.02.02.00	Polybutadiene rubber (BR)
56.01.11.00	Discontinuous acrylic fibre without carding, combing and preparing into other forms
56.02.11.00	* _____ Acrylic fibre cables for the discontinuous pieces

CHILE

28.43.01.01	Sodium cyanide
28.43.01.02	Potassium cyanide
28.43.01.06	Calcium cyanide
29.02.01.06	Chlorofluoromethanes
29.02.01.07	Ethylene chloride (1,2-dichloroethane)
29.02.02.01	Vinyl chloride (monochloroethylene)
29.02.02.02	Trichloroethylene
29.02.02.03	Tetrachloroethylene
29.04.01.03	Isopropyl alcohol
29.04.01.04	Normal butyl alcohol
29.04.01.05	Isobutyl alcohol
29.04.01.21	2-ethyl hexanol
29.04.03.04	Pentacrythritol (Pentacrythrite, totramethylol methane)
29.14.02.43	Monomeric vinyl acetate
29.14.10.41	Methyl methacrylate
29.14.10.69	Other esters of methacrylic acid
29.15.21.04	Phthalic anhydride
39.02.01.00	Polyethylene of low density
39.02.02.00	Polystyrenes
39.02.05.00	Polyvinyl chloride, suspension type without charge, plasticizers, dyes and other additions
39.02.07.00	Polyvinyl chloroacetate without charge, plasticizers, dyes and other additions
39.02.09.00	Polypropylene

* Word illegible on original

ECUADOR

29.02.01.07	Ethylene chloride (1,2-dichloroethane)
29.02.02.01	Vinyl chloride (monochloroethylene)
29.04.03.01	Ethylene glycol (glycol)
29.08.04.02	Diethylene glycol
29.08.04.04	Triethylene glycol
29.08.04.99	Ethylene glycol ethers
29.09.01.01	Epoxyethane (ethylene oxide)
29.15.21.04	Phthalic anhydride
29.23.01.01	Monoethanolamine
29.23.01.02	Diethanolamine
29.23.01.03	Triethanolamine
29.35.11.01	Epsilon-caprolactum
34.02.01.00	Surface-active organic non-ionic products obtained by the condensation of ethylene oxide with mixtures of linear alcohols containing 11 or more carbon
39.01.06.00	Polyethylene glycols
39.02.01.00	Polyethylene of low density
39.02.01.00	Polyethylene of high density
39.02.02.00	Polystyrenes
39.02.03.00	Acrylonitrile-butadiene-styrene copolymers (ABS resins) and styrene acrylonitrile copolymers (SAN resins)
39.02.05.00	Polyvinyl chloride, suspension type, without charge, plasticizers, dyes and other additions
39.02.03.00	Acrylonitrile - butadiene - styrene copolymers (ABS resins) and styrene-acrylonitrile copolymers (SAN resins)
39.02.05.00	Polyvinyl chloride, suspension type, without charge, plasticizers, dyes and other additions
39.02.07.00	Polyvinyl chloroacetate without charge, plasticizers, dyes and other additions
39.02.09.00	Polypropylene

PERU

28.03.00.00	Carbon (mainly gas black)
28.43.01.01	Sodium cyanide

28.43.01.02	Potassium cyanide
28.43.01.03	Calcium cyanide
29.02.01.07	Ethylene chloride (1,2-dichloroethane)
29.02.02.01	Vinyl chloride (monochloroethylene)
29.04.01.03	Isopropyl alcohol
29.15.21.04	Phthalic anhydride
29.27.00.01	Acrylonitrile
39.02.01.01	Polyethylene of low density
39.02.02.00	Polystyrenes
39.02.05.00	Polyvinyl chloride, suspension type, without charge, plasticizers, dyes and other additions
39.02.05.00	Polyvinyl chloride, emulsion type, without charge, plasticizers, dyes and other additions
39.02.07.00	Polyvinyl chloride, emulsion type, without charge, dyes and other additions
39.02.08.00	Polyacrylonitrile
40.02.01.00	Latex of styrene-polybutadiene rubber (SBR)
40.02.02.00	Styrene-polybutadiene rubber (SBR)
40.02.02.00	Polybutadiene rubber (BR)
56.01.11.00	Discontinuous acrylic fibre without carding, combing and preparing into other forms
56.02.11.00	Acrylic fibre cables for discontinuous pieces

VENEZUELA

28.03.00.00	Carbon (mainly gas black)
29.01.05.12	Styrene (vinylbenzene, styrelene, styrele)
29.02.01.06	Chlorofluoremethane
29.02.01.07	Ethylene chloride (1,2-dichloroethane)
29.02.02.02	Trichloroethylene
29.02.02.03	Tetrachloroethylene
29.04.01.01	Methyl alcohol (methanol)
29.04.01.03	Isopropyl alcohol
29.04.03.02	Propylene glycol (Propanediol)
29.08.04.03	Dipropylene glycol

29.08.04.00	Propylene glycol ethers
29.09.01.02	Epoxipropane (propylene oxide)
29.15.21.04	Phthalic anhydride
29.30.01.00	Toluene di-isocyanate
39.01.07.00	Propylene glycols
39.02.01.00	Polyethylene of low density
39.02.01.00	Polyethylene of high density
39.02.02.00	Polystyrene
39.02.05.00	Polyvinyl chloride, suspension type without charge, plasticizers, dyes and other additions
39.02.05.00	Polyvinyl chloride, emulsion type without charge, plasticizers, dyes and other additions
39.02.07.00	Polyvinyl chloroacetate without charge, plasticizers, dyes and other additions
40.02.02.00	Styrene-polybutadiene rubber (SBR)
40.02.02.00	Polybutadiene rubber (BR)

Annexe III

Country-wise distribution of the units allotted

BOLIVIA

Units allotted

Number	Description
2.1	Compressors of 40 or more HP
2.2	Pneumatic tools
12.2	Threading tools
12.3	Sintered plates and rods
19.2	Radial drilling and thread cutting machines
20	Sewing machine
21.2B	Tricones (without metal carbide inserts) (for use in petroleum production)
21.5	Conical crushing machines
28.1	Cutters of less than 1000 volts
35.6	Sealed absorbing units

COLOMBIA

Units allotted

Number	Description
1.1	Sprayers
1.2	Agricultural machines
1.3	Harvesters
3.1	Filling and sealing machines
6	Mill machinery
9.1	Machinery for bakeries and chocolate industry
10	Foundry equipment
11	Shears, knives, etc.
17	Forging machines
18	Surface finishing machines
22.1	Machines for plastic industry

(25.1)	Centrifugal and turbine pumps
27	Elements for fluid passage
30	Light aircraft
31.1	Odontological apparatus
31.2	Kit of surgical instruments
35.2	Sealed compressors for refrigeration
35.4	Open compressors for refrigeration
35.7	Dry-cleaning machines
35.8	Sewing machines
35.9	Hand looms
35.15	Toys
35.16	Machines for footwear and other leather goods manufacture

CHILE

Units allotted

1.1	Sprayers
1.2	Agricultural machines
1.3	Machinery for pastures
8.1	Generators and motors
8.2	Rectifiers
8.3	Transformers
13	Mechanical presses
15	Milling machines for metals
21.1A	Mining drills
21.2A	Tricones with metal carbide inserts (for use in mining)
21.4	Crushing and other machines
23	Railway equipments
25.1	Centrifugal and turbine pumps
27	Elements for the fluid passage
28.2	Cutting and sectioning apparatus of more than 1000 volts
29.2	Machines, apparatus and instruments for measuring testing and control
31.1	Odontological apparatus
31.2	Kit of surgical instruments
35.2	Sealed compressors for refrigeration
35.8	Sewing machines
35.9	Hand looms
35.10	Fixed-focus cameras

ECUADOR

Units allotted

Number	Description
7	Machine for dairy industry
12.1	Drills, drill bits, reamers, etc.
14	Hydraulic presses
16	Alternative machines for chip removal
22.2	Moulding presses for plastic industry
24	Measuring and control instruments (electric or electronic)
26	Centrifuges
28.1	Cutting and sectioning apparatus of less than 1000 volts
32	Clock and watch making
34	Hydraulic systems
35.12	Manometers

PERU

Units allotted

3.2	Packing, bottling and baling machines
4	Machinery for ceramic industry
5.1	Lifting machines, hoisting tackle, lathes and capstans
8.1	Generators and motors
8.2	Rectifiers
8.3	Transformers
9.2	Machinery for oil, soap industry, etc.
13	Mechanical presses
19.1	Drills
21.1A	Mining drills
21.1B	Integral drills
21.3	Boring apparatus
21.4	Crushing and other machines
25.1	Centrifugal and turbine pumps
25.2	Fuel pump
28.2	Cutting and sectioning apparatus
29.1	Drawing and calculation instruments
33	Speed variators
35.1	Gas containers

35.3	Semi-hydraulic compressors for refrigeration
35.5	Evaporators ("Roll-bend")
35.9	Hand looms
35.11	Apparatus for still projection
35.13	Thermostats
35.14	Taximeter and parking meters

Annexe III

Products not allotted

Specification No.	Product
	Group A
27.10.89.99	Mixture of n-paraffins
27.10.89.99	Tetrapropylene
28.13.06.99	Hydrocyanic acid
28.14.01.00	Phosgene
29.01.02.01	Ethylene
29.01.02.02	Propylene
29.01.02.03	Butylene
29.01.02.11	Butadiene
29.01.02.21	Acetylene
29.01.02.99	Isoprene
29.01.03.02	Cyclohexane (Hexamethylene)
29.01.05.01	Benzene
29.01.05.02	Teluene (Methyl benzene)
29.01.05.03	Xylene (Dimethylbenzene)
29.01.05.11	Ethylbenzene
29.01.05.21	Naphthalene (Naphthalin)
29.01.05.99	Gumene
29.04.04.02	Glycol monochlorohydrin (ethylene chlorohydrin)
29.04.04.02	Propylene glycol monochlorohydrin (propylene chlorohydrin)
29.05.01.01	Cyclohexanols
29.09.02.01	Epichlorohydrin
29.11.01.02	Ethanol (acetaldehyde, acetic aldehyde)
29.11.01.03	Butanal (Butyl aldehyde)
29.13.02.03	Cyclopentanene

Annexure V

ANDEAN GROUP MISSION TO INDIA

List of the Mission Members

I. POLICY GROUP (two members)

1. Dr. Terry Suero (Leader)
   Vice President
   Programming CAF

   Andean Development Corporation (CAF)
   Corporation Andina de Fomento
   Apartado de Correos 5086
   Caracas, Venezuela

   Telephone: 724111/16
   Cable: CAF, Caracas, Venezuela

2. Mr. Fausto Vinces (Peru)
   Director CAF

   -do-

II. TECHNICAL GROUP (seven members)

Andean Development Corporation CAF

1. Dr. Jose Luis Ascanio (Group Leader)
   Deputy Director
   Programming CAF

   -do-

Ecuador

2. Mr. Jorge Vela Barragan
   Analyst
   General Studies and Integration
   Department National Financing
   Corporation

   Juan Carrea No. 451
   Quito - Ecuador
   (America del Sur)

Chile

3. Mr. Oscar Morel
   Deputy Manager
   Non Renewable National Resources
   Corporacion de Fomento de la
   Production (CORFO)

   Casilla 3886
   Santiago
   Chile

Peru

4. Mr. Ernesto Florez Costa
   Operations of Investment Division
   Corporacion Financiera de Desarrollo
   (COFIDE)

   Avenue Inca Garcilaso de
   la Vega 1456 - 1490, Lima Peru

Colombia

5. Mr. Ernesto Merlano
Technical Assistant Manager
Institute of Industrial Development
(Instituto de Fomento Industrial)
Correra 35.A
58-20, Bogota
Colombia

Bolivia

6. Mr. Rolando Pereira
Under Secretary of Industries
Tel: 50914
La Paz

7. Alfonso Criales

III. UNIDO STAFF

1. Mr. G.S. Gouri, Deputy Director
Industrial Technology Division
UNIDO, may also join the Group
for a week during final discussions

2. Mr. V. Veltze-Michel
Programme Management Officer
Technical Co-operation Division

3. Mr. V. Kolchin
UNIDO Senior Industrial Development Field
Adviser
c/o UNDP, New Delhi

4. UNDP staff at Delhi

IV. CSIR STAFF

1. Dr. J.C. Srivastava
Chief, Technology Utilisation
Council of Scientific & Industrial Research
Rafi Marg, New Delhi 10001
Tel: Office: 384210/381321

2. Mr. B.M. Sen
Deputy Director
Central Mechanical Engineering Research Inst.
Durgapur

3. Mr. A.K. Guha
Scientist, Technology Utilisation
Council of Scientific and Industrial Research
Rafi Marg, New Delhi 110001

Annexure VI

PROGRAMME OF VISIT OF SENIOR POLICY PLANNING DELEGATION FROM ANDEAN GROUP OF COUNTRIES

Day/Date	Time	Programme
OCTOBER 1975		
Sunday 19	0600	Arrival Delhi by Flight AI-128
	1430	Visit to National Museum
	1900	Sound and Light Show at Red Fort
Monday 20	1030	Introductory meeting with the officials of the Government of India, CSIR, UNDP/UNIDO (CSIR Conference Room - 1st Floor)
	1600	Meeting with Railway Ministry (Rail India Technical and Economic Services), Rail Bhavan
	1700	Meeting with President of India at Rashtrapati Bhawan
Tuesday 21	1030	Visit to Indian Standards Institution
	1400	Porotype Development & Training Centre
	1530	Kirloskar Show Room
	2000	Dinner by M.N. Dastur & Co. at Ashoka Hotel
Wednesday 22	1030	The Projects & Equipment Corporation of India Limited (NPEC)
	1300	Lunch by Mr. R.K. Sethi, Managing Director, NIDC
	1530	National Industrial Development Corporation of India Limited (NIDC)
	1630	Meeting with Mr. A.C. Banerjee, Chairman, MECON at SAIL's Office
	2015	Dinner by Mr. M.M. Luther, Chairman, NPEC at Hotel Oberoi Intercontinental

Annexure VII

PROGRAMME OF VISIT OF SENIOR TECHNICAL/IMPLEMENTATION GROUP FROM ANDEAN GROUP OF COUNTRIES

Day/Date	Time	Name of Institution/Programme
OCTOBER		
Sunday 19		Arrival Delhi
Monday 20	1030	Introductory meeting with the officials of Government of India, CSIR, UNIDO/UNDP (CSIR Conference Room - 1st Floor)
	1300	Lunch break
	1600	Meeting with Chairman, Railway Board
	1700	Meeting with President of India
Tuesday 21	0635	Dep. Delhi IC-461 Arr. Bombay
	1000	Mahindra and Mahindra Ltd.
	1200	International Tractor Co. India Ltd.
	1700	Dep. Bombay IC-157 Arr. Poona
Wednesday 22	0900	Kirloskar Oil Engines Ltd.
	1200	Kirloskar Pneumatic Co. Ltd.
	1500	Bharat Forge Co. Ltd.
Thursday 23	1000	Bajaj Auto, Poona
	1500	National Chemical Laboratory
	1800	Dep. Poona IC-158 Arr. Bombay
Friday 24	1500	Godrej Machine Tools
Saturday 25	0830	Indian Tools Manufacturing Ltd., Thana
	1000	Meeting with the Indian Engineering Industries, Western Region at Radio Room of Radio Club
	1430	Visit to Sahney Kirkwood Pvt. Ltd., Bombay
	1600	New Standard Engineering Co. Ltd.
Sunday 26	1050	Dep. Bombay IC-110
	1205	Arr. Hyderabad

Annexure VIII

Itinerary of Mr. Rolando Pereira, Under Secretary Industries, Bolivia and member of the delegation from Andean Group of countries

Wednesday 5 November	Arrival Delhi
Tuesday 6 November	(i) Meeting with the Resident Representative UNDP and UNIDO representative in India. (ii) Meeting with Prof. Y. Nayudamma, Director General, CSIR. (iii) Meeting with Dr. J.C. Srivastava, Chief, Technology Utilisation, CSIR. Visit to Sound & Light Show at Red Fort, New Delhi.
Friday 7 November	- Visit to Central Scientific Instruments Organisation & Training Centre, Chandigarh. - Lunch by Dr. Harshwardhan, Director, CSIC. - Visit to Punjab Tractors Ltd., Chandigarh. Dinner by Mr. Chandra Mohan, Mg. Director, Punjab Tractors.
Saturday 8 November	- Visit to Atlas Cycles Industries. Sonepats, (Haryana State). - Lunch by Atlas Cycles Industries. - Return to Delhi.
Sunday 9 November	Sightseeing in Delhi and Departure for Bombay.
Monday 10 November	- Meeting with the Association of Indian Engineering Industries (Western Region), Bombay. - Lunch by AIEI.
Tuesday 11 November	- Visit to Bharat Gears Ltd., Bombay Travel to Ranchi via Calcutta.

Wednesday 12th	- Visit to Metallurgical & Engineering Consultants (India) Ltd., Ranchi (MECON), (Bihar State). (All hospitability extended by MECON).
Thursday 13th	- Visit to Heavy Engineering Corporation (HEC), Ranchi (Bihar State).
	(Ranchi - Calcutta visit by HEC aircraft).
	- Calcutta - Varanasi
Friday 14th	- Visit to Diesel Locomotive Works, Varanasi (UP State).
Saturday 15th	- Visit to Agra and return to Delhi.
	DELHI
Sunday 16th	(i) Meeting with Prof. Y. Nayudamma, DGSIR.
	(ii) Meeting with Mr. T.A. Pai, Minister of Industries, Government of India.
Monday 17th	- Meeting with the officials of Government of India, CSIR and UNIDO/UNDP.
	- Meeting with Engineering industries and President Association of Indian Engineering Industries.
	Dinner by Development Consultants at Ashoka Hotel, New Delhi.
	BOMBAY
Tuesday 18th	- Visit to Materials Handling Engineering Co.
Wednesday 19th	- Departure for Bolivia.

Annexure IX

Dr. Terry Suero Escurra
Vice President - Programming
Corporacion Andina de Fomento (CAF)
Apartado de Correos 5086
Caracas, Venezuela

Policy Planning Delegation of the Andean Group
Mission visiting India under UNIDO/India
International Technology Transfer/Familiarization
Programme

Dear Dr. Suero,

We are thankful for the opportunity of meeting you and your team at New Delhi on the 21st October 1975 and discussing about the manner in which an organization like Dasturs specializing in the field of iron and steel industry could assist the Andean subregion. In connexion with the study we are now carrying out for the steel development in Colombia, we had occasion to visit the other Andean Group countries and to acquaint ourselves with their raw materials and other resources as well as their future steel development plans. We are, therefore, quite familiar with the problems and prospects of the development of the iron and steel industry in the subregion.

We feel that there is an urgent need to co-ordinate the activities of the member countries on a continuing basis, to ensure the maximum utilization of the raw material resources, infrastructure and technical skills keeping in view the future steel requirements of the expanded Andean market, export possibilities to third countries etc., which would benefit the subregion as a whole as well as the individual member countries.

We are glad to learn that the co-ordinated development of the iron and steel industry in the subregion forms one of the basic objectives of the JUNTA. Though no single member country possesses all the raw materials resources, the subregion as a whole has most of the raw materials for the large-scale development of the iron and steel industry on the

basis of complementarity. For instance, Venezuela has large iron ore reserves and natural gas, whereas Colombia has abundant reserves of coal but only limited iron ore reserves. Peru is known for its iron ore deposits, but has no coal; while Chile has both iron ores and some coal. Obviously, it would redound to the benefit of the member countries to co-ordinate the various activities in developing these resources and create steel capacity on the basis of interchange and co-operation.

According to the current plans, it is expected that the Andean Group countries will install about 19 million tons of new steel capacity by 1985. The installation of this large capacity would call for not only massive investment, but also large inputs of various raw materials as well as technical services. In the absence of a competent design and engineering organization to take up the challenging tasks, heavy reliance has to be placed on foreign consultants. For instance, for the expansion programme now under way at the SIDOR plant in Venezuela, the plant authorities are engaging the services of various consultancy organizations from different countries, on a job-to-job basis. In the absence of a local design and engineering organization, the effective transfer of the know-how of the foreign consultants to Venezuelan organizations cannot take place, and there will be no opportunities to build up self-reliance.

It is also to be recognized that the requirements of individual member countries will not be large enough to warrant the establishment of a full-fledged design and engineering organization and for sustaining it on a continuing basis. A logical approach would therefore be to have a central design and engineering organization for the entire subregion to provide the required technical services to the iron and steel industry in the subregion. Such a central consultancy organization would be in a better position to understand fully the problems of the iron and steel industry in the context of the subregional planning, harmonizing national objectives with regional requirements. This central organization can play a significant role in the planning, design and construction of steel plants in the member countries.

Similar situation obtained in India about 20 years ago, when three new steel plants in the public sector (Rourkela, Durgapur and Bhilai) had to be constructed during the late 50's with foreign technical assistance. The Government of India then felt the need for creating an Indian consultancy organization to assimilate the know-how, which would enable the country to become self-reliant in due course.

Accordingly, it was expressly for this purpose and at the instance of the Government of India that in 1955 the Dastur Organization came to be established. Today it has grown into a full-fledged organization covering all the disciplines with a strength of over 1000 engineers. The Dastur Organization has its subsidiary Dastur Engineering International GmbH (DEI) at Dusseldorf, West Germany, in association with which it works on international assignments. The Dastur Organization is able to provide the entire range of consultancy services from concept to completion for various types of iron and steel and allied projects. In fact, within a short span of 15 years, it has built up its reputation for its expertise and capabilities not only in India but also in other countries.

A design and engineering organization cannot be set up like a factory with exclusively imported know-how and equipment. The nucleus of the design force must be created within the Andean subregion and given adequate scope and opportunities to develop under competent leadership and guidance. In the initial stages, however, for the establishment and development of a strong and competent design organization, the assistance and guidance of a consultancy organization specialized in the field, preferably one with the specific experience of design and engineering of steel plants, recruitment and training of design personnel and evolution and development of a result oriented multi-disciplinary organization, would be required. The Dastur Organization, because of its intimate knowledge of the conditions and requirements of developing countries, is in a better position to assist the Andean Group countries in setting up a nucleus of a design and engineering organization to serve the subregion.

Initially, the proposed design and engineering organization would start functioning with a small core group of experienced technologists selected from the Andean Group countries who will be assisted and trained by experts from the Dastur Organization stationed in the Andean headquarters,

in the various aspects of design and consultancy services. Dastur Organization will also prepare the overall organization plan of the proposed design and engineering organization and evolve systems, procedures and practices most suited for the conditions obtaining in the Andean Group countries. Once the nucleus of the design and engineering organization is established, gradually the size of the organization can be expanded to enable it to take up greater responsibilities. The Andean engineers will also be given on-the-job training at Dasturs' home offices in India, supplemented by steel plant training where feasible. Initially, a part of the studies and design work on the projects will be carried out in Dasturs' offices, in which Andean engineers will also be fully associated. Gradually the workload will be shifted to the Andean organization. It is expected that in the course of 5 to 7 years the Andean organization would be in a position to take up major assignments by itself, except for occasional guidance on a few highly specialized jobs.

We look forward to hearing from you at an early date and shall be glad to come over for further discussion, if you so desire.

Yours sincerely,

(Signed) T.V.S. Ratnam
Director

TVS.nr

cc: Dr. J.C. Srivastava, CSIR, New Delhi
cc: Dasturco, New Delhi

Annexure X

NOTE BY MR. MARIWALLA, CHIEF CONSULTANT, NIDC

1. NIDC is a Government-owned consultancy Organization providing consultancy services in economic development and planning, industry development, project design and engineering, management services and R and D services. It provides the necessary bridge between technology as developed in local research institutions or inducted from outside, and its commercial and economic application by industrial units. Thus, it fulfils the role of an effective Technology Transfer Agent.

NIDC has done this type of work for a wide variety of industries both in India and 17 other developing countries. This has provided the NIDC with the necessary experience to evolve economic and engineering solutions, which are suited to the circumstances obtaining in developing countries. It is in the context of this relevance of NIDC experience that the NIDC has been used by international organizations such as the United Nations as well as by sister developing countries for providing consultancy services in the third world countries.

Apart from this, the NIDC has a well organized Industrial Information Centre with considerable amount of data necessary for consulting engineering firms who are engaged in industrial planning activities and plant design and engineering.

NIDC has also been furthering the concept that each developing country or a group of developing countries, on a sub-regional basis, should have their own consultant organizations as these are the agencies which are best able to appreciate the local constraints and socio-economic objectives. NIDC has indeed been fortunate to have had the opportunity of having been retained by the Government of Iran to help them set up an Iranian National Consultancy Organization which is now fully operative. Currently, the NIDC is in the process of providing similar assistance to Government of Tanzania in their endeavours to set up a local consultancy organization in that country.

2. These various facets of NIDC activities were pointed out to the visiting Andean delegation and an assurance was extended to them that should they so desire, the NIDC were entirely at their disposal to assist them in any manner they wish, in the following fields:

(a) To act as a focal agency for exchange of information with CAF relating to engineering projects and consultancy services.

(b) Joint evaluation of projects.

(c) Consultancy services for specific projects jointly with local expertise in the Andean Group.

(d) Sharing of NIDC's experience as a transfer agent for transforming indigenously created technology or that inducted from overseas, to commercial and economic application in industrial units.

(e) To assist, to the extent necessary, in setting up of local consulting engineering organizations in the countries of the Andean Group.

(f) To help in strengthening local industrial information data centres.

(g) NIDC's assistance to help the existing engineering industrial units in the Andean Group countries increase their operational efficiency.

It was pointed out to the Andean Group that all this work could be done on a joint basis so that not only the Indian experience becomes available to them in the areas mentioned above through the NIDC, but that in the fields in which the Andean Group countries have developed their expertise, their experience could be of use to Indian industries. It could thus be conceived as a mutually rewarding arrangement.

Annexure XI

Activities of MECON

Metallurgical & Engineering Consultants (India) Limited (MECON) is a public sector undertaking and a fully owned subsidiary of the Steel Authority of India Limited. For more than a decade and half MECON has been in the vortex of planning and engineering for ferrous metallurgical industries in India as the premier consultant to the Government of India.

Among the major projects successfully completed/under execution by MECON, the important ones include expansion of Durgapur Steel Plant from 1.0 Mt to 1.6 Mt and expansion of Rourkela Steel Plant from 1.0 Mt to 1.8 Mt; Sixth Blast Furnace complex at Bhilai Steel Plant; expansion of Bokaro Steel Plant from 2.5 Mt to 4.0 Mt; Aluminium Plant at Korba; etc., as prime consultant responsible for the complete consultancy and detailed engineering services; consultancy services for the 3.0 Mt new steel plant at Vijayanagar and various other projects in the country. MECON has rendered its services in the field of sponge iron, iron ore beneficiation and agglomeration and also in mining. It is now engaged in the perspective planning for the development of Iron and Steel industries and allied infrastructure facilities in India. MECON has also undertaken the design and supply of rolling mill equipment to various customers in India both in public and private sector. Besides these, for overseas countries MECON has completed feasibility reports for setting up of sponge iron-steel complex for Government of Bangladesh, Dubai and Abu Dhabi.

MECON is capable to provide complete consultancy and engineering services for ferrous and certain non-ferrous metallurgical plants from the concept to commissioning and is willing to render the following services to the ANDEAN group of countries.

1. Services relating to engineering and consultancy work for ferrous metallurgical industries and related facilities.
2. Supply of rolling mills equipment for ferrous and non-ferrous industries.
3. Services relating to engineering and consultancy work for Aluminium industries.
4. Know-how and engineering for coke oven batteries and certain chemical plants.
5. Detailed design and engineering related to the above fields.
6. Total project engineering services in association with the firms operating in those countries.

Annexure XI

ASSOCIATION OF INDIAN ENGINEERING INDUSTRY
(WESTERN REGION)

Meeting with the Policy Group of the Andean Mission - 28 October 1975

Association of Indian Engineering Industry is the largest single industrial assocoiation in the country which represents over 1,000 companies including small, medium and large-scale units from public and private sectors with an investment of around Rs.3,000 crores and employing 10 lakhs personnel. It is the representative spokesman of engineering industry in the country.

The Western Region covers the States of Maharashtra, Gujarat, Madhya Pradesh and the Union territories of Goa, Daman and Diu and has in its fold over 370 member units.

Its principal objectives are to provide information, advisory and consultative services to industry and the Government.

List of Participating Member Firms

Name & Address of Company	Name of Representative & Designation	Products Manufactured by the Company
Bajaj Auto Ltd., Bombay Poona Road, Akurdi, Poona 411 035	Mr. Jayant H. Shah, Chief Executive (Chairman, AIEI, WR)	Bajaj Scooters, three wheelers, spare parts
Indian Standard Metal Co. Ltd., Anant Ganpat Pawar Lane No. 1, Opp. Byculla Goods Depot, Bombay 400 027	Mr. F.A. Jasdanwalla, Managing Director (Vice-President, AIEI)	Gun metals, bronzes, brasses, antifriction bearing metals, aluminium, zinc and lead alloys, type metals, master alloys, fusible alloys, tin and silver solders, special solders and other non-ferrous alloys. Lined bearings including babbetalling up to 6 ft. weighing about 2 tons. Sand castings in non-ferrous alloys, copper base up to 1500 kgs, aluminium base up to 800 kgs and lead base up to 7 tons piece wt. Press and gravity die castings in aluminium and zinc base alloys S.G. Iron, alloy steel and other austenitic iron and steel castings PIV chain gears.

Annexure XII

ASSOCIATION OF INDIAN ENGINEERING INDUSTRY
(WESTERN REGION)

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Indian Standard Metal Co. Ltd., Anant Ganpat Pawar Lane No. 1, Opp. Byculla Goods Depot, Bombay 400 027	Mr. F.A. Jasdanwalla, Managing Director (Vice-President, AIEI)	Gun metal, bronzes, brasses, antifriction bearing metals, aluminium, zinc and lead alloys, type metals, master alloys, fusible alloys, tin and silver solders, speoial solders and other non-ferrous alloys. Lined bearings including remetalling up to 6 ft. weighing about 2 tons. Sand castings in non-ferrous alloys, copper base up to 1500 kgs, aluminium base up to 800 kgs and lead base up to 7 tons piece wt. Press and gravity die casting in aluminium and zinc base alloys S.G. Iron, alloy steel and other austenitic iron and steel castings. PIV chain gears.

Name & Address of Company	Name of Representative & Designation	Products Manufactured by the Company
Crompton Greaves Ltd., No. 1 Dr. V.B. Gandhi Marg, Bombay 400 001.	Mr. P.R. Deshpande, Managing Director	Electric motors, motor control gear, power & distribution transformers, switchgear; ceiling, table and exhaust fans, other electrical equipment and dry batteries
Batliboi & Co. Pvt Ltd., 7, Forbes Street, Bombay 400 001.	Mr. J.N. Mehrotra, General Manager & Director	Drills, milling machines, shaping machines, fast tapping machines, industrial humidification, air conditioning plants and air control
Malleable Iron & Steel Castings Co. Pvt Ltd., Mathurdas Mills Compound, Lower Parel, Bombay 400 013.	Dr. Pranlal Patel	Malleable Iron, high duty cast iron castings for automotive industries, railways etc.
Indian Oxygen Ltd., Lal Bahadur Shastri Marg, Ghatkopar, Bombay 400 086.	Mr. J.C. Tewari	Industrial & medical cases welding consumables, industrial equipment and tools, medical equipment, air separation plants, associated cryogenic equipment and liquid oxygen explosives
Indian Hume Pipe Co. Ltd., Construction House, Walchand Hirachand Marg, Bombay 400 038.	Mr. Bahubali Gulabchand Managing Director, Mr. N.G. Joshi	Hume pipes, penstocks, prestressed pipes, poles, concrete railway sleepers and no-joint pipes
Indian Tool Manufacturers Ltd., 101 Sion Road, Sion, Bombay 400 022.	Mr. G.S. Agrawal, President	Twist drills, reamers, cutters, taps and micro-meters. Sintered carbide tips and tipped tools, gear cutting hobs and tools
Larsen & Toubro Ltd., L. & T. House, Ballard Estate, Bombay 400 038.	Mr. U.V. Rao, Vice-President	Equipment for chemical, pharmaceutical, fertilizer nuclear power plant, dyestuff, distillery and brewery industries, dairy and refrigeration, food processing, cement making machinery, sulphuric acid and superphosphate plants, sugar diffuser plants, switchgear and motor start HRC fuses, air circuit breakers, petrol pumps, aluminium capsules, crown corks, VOPP seals, capsuling machinery.

Name & Address of Company	Name of Representative & Designation	Products Manufactured by the Company
Mahindra Ugine Steel Co., Ltd. Bhaktawar, Nariman Point, Bombay 400 021.	Mr. Ashish Mitra General Manager (Administration)	Tools, alloy and special steels
Indian Furnace Co. Ltd., NSE Estate, Goregaon(E), Bombay 400 063	Mr. P.A. Patel	All types of electric & fuel fired furnaces, ovens and incinerators
Super Tool Co.Pvt Ltd., S.G. Barve Road, Kalina, Santa Cruz(E) Bombay 400 029.	Mr. A.M. Gandhi, Chairman & Director	Tungsten carbide tipped tools, reamers, drills centres, scrapers, side & face cutters, work rest blades etc.
Scottish Indian Machine Tools Ltd., 2nd Pokhran Road, Thana (Maharashtra)	Mr. M.K. Tewari, General Manager	Heavy duty plate and bar working machinery, such as mechanical and hydraulic guillotine shears, hydraulic press brakes, punching, cropping and shearing machines etc.
Ruston & Hornsby(I) Ltd., Chinchwad, Poona 411 019.	Mr. D.D. Suryawanshi	Diesel engines, marine (fishing & propulsion) generating sets, driving welding sets, compressors, road rollers etc.
Nat Steel Equipment P. Ltd., 4D Ambekar Marg, Dadar, Bombay 400 014.	Mr. Darayus Bhatena	Hospital & pharmaceutical appliances, heavy duty industrial canteen equipment, high pressure sterilizer, autoclave etc.
Westerwork Engineers P. Ltd., 5D Vulcan Insurance Bldg. Veer Nariman Road, Churchgate, Bombay 400 020.	Mr. H.T. Makhijani Mr. K.B. Mansharamani	Industrial furnace plants, lime kilns, packaged type steam and hot water boilers pneumatically operated foundry moulding machines oil burning system.
Union Manufacturing Co., Chakala Road, Andheri(E), Bombay, 400 093.	Mr. K.S. Kohli	Automobile belts, nuts and attachment parts, tempered springs etc.
Mukand Iron & Steel Works Ltd., LB Shastri Marg, Kurla, Bombay 400 070.	Mr. V.P. Goyal	Bars & rods, torsteel wire rods, steel castings, valve castings, industrial machinery EOT cranes, structural fabrication (tanks & pressure vessels) sugar mill machine.

Annexure XIII

Disoussions held with the member of AIEI,

Western Region

(28 October 1975)

The industry has made phenomenal progress in the last decade in building manufacturing capability for a comprehensive range of sophisticated industrial plant and machinery, machine tools, heavy electrical equipment and electronic equipment.

It is in a position to offer technical know-how and expertise in diverse areas.

The industry is deeply interested in export of various equipment, turn-key projects and consultancy.

The present contact with the Andean countries is limited, but the industry welcomes the opportunity to widen the area of co-operation.

Dr. Terry Suero thanked the Association for giving his team an opportunity to meet the members and made the following reference:

Objectives of the Visit

The main objectives of the visit are to share experience, explore possibilities of transfer of technology and establish long-term co-operative programme.

The technical group and the policy group will meet at the end of the visit to decide the future programme of oo-operation between the two countries.

The engineering industry can co-operate in various areas of development in the Andean countries.

The group will disouss scope of long-term co-operation in the areas of technical assistance and credit planning for promotion of various projects in the Andean countries. India has tried intelligent combination of technology and labour in its development which will serve as a good model to Andean countries. There is a wide communication gap between India and Andean countries which needs to be bridged. The present visit will help to start free flow of information in both directions. As a follow-up of this visit, an Indian

delegation should visit Andean countries. In such an event, the Andean Development Corporation will make available all the required assistance.

India's performance on the export front is remarkable. It is, however, surprising that there is no control on items exported. High standard of workmanship and quality are crucial to develop and sustain exports. Japan has set a very fine example in this field.

The Andean Development Corporation has plans to develop petrochemicals, automotive industry and mechanical engineering. The Indian engineering industry would have ample opportunities for transfer of technology in these fields.

The Association can help in following up the contacts which have been established.

Mr. Fausto Vincos Zevallos, CAF, explained the structure and role of Andean Development Corporation which is the main instrument of economic development with the following mechanisms:

(i) Interchange of commerce in the member countries and outside world;
(ii) Social development of the Regions;
(iii) Formation of policies for development and their legislation;
(iv) Programming of infrastructure;
(v) Project planning and implementation.

Andean countries have special interest in India as it has imagination and aggressive salesmanship. A visit by an Indian team will be most welcome.

Following points were concluded during the discussion:

Spanish is the main language in use in Andean countries. The use of English is also wide. Distance between India and Andean countries has a bearing on the export price of Indian items.

High freight adversely affects the competitiveness of the Indian goods.

The disadvantage can be overcome by developing shipping lines to serve the Andean countries.

Movement of goods between the Andean countries amongst themselves is not completely free, but there are special considerations for easy movement.

Chile, Peru and Bolivia produce non-ferrous metals such as copper and tin in large quantities. Mining is a prominent activity in these countries. Mining machinery is not produced in these countries.

There is scope for development of ancillary units related to production of non-ferrous metals.

There is scope for paper machinery and pulp making machinery.

Mr. Jayant H. Shah thanked the members of the policy group and said that the Association will follow up the contact which has been established. The suggestions made by Dr. Terry Suero regarding exports will be borne in mind.

Annexure XIV

Persons who attended the meeting on 28.10.1975

ANDEAN POLICY PLANNING GROUP

Dr. Terry Suero (Leader)
Vice-President,
Programme and Andean Development Corporation (CAF)

Mr. Victor Veltze Michel,
Ingeniero Mecanico Industrial,
United Nations Industrial Development Organization (UNIDO)

Dr. F. Vince
Director, CAF

ASSOCIATION OF INDIAN ENGINEERING INDUSTRY

Mr. K.G. Khosla	President, AIEI (in the Chair)
Mr. Vijai Kapur	Guest Keen Williams Ltd
Mr. M.K. Jhawar	Usha Telehoist Ltd
Mr. L.K. Dhawan	Projects & Equipment Corporation of India Ltd
Mr. Manmohan Singh	Frick India Ltd
Mr. J.V.S. Iyengar	M.M. Suri & Associates P. Ltd
Mr. I.J.S. Bassi	Holtec Engineers P. Ltd
Mr. Sumer Singh	Jaipur Metals & Electricals Ltd
Mr. Rajendra Dev	Davy-Ashmore (India) Ltd
Mr. K.C. Sen Gupta	Development Consultants P. Ltd
Mr. T.N. Idnani	-do-
Mr. W.N. Talwar	Payen Talbros P. Ltd
Mr. S. Prakash	Shriram Refrigeration Industries Ltd
Mr. D.N. Sengupta	Metallurgical & Engg.Consultants (I) Ltd
Mr. A.K. Gupta	Chem Metals
Mr. S. Paul	-do-
Mr. G.S. Chandran	Bawa Iron & Steel Works Ltd
Mr. J.S. Chandran	-do-

CSIR

Mr. A.K. Guha, scientist

AIEI

Mr. T. Das	Secretary
Mr. N. Subramanian	Deputy Secretary
Mr. N. Srinivasan	Deputy Secretary
Mr. T.N. Srivastava	Secretary, AIEI (NR)
Mr. V.K. Chopra	

Annexure XV

Speech of Mr. K.G. Khosla, President, AIEI for meeting with the Policy Planning Group from the Andean Development Corporation on 29 October 1975

It gives me great pleasure to welcome your Excellency, Dr. Terry Suero and his colleagues, from the Andean Development Corporation to yet another meeting with the representatives of the Association of Indian Engineering Industry.

We have had the opportunity of arranging meetings with the Southern Region and the Western Region members of this Association and therefore the CAF members are not new to AIEI. This has largely been possible by the overwhelming support we have received from the Council of Scientific and Industrial Research who have so generously given AIEI the honour of playing an active role in organizing the programme of the two Andean delegations. In it we see a measure of the confidence AIEI enjoys with CSIR.

To avoid the risk of being repetitive, I will merely state that AIEI today is the largest Industrial Association in the country with a membership of over 1000 large, medium and small-scale units from both the public and private sectors. With its 16 specialized industrial divisions, 10 sub-committees and 21 affiliated industry associations, AIEI serves as a national point of reference for the engineering industry which increasingly accounts for a major share in the country's industrial production as well as exports.

Indian Engineering Industry represents an industrial base which is not easily matched in any of the developing countries. The growth of engineering industry has been spectacular and we have competence, skill and capacity not only to produce an entire range of engineering goods but have also established our capacity to absorb contemporary technology. So much so, we are eminently suited to reverse the flow through export of technology through joint ventures, turn-key projects and consultancy services.

A recognition of this state is amply demonstrated by the fact that when CAF approached UNIDO in establishing appropriate engineering industries, UNIDO advised CAF to send a team to India. In view of Andean Group countries' emphasis on industrial development programmes and the degree of industrialization achieved by India, this programme of sharing experience is bound to be very useful as a means of utilizing each other's experience.

We see your visit as the beginning of two-way sharing of experience aimed at building up a long-term co-operation programme. Encouraged by your visit and the support received from UNIDO and our CSIR, I have pleasure in announcing that I propose to lead a result-oriented trade mission to the Andean Group of countries early next year, CAF with a charter of providing technical/financial assistance to member countries for implementation of industrial development programmes is ideally in a position to guide this mission.

RECOMMENDATIONS

1. Let me now turn to what specific facilities we can offer in terms of the objectives of your mission:

(a) In-plant training programme;
(b) Deputation of engineering and technical experts;
(c) Wide range of technical consultancy services;
(d) Undertake to erect and commission plants;
(e) Undertake market and feasibility studies.

AIEI is uniquely placed to offer these facilities through its membership. Further, AIEI will work in full confidence of the Government of India and governments of the participating countries.

2. AIEI would further commend for your consideration the setting up of a sub-regional design and engineering nucleus and a central design and engineering organization which could take into account the requirements as well as the natural endowments of each country.

3. At present the transfer of technology between developing countries is very limited mainly due to lack of information and data regarding technology requirements as well as technology available. The sharing of experience

as is the case of the Latin American delegation's visit to India is one effective way of achieving this. AIEI would recommend that CAF publish an inventory of its technology requirements and the Indian Engineering Industry on its side provide an inventory of technologies available. India-UNIDO sponsored programme is already set to achieve this and AIEI offers its support to this effort.

4. A special feature of the requirements of the developing countries is the suitability of semi-modern technology in many areas to the modern sophisticated technology. The availability of skilled and technical manpower is a major determinant of ability of the developing countries to absorb modern technology.

Keeping in view the Andean Group countries capability and the infra-structure to absorb imported technology and also taking into account the specific technological needs of each country, Indian Engineering Industry and in particular the consultancy firms are in a position to offer total package of technology, engineering consultancy services.

5. AIEI considers that the transfer of technology to Andean Group would be greatly encouraged by the support of CAF and UNIDO. The involvement of international financial organizations in this effort is also necessary.

6. For the benefit of the Technical/Implementation Group AIEI has arranged factory visits to a cross section of engineering units to enable them exchange experience on setting up and efficient running of units. We express the hope that when after the completion of the tours both the Groups sit together with CSIR and UNIDO to draw up the recommendations the special claims of Indian Engineering Industry are taken into account. AIEI recommends the formation of an Indo-Andean Joint Commission with involvement of UNIDO and CSIR to give direction to the transfer of technology between these countries.

We, in AIEI, are thankful to you for the opportunity you provided to us for this meeting and I would now request your Excellency Dr. Suero to speak to us about the objectivs of the mission as well as the experience of meeting a representative sample of Indian Engineering Industry. In particular, we would be obliged if you could clarify for our members:

(i) The possibilities for

(a) Exporting equipment to Andean countries

(b) For phased manufacturing programme in Andean countries with Indian know-how

(c) Joint participation in third countries.

(ii) A forecast of the commercial possibilities in the Andean countries in respect of the industries identified by your Group. Including the scope for transfer of know-how in the chemical engineering industry; export of equipment for metal transformation etc.

(iii) Clarifioation on the terms for such transfer of technology.

Annexure XVI

EPI's participation in Andean countries development plans

Engineering Projects (India) Ltd., (abbreviation:EPI), is the biggest prime contracting company of India, operating as a consortium of seven industrial giants. EPI offers to implement projects on a turn-key basis in the fields of metallurgical, chemical, power generation and transmission, civil structurals and material handling.

The Andean countries have a wealth of natural resources, namely oil in Venezuela, copper and sodium nitrate in Chile, and tin in Bolivia. Also, coal, iron ore, gold, silver and manganese are found extensively in most of the Andean countries. For optimum utilization of these natural resources, industrialization is necessary.

Therefore, the oil and petro-chemicals industries, ferrous and non-ferrous industries, chemical and fertilizer plants and coal-based industries could form the nucleus of industrialization of Andean countries.

EPI offers to associate with the Andean countries in the following manner in three stages:

PHASE I: EPI offers to undertake survey of the Andean countries and preparation of an overall industrial plan identifying the industries and location.

PHASE II: On the basis of the industrial plan that would be drawn up under Phase I, EPI would then conduct feasibility studies for setting up of various industries.

PHASE III: Once the industries of interest are selected and the economic viability of setting up these industries proven, EPI would be pleased to undertake the implementation of these projects on a turn-key basis.

Projects being implemented by EPI, abroad

			Rs (million) $ (million)
1.	Supply of plant and equipment for a coke-oven complex.	Yugoslavia	57.0 [$7.1]
2.	Supply, fabrication and erection of steel structurals for the international airport.	Kuwait	27.0 [$3.4]
3.	Supply of reheating furnaces	Iraq	3.3 [$0.4]
4.	Preparation of a project report	Iraq	0.8 [$0.1]

I hope that adequate information about EPI has been furnished in this note. Should you require any further clarifications, I will be pleased to furnish them, immediately.

With regards,

Yours sincerely,

(Signed) Dr. A. Das Gupta

Dr. J.C. Srivastava
Chief (Technology)
CSIR
CSIR Building,
Rafi Marg,
New Delhi-110001.

Annexure XVII

BHARAT HEAVY ELECTRICAIS LIMITED

A note on whether BHEL have identified any projects for the Andean Corporation and also on what can be done by way of participation by us in the activities envisaged by you with specific reference to technology transfer from India.

We understood that power generation and distribution falls outside the scope of CAF while other industries which can serve the common needs of all member countries fall within their scope.

We would like to approach this in two ways:

(a) To suggest to CAF that they also consider the establishment of an electrical industry (in any one of their member countries) which can serve the needs of all members in the field of generation and distribution of power;

(b) To offer our co-operation for the establishment of industries already under their active consideration, namely in the petrochemical and paper/pulp fields.

For the establishment of an electrical industry, BHEL would be able to offer technical assistance for the following products:

(a) Transformers, say up to 132 KV Class.
(b) Process turbine driven generators, say up to about 3,500 KW.
(c) AC and DC motors from about 75 KW and upwards to say 5000 KW.
(d) Power Capacitors, both for L.T. (440 volt) and H.T. Applications.
(e) Boilers for industrial and utility applications.
(f) Water turbines and water turbine driven generators from say 5 MW and upwards.

(The voltage/size ranges given are indicative only and can be suitably modified to suit likely demand, capital available etc.) For all the above products, BHEL would envisage agreements with parties having sufficient financial and other resources. Agreements would normally cover advice on

selection of plant and machinery, supply of process and manufacturing documentation and the supply of special purpose machinery etc. BHEL would train engineers and technicians in their factories and will also enter into long-term agreements for the supply of components to their collaborators. In consideration, BHEL would expect a lump-sum fee to cover initial services and also a royalty based on sale prices.

In selected cases, it is expected that financial participation will be possible to an extent which will cover the supply of services and capital equipment from India. In such cases, BHEL would expect satisfactory guarantees for the repatriation of capital and for the remittance of profits from time to time.

BHEL's offer of co-operation for the establishment of petrochemical and paper/pulp industries would be in a different form. We are able to supply most of the electrical plant and also process boilers and compressors for these plants. We can offer software and all technical assistance for the engineering of control schemes especially for paper mill drives. This type of assistance is also possible for drives and controls for mining and steel mill applications. Eventually, it may be possible to assist in establishing factories for manufacture of motor and controls also, if the volume of work would justify such a move.

Annexure XVIII

MISSION TO THE INDUSTRIES IN THE BOMBAY-POONA-REGION

No.	Name and address of the firm	Person visited	Area of specialization	Capacity production	Points of discussion
1	Mahindra & Mahindra Ltd Factory: Akurli Road, Kandivili, Bombay 67 Phone: 695281 Office: Worli Road, No. 13 Bombay 18, 400018 Phone: 391441	Mr. J.S. Karkal	Jeeps, ambulance, mini-bus, delivery van, trailer bus etc.		Discussion in regard to technology transfer - setting up of plant for manufacturing jeeps on turn-key basis.
2	International Tractor Co. of India Limited Kandivili East Bombay 87 Phone: 694201	Mr. S. Vijay Iyengar	Tractors Models of 37.5 HP and 45 HP, and implements such as Heavy Duty Tillers Rigid Tine Cultivator Disc Plough etc.	2500 employees 10,000 tractors per year	General discussion took place.
3	Bajaj Auto Limited Bombay Poona Road Akurdi, Poona 35 411 035 Phone: 82551-2-3	Mr. J.H. Shah Chief Executive Mr. G.N. Deshmukh General Manager Mr. D.V. Borgaonkar Works Manager	Scooters Three wheelers	Scooters 60,000 per year. Three wheelers 10,000.	Company is giving the technical know-how to Taiwan, for manufacture of scooters. Company is ready to provide technical know-how for setting up plant in any of the Andean countries on turn-key basis.
4	Bharat Forge Co., Ltd Post Box No. 57, Mundhwa, Poona 1: PIN 411 001 Phone: 25351-3	Mr. P.N. Gore Manager Engg.	Steel forgings of various types such as crankshafts, camshaft bomb shell, connecting rods etc. Max Wt. of forging 2000 kg	12,000 tonnes of forgings per year on 2 shift basis.	General discussion on forgings, particularly on special steel heavy weight forgings.

No.	Name and address of the firm	Person visited	Area of specialization	Capacity	Points of discussion
5	Kirloskar Oil Engines Limited 13, Laxmanrao Kirloskar Road Poona, 411 003 Phone: 55346-47-48	Mr. M. Radhakrishnan Sr. Manager Phone: 55341 Mr. C.S. Kirloskar Chairman	Aircooled Engines from 3.4 to 63 HP Water cooled diesel engines from 13-66 HP Diesel pumping sets Marine diesel engines from 11 to 66 HP	2500 engines per month. 3500 workers	Discussion was held in regard to technology transfer in the manufacturing medium capacity diesel engines
6	Kirloskar Pneumatic Co. Ltd Hadapsar Industrial Estate Hadapsar, Poona 13; 411 013 Phone: 7133	Maj. General H.M. Mohite President Mr. K.K. Khanna Vice President	Compressed air equipments refrigeration and air conditioning equipments and pneumatic tools 1. Rotary two-stage oil flooded air compressor 2. Reciprocating water cooled, motor driven stationery air compr. Capacity varying from 95 cft/min to 1000 cft/min Refrigeration Ammonia & Freon Compressors Flake/Pack/Slush ice plants 1,3,5,10 tons & multiples per 24 hours. Pneumatic tools Pneumatic drills, rock drills, pneumatic hammers vibrators, picks etc.		Discussions were held mainly on the following: Rock drills Road breakers Hammers etc., Party is interested in the technical know-how in pneumatic tools.
7	National Chemical Lab and MERADO Poona 8	Mr. A.M. Lele Mr. Kulkarni M/s Supdt. Dr. S.K. Basu	Research and development in chemicals, chemical technology and allied areas.	CSIR research organization	Discussions took place in MERADO in regard to MERADO type organizations preferably with CSIR collaboration, in Andean countries. Interested in the sponsored research projects and impressed very much by the activities by such units.

No.	Name and address of the firm	Person visited	Area of specialization	Capacity	Points of discussion
8	Indian Tool Manufacturers Ltd., Sion Road, Sion, Bombay 22, PIN: 400022; Phone: 476376-9; Telex: 011-2431	Mr. G.S. Agrawal, President; Mr. P.D. Maheshwari, Sales Executive.	Small tools such as twist drills, reamers, etc. of various sizes.		Discussion in regard to setting up of a similar factory in Andean countries. (In Ecuador a factory is already working, producing drills with German know-how)
9	Godrej & Boyce Mfg. Co., Pvt. Ltd., Home Street, Bombay-1. Factory: At Vikhroli, Bombay-79 Phone: 582621	Mr. P.M. Bhadha, Plant Manager, Plant No. 9.	Pneumatic presses of various types and sizes. 10 to 100 tons capacity. 1. Single geared and non-geared, inclinable and non-inclinable models. 2. Two-point slided presses. 3. Super rigid cap presses and also 4. Press brakes of 200 ton capacity.		Discussion took place generally. The visit was restricted to this Plant No. 9 only. Party was interested in the manufacture of heavy duty press brakes and presses.
10	Sahney Kirkwood Pvt. Ltd.	Mr. Devinder Singh Sahney, Mg.Director	Manufacturers of Dynamo Brushes, Starter Brushes. All types of steel & Mico Commutators and Slip Rings. Products are all completely indigenous.		Party showed keen interest in manufacturing of commutators of various types. No special discussion was held due to lack of time.
11	New Standard Engineering Co., Ltd., NSE Est Goregaon (E) Bombay 63. Phone: 695261	Mr. Patil Managing Director	Various types of furnaces of high capacity by fabrication.		Party was shown round the various sections. General discussion with the Managing Director of the firm.

Annexure XIX

Report on the meeting held with the technical group on 25 October 1975

Mr. M.B. Bhaskare, Deputy Chairman, welcomed the technical mission and made the following points:

The Indian Engineering Industry has the capability to offer various items and also the technology.

Being a developing country, India is in a position to appreciate the problems of Andean countries which are developing.

The engineering industry has achieved remarkable progress in export of various goods and technical expertise through the consultancy organizations.

The industry welcomes the opportunity to share experience with the Andean countries.

The Association can play a useful role in this dialogue between the Andean Development Corporation and the engineering industry.

Mr. Veltze-Michel said that UNIDO has been working for transfer of technology from developed to developing countries and also from developing to developing countries. The Association has been co-operating with UNIDO and very useful work can be done in future.

Dr. Jose Luis Ascanio thanked the Association for giving him and his colleagues an opportunity to meet the members. The basic objectives of the visit are to share experience and to make acquaintance with the various sectors of engineering industry in which the Andean Development Corporation is interested. The Corporation aims at integrated economic development through the implementation of various projects in the member countries. The Corporation has projects valued at $160 million in the six member countries. The Corporation gives financial as well as technical assistance for implementation of the various projects in the Andean countries. The Group wishes to study the possibilities of transfer of technology from India to Andean countries. The transfer may be in the form of joint ventures, setting up of complete manufacturing plants and export of engineering items suitable to the Andean countries. The actual mode of co-operation in the specific areas identified by the Group will be decided by the two countries at the Government level.

Other points made at the meeting were as follows:

1. Development

Of the six Andean countries, Colombia and Chile are most developed. Bolivia and Ecuador are not developed.

2. Immigration

The rules regarding immigration differ from country to country. Generally, skilled personnel are welcomed. Chile needs skilled workers as well as foreign investments. Peru needs skilled personnel. Venezuela accepts immigrants on selective basis. Immigration of technicians to set up plants falls within the agreements between the two countries and it falls outside the normal immigration rules.

3. Production of basic items such as steel

The policy of the Andean countries is to nationalize industries dealing with natural resources. All countries are interested in developing steel industry. The countrywise production and projected demand are as under:

Name of country	Present production	Projected demand by 1980
Chile	600,000 tonnes	1,500,000 tonnes
Peru	500,000 tonnes	1,500,000 tonnes
Venezuela	1,000,000 tonnes	1,500,000 tonnes
Bolivia	No production	Figures not available
Ecuador	-	400,000 tonnes
Colombia	600,000 tonnes	Figures not available

4. Industries

(i) Foundry industry

All the Andean countries have scope for foundry industry, both for technology and equipment. Pig iron is available in all the countries in adequate quantities. There is no restriction on import of forging steel. Steel that may be required for use can be imported without any difficulty. Chile has priority for setting up of foundries.

(ii) Machine tools

Colombia and Chile which are most developed need machine tools of various types. Peru requires grinders and drilling machines.

(iii) Agricultural machinery

Agricultural machinery is produced by almost all the Andean countries.

(iv) Sugar machinery

Sugar industry is being expanded. Recently, sugar plants valued at $55 million were purchased from Finland and West Germany. Sugar plant machinery, therefore, has scope.

(v) Automobile industry

Automobile manufacturers, such as Fiat, Ford, General Motors have assembly plants in the Andean countries. The automotive industry has been already planned for each country and products have been assigned. There are joint ventures between the countries and the suppliers of automobiles. Venezuela already produces 25 to 30% of the automobile components needed. The possibility for export of automobile components from India will have to be probed.

(vi) Electrical equipment

The electrical equipment industry in the Andean countries is in a developing stage. In Chile, electrical equipment is not manufactured. However, transformers of 1,000 KW are manufactured. Chile is interested in electric motors for electric locomotives. The voltage in use in Chile is 220 KVA.

(vii) Infrastructure

Venezuela and Peru have very good road system. All the countries have good ports. Colombia and Venezuela are most developed in communications.

(viii) Engineering items

At present, engineering goods are mainly imported from U.S.A. and Japan.

(ix) Petrochemicals

The investment in petrochemical industry by 1980 is expected to be $2,500,000. All the Andean countries are expected to implement the various projects assigned to them in the field by the Corporation. Venezuela and Chile are well advanced and they have gross investment of $320,000. There is good scope for petrochemical plants and equipment. The required know-how is not available and joint ventures are invited.

5. Rules for foreign investments

The Andean countries have laid down norms for foreign investments. The foreign investor can have 49% holding which is reduced over a period of time. 14% of the profits can be repatriated by the foreign investors.

6. Labour rates

The labour rates depend upon the development of the country. Venezuela has the highest labour rates which compare favourably with rates in U.S.A. The rates are low in Bolivia and Ecuador as they are undeveloped. The rates in the other countries compare favourably with the rates in India.

7. Adoption of technology

The Andean countries are interested in transfer of technology which will suit the specific conditions existing. The technology will be such which will allow utilization of the available labour force. The Andean countries are therefore much interested in the Indian technology. As a rule, they wish to have sophisticated items which would improve the standard of living.

8. Standards institution

Each country is trying to develop its own standard institution.

Dr. Ascanio suggested that if there are specific points on which information is needed, they may be sent to the Andean Development Corporation through the Association.

Mr. M.B. Bhaskare thanked the members of the technical group for the useful exchange of information.

Annexure XX

MEETING OF TECHNICAL GROUP OF THE ANDEAN MISSION WITH INDUSTRIES OF TAMIL NADU

Name	Company represented	Interest on export of specific product/field of technology
1. Sri K.V. SRINIVASAN	The Union Co.(motors) Private Limited	Scissor jacks, screw jacks, screw jacks, tail pipes, mufflers, automobile water pumps, electric motors, leather goods-shoe uppers, gloves, ginning washers etc. and automobile manufacturers.
2. Sri S. MUTHUKRISHNAN	Carburettors Limited	
3. Sri C.V. KARTHIK NARAYANAN	Standard Motor Products of India Limited	
4. Sri B.K. SREENIVAS	Union Co.(Accessories) Private Limited	
5. Sri R. RAMANUJAM 6. Sri R. MUKUNDAN	Brakes India Limited	Foundation Braking equipment Hydraulic cylinders like Master cylinder, wheel cylinder Hoses and Seals-kits.
7. Sri E. ABRAHAM	Binny Limited	Light forgings Foundry (G.I. & Mechaile Structural steel including Bailey bridge
8. Sri R.K. GUPTA	Audco India Limited	Inaustrial pipeline valves.
9. Sri L. RANGANATHAN	Carborundum Universal Limited, Madras	Bonded and coated abrasives also technology in selected areas.
10. Sri A. PANCHAPA-KESAN	Kaveri Structurals	Chemical process equipments.
11. S.RM.PL. SUBRA-MANIAN	S.R.P. Tools Ltd.	Cutting tools for export and joint venture.
12. Sri K. RAMAN 13. Sri K.R. ANANDA-KUMARAN NAIR	Best & Crompton Engineering Ltd.	Manufacturing of pumps, electrical design and cinema carbon and automobile electrical equipments.
14. Sri A.L. BAGRI	Aditya Agro Industries P.Ltd.	Power Sprayer for Spraying pesticides for agricultural purposes.

Name	Company represented	Interest on export of specific product/field of technology
15. Sri S.S. JAIN	L & T-McNeil Ltd.	Tyre machinery
16. Sri K.G. Gupta	English Electric Co.	LT Distribution equipment
17. Sri Y.H. RAO	Vak Engineering (P) Ltd.	Exporting Road construction tube well drilling pipes.
18. Sri C.R. VENKATA-SUBBIAH	Coromandel Steels	Structural work, pipes.
19. Sri RAJAPPA	CHEMFAB	Plants for chemicals.
20. Sri C.H. KRISHNA-MURTHY RAO		

Annexure XXI

M.N. DASTUR & COMPANY (P) LTD

Visited on 5.11.75

1. Name and address of the organization

M.N. Dastur & Company (P) Limited, P-17, Mission Row Extension, Calcutta 700 013. Phone: 23-7272

2. Area of specialization

Consultancy services for the iron and steel, chemical and allied industries.

3. Field of activities

Comprehensive design, engineering and management consultancy services:

(i) Surveys and reports

Feasibility studies and project reports, market studies, raw material investigation, project evaluation and assistance during negotiations with financial institution.

(ii) Design, engineering and construction supervision including:

Detailed plant design and layout; specifications, tender evaluation, procurement and inspection; construction supervision services; project management and control; assistance in commissioning etc.

(iii) General consultancy services

Plant development and operation research; manpower planning, recruitment and training programmes; management organization; productivity and cost reduction; materials management etc.

4. Size and capacity

Dastur's is one of the largest consulting engineering firms of its kind and has a strength of about 1,000 at present. On its staff are men with a wide range of specialities - metallurgical, mining, electrical, chemical, mechanical, civil, structural, fuel, instrumentation, construction, industrial - as well as experts in economic evaluation operation research, financial analysis and project management.

4.	Preparation of a project report	Iraq	0.8 [$0.1]

5. Points of discussion with Andean team

Provision of consultancy services and transfer of technology for the development of iron and steel industry in the Andean subregion. Specifically, the possibility of Dastur's providing the design and engineering services and technology transfer for foundry and forge projects to be established in the Andean subregion was discussed.

Dasturs also offered their specialized services for the establishment of central design and engineering organization for the Andean subregion.

6. Conclusions

The leader of the delegation invited Dasturs to register themselves with the Andean Development Corporation.

BHARTIA ELECTRIC STEEL CO. LTD

Visited on 5.11.75

1. Name and full address of the firm visited including the telephone numbers and the persons visited

Bhartia Electric Steel Co. Ltd.,
8, Anil Maitra Road,
Calcutta 700 019

Phone: 47-7761-5.

Persons visited:

Shri O.P. Tantia, Director,
Shri J.P. Chowdhary, Executive Director

2. The area of specialization of the firm

Steel foundry products, especially railroad rolling stock - centre buffer coupler and cast steel bogie, anchors for docks and harbours, steam turbine castings, sinter and slag ladle cars for steel plants, sheel moulded high alloy/Mn. steel castings.

Foundry resins and catalysts.

3. Items of production, details regarding capacity, employment

Heavy & low weight centre buffer couplers.
High speed cast steel bogies.
Caterpillar links for earth moving equipment.
Tract links for fighting vehicles (sheel moulded castings).
Anchors & Bollards for Docks and Harbours.
All types of vessel/ship castings (maximum weight 9000 kg)
Pulveriser rings for coal crushing plants.
Sophisticated steam turbine castings.

Phenol formaldehyde resins and various types of catalysts.

The Company can make steel castings by both hand moulding and shell moulding processes in the weight range of 500 gms to 9,000 kgs finished unit weight. Heavy moulding machines for manufacture of 3.5 tonnes unit weight castings are available with all other necessary equipment, viz., heat treatment, shot blasting, fettling and machining.

Capacity

(a) Steel castings -	licensed:	12,000	tonnes per year
	installed:	11,500	" "
(b) Foundry chemicals -	licensed:	2,400	" "
	installed:	1,800	" "

Employment

Between the four Works of the Company there is a total complement of 1,600 skilled and unskilled workmen and 400 administrative and clerical staff.

4. Points of discussion in brief such as training programme, technology transfer, production aspects, setting up of R&D or any other points such as question of adaptation etc.

Horizontal transfer of technology in terms of production techniques is possible for steel foundry products. In case of both the processes, viz., conventional sand moulding and shell moulding, the design transfer is possible wherever Bhartia has developed the design and is not prevented by patents, foreign collaboration etc.

The Company has a consultancy firm in the name and style of Bacsel India Ltd. for providing expertise on project engineering for steel foundries and, hence, is in a position to assist in engineering a project. The Company has also a Research and Development Cell which has the expertise for providing methods/designs and helping in development of steel castings. Production training facilities also can be provided. With an idea to expand its diversified activities, the Company has equipped itself for training a large number of technicians/supervisors.

5. Conclusion

Nil.

NATIONAL INSTRUMENTS LIMITED

Visited on 6.11.75

1. Name and address of the Company

National Instruments Ltd.,
1/1 Raja Subodh Ch. Mullick Road,
Calcutta 700 032

Phone: 46-4504 (5 lines)

2. Area of specialization and items of production

The factory is located in Greater Calcutta and employs about 1,400 people. The Company's turnover during the year 1974-1975 was about Rs.33 million. The present product-mix consists of the following broad groups:

(i) Survey instruments: level dumpy, level engineers', optic theodolite, transit theodolite, compass prismatic, pocket and mirror stereoscopes for photogrammetry.

(ii) Optical Instruments: profile projector, optical measuring instruments for use in machine tools.

(iii) Pressure and vacuum gauges: for railways, pressure regulators, process control industries etc.

(iv) Infra-red night vision sighting equipment.

(v) Meteorological and industrial thermometers and hydrometers, precision scales etc.

3. Points of discussion

The team showed special interest in different types of survey instruments.

4. Conclusion: nil.

JESSOP & CO. LTD

Visited on 11.11.75

1. Name of the Company and address

Jessop & Co. Ltd.,
63, Netaji Subhas Road
Calcutta - 700 001

Phone: 22-5041-49

Factory: Dum Dum
Calcutta 700 028

2. Area of specialization and items of manufacture

The Company specializes in production of heavy engineering equipment like:

(1) Cranes of all types e.g. - Electric overhead cranes, wharf cranes, special cranes for steel plants and other applications.

(2) Rolling stocks of all types for railways e.g. - Wagons, coaches, electric multiple units.

(3) Road rollers.

(4) Crawler tractors.

(5) Hydraulic circular sawing machines.

(6) Hydraulic gates e.g. - Sluice gates and radial gates for river projects.

(7) Industrial building structures, bridges and other technological structures.

3. Annual licensed capacity of various products

(1)	Structural fabrication	-	18,000 tonnes.
(2)	Cranes	-	6,000 tonnes.
(3)	Railway wagons	-	3,648 in terms of four wheelers.
(4)	Meter gauge coaches	-	376 coaches.
(5)	Road rollers	-	1,380 units.
(6)	Crawler tractors	-	400 units.
(7)	Paper-making machinery	-	Two machines of 200 tons per day capacity or equivalent.
(8)	Hydraulic circular sawing machines	-	48 machines.

(9) Saw-blade sharpening machines - 16 machines.

(10) Crabs - Rope operated and electro hydraulic - 48 Nos.

Employees - Approx. 10,000 Nos.

4. Points of discussions

Discussions were mainly on the subject of providing technical assistance for establishing complete manufacturing facilities for production of wagons and coaches for the railways and road rollers.

It was suggested by Jessop that initially they may provide assistance for preparation of project reports and know-how for setting up manufacturing facilities. Designs would intially be supplied by Jessop, and Jessop may provide the technical know-how for gradually building up design expertise in that country.

Jessop can train their people in their Works and design offices to enable them for proper appreciation and understanding of the technical know-how to be transferred.

The Group was given all the details requested.

5. Conclusion

The team showed special interest in the manufacture of railway wagons, coaches, electric multiple units and paper-making machinery.

GUEST KEEN WILLIAMS LIMITED

Visited on 12.11.75

1. Name of the Company and address

Guest Keen Williams Limited,
97, Andul Road,
Howrah - 3

Phone: 67-4112 (5 lines)

2. Area of specialization

(1) Forgings,
(2) Alloy and special steels,
(3) Bolts and nuts (fasteners),
(4) Precision pressings.

3. Items of production

At present employs about 13,000 people. The details regarding their items of production etc. are given below divisionwise:

Forgings Division

The products range from small connecting rods and levers as light as 100 grams to draw bar hooks as heavy as 35.00 kg for railway wagons made from carbon, alloy, stainless, boron freecutting and other special steels, majority of which are procured from the Steel Division.

The GKW Forge has an installed capacity of 8,400 tonnes and produces around 5,000 tonnes of closed-die forgings.

Clear Space Pneumatic hammers cater for the requirements of "preforge-use" for stamping.

Steel Division

GKW Steel Division is a major producer of alloy and special steels in India. Annual capacity is 65,000 ingot tonnes of electrically melted steels; 135,000 tonnes of finished rolled bar and 15,000 tonnes of bright steel bars.

Products made by the division are of interest to transportation industry, railway rolling stock and track fasteners, industrial machinery, defence forging, spring and bright drawing industries.

In addition to the standard sections i.e. rounds, squares, hexagons etc., special profiles have also been developed such as the lock ring and flange bar for commercial vehicle wheels, file steel flats and half rounds.

Bolts and Nuts (Fasteners) Division

GKW manufactures a wide range of quality to various specifications and sizes and also supply fasteners to customers' designs. These fasteners are used in nuclear plants, space centres, electrical generation and transmission, automotive and ancillary industries, buildings, bridges and structurals, railways, etc.

They make high tensile and mild fasteners generally from 6 mm to 33 mm. dia. bolts and nuts. They are equipped to manufacture about 25,000 tonnes of fasteners and allied products per year.

They export about 10 per cent of their production to overseas countries.

Precision Pressings Division

This Division's products include:

Electrical stampings and laminations for electric motors and fans, motor control gear, distribution and power transformers, switchgear and electricity meters.

Strip wound cores for auto-transformers, instrument transformers, magnetic amplifiers and saturable reactors.

Complete sub-assemblies such as hydraulically pressed and rivetted or argon arc welded stator cores for motors and fans, cores for energy meters, pole bricks and pole shoe assemblies for alternators, contactors, contactor cores for control gear.

Precision, pressed and deep drawn metal components for electrical, automobile, textile and general engineering industry.

4. Points of discussion

The team showed special interest in the activities of Forgings Division.

5. Conclusion

Nil.

DEVELOPMENT CONSULTANTS PVT. LTD

Visited on 12.11.75

1. Name of the Organization and address

Development Consultants Pvt. Ltd.,
24B, Park Street,
Calcutta 700 016

Phone: 24-8153 (8 lines)

2. Area of specialization

Steel and iron, paper and pulp, cement, architecture and town planning, structures, nuclear and thermal power, fertilizer and chemical, power transmission and distribution, ferrous and non-ferrous metallurgical projects, mining and mineral beneficiation, transport and communication, irrigation and flood control, material handling, textile and synthetic fibre, docks and harbours, airports.

3. Items of production

It is a consultancy organization specialized in the fields mentioned above and at present tackling quite big projects in India and abroad, employing about 750 people inoluding engineers.

4. Points of discussion

DCPL appraised the team that it can offer engineering services in all the fields of their specialization.

5. Conclusion

The representative of Bolivia showed special interest in the field of iron and steel, cement, paper and pulp and had asked for some more details from the organization. The follow-up action has been taken up by DCPL.

A short note on some of the points of a meeting of AIEI (ER) with the Andean Team on 13.11.75

Shri S.S. Varma, Industries Commissioner and Secretary, Government of West Bengal was present in the meeting as a special invitee.

Chairman, Mr. Om Khosla, gave a short history of the development of industries in the eastern part of India.

Dr. J.L. Ascanio, Leader of the Andean Group, being requested by the Chairman indicated some of the fields of interest of the Andean Group where the scope of technology transfer is existing and those were metalworking, petrochemical and auto industry. He had also added that the projects that are under consideration relates to electronics, paper and steel industry. During his speech Dr. Ascanio appraised the members present that the Team had forwarded to CSIR a detailed list indicating the requirements which they need in the next ten years. He suggested that the list should be availed of by the Association so that this could be circulated to the interested members.

He also continued that the members of his delegation had identified a few items of interest to them and those were:

Peru

Establishment of foundry and forge plant, rolling stock, auto-components, etc.

Ecuador

Foundry/forge, machine tools of special quality, precision instruments, etc.

Chile

Auto components, machine tools of general nature, foundry/forge, etc.

The other countries in the Group were also more or less interested in the items mentioned above.

Annexure XXII

ELECTRONICS COMMISSION

An Area Survey Study conducted by Information, Planning and Analysis Group of Electronics Commission, New Delhi reveals that the Andean Group of countries have requirements for electronic goods pertaining to the areas of computers, consumer electronics, mass communication, telecommunication, components and medical electronics. For example, the Andean Group is estimated to have imported about $50 million worth of electronic goods from the U.S.A. in 1970 alone.

India could meet at least part of these requirements of the Andean Group. The Indian companies/organizations among many others which could assist in the production and R&D of the various items are listed below:

Items	Production	Research and development
Electronic computers	ECIL/BEL/HTL/Private	ECIL/BEL/HTL/CEL
Consumer electronics	ECIL/Private	
Mass communication	BEL	BEL
Telecommunication and other communication equipment	ITI/Railways	TRC/ITI
Components	BEL/ITI/ECIL/KSEDC	TIFR/CEERI
Medical electronics	ECIL/IBP/Private	ERDE/CSIO/BARC/ECIL/IITM/IITD

The Information, Planning and Analysis Group, Electronics Commission could assist in co-ordination of the selection of the specific projects for co-operation between the two countries by providing information on a national scale both in terms of production and R&D structure and the future plans for the same.

ECIL	Electronics Corporation of India Limited
BEL	Bharat Electronics Limited
HTL	Hindustan Teleprinters Ltd
CEL	Central Electronics Ltd
ITI	Indian Telephone Industries
KSEDC	Kerala State Electronics Development Corporation
ERDE	Electronic Research and Development Establishment
CEERI	Central Electronics Engineering Research Institute
CSIO	Central Scientific Instruments Organization
BARC	Bhabha Atomic Research Centre
IITM	Indian Institute of Technology, Madras
IITD	Indian Institute of Technology, Delhi

Note: For detailed study refer to:

"A perspective analysis of trade and technology co-operation in electronics between India and the Andean Group of Latin American countries", October 1975, Area Survey Report-30. Electronics Commission, Information, Planning and Analysis Group, C5/18 Safdayung Dev. Area, New Delhi-110016, India.

Industries who participated in the meeting of AIEI Northern region

Annexure XXIII

Ser.No.	Name of Company	Name of person	Area of Interest
NORTHERN REGION			
1.	Bareja Engg. Industries (P) Ltd., New Delhi	Mr. L.M. Bareja	
2.	Fedders Lloyd Corporation P Ltd., New Delhi	Mr. B.R. Punj	Metal working machinery
3.	K.G. Khosla & Co. P Ltd., New Delhi	Mr. K.G. Khosla	Air compressor technology
4.	Hindustan Everest Tools Ltd., New Delhi	Mr. J.P. Singh	Foundry forge, hand tools, auto components, etc.
5.	Hindustan Monark P Ltd., New Delhi		Machine tools and complete plant for bicycles and bicycle parts
6.	Holtec Engineers P Ltd., New Delhi	Mr. Ajit Thakur	
7.	Shriram Refrigeration Industries Ltd., New Delhi	Mr. V.K. Hajela	Internal combustion engines and pump sets
8.	Bharat Steel Tubes Ltd., New Delhi		Mild steel pipes and tubes
9.	National Steel and General Mills (P) Ltd., Ghaziabad		Forge
10.	Payen-Talbros P Ltd., Faridabad	Mr. W.N. Talwar	Gaskets and oil seals, besides joining sheets
11.	Guru Nanak Engg. and Foundry Works		Automobile rear axle shafts and U.J. Crosses and steel forgings

Annexure XXIV

Speech of Mr. K.G. Khosla, President, AIEI, for meeting with the Technical Group from the Andean Development Corporation on 15 November 1975

It gives me great pleasure to welcome you to what is perhaps your last official meeting with industry in your four weeks' visit of India. The members of this Association in the regions who had the opportunity of meeting you have expressed satisfaction at your interest and favourable response to the possibility of technology transfer from India to the Andean countries in selected fields.

It is only appropriate that you, having toured the country in the last four weeks, should be speaking to us rather than my telling you about the capability of the Engineering Industry. We believe that you have had by now a first-hand experience of the Indian Engineering Industry.

Nevertheless, I wish to take the opportunity of reiterating some points which have come up at various meetings and which you may like to bear in mind when finalizing the recommendations.

1. At all the AIEI meetings with you, we have attempted to emphasis the competence of Indian Engineering Industry. This industry not only can produce an entire range of engineering goods but has the capacity to absorb contemporary technology and in fact initiate flow of technology to other developing countries through joint ventures, turn-key projects and consultancy services.

2. A logical outcome of this state of the industry is that what the Indian Engineering Industry has to offer can stand international competition in terms of price and quality. We recognize that as developing countries your Group's anxiety to select what is best and appropriate to your countries requirements. I can confidently state Indian engineering technology would merit those considerations by their suitability particularly in the area of appropriate intermediate technology.

3. During your Group's factory visits a number of our member companies have evinced interest in setting up joint ventures in the Andean countries. I would like to state that India's own record of treatment of foreign investments has been excellent and foreign investors have been treated in a fair and just manner. At AIEI meetings with the Policy Group from the Andean Development Corporation the terms for foreign investment were outlined. If you would permit me to say, these are marginally attractive. I would therefore impress upon you to consider the possibility of liberalizing these terms with a view to making foreign investments attractive. In view of the distances involved between India and the Andean countries, there is also need to assure that Indian investors' interests would be protected so long as these are within the parameters of the foreign investment policy of each of the countries.

4. The problems of shipping has been highlighted at these meetings and there is need to examine this issue in greater detail. However, the one advantage in joint ventures, is that unlike in trade, the dependence on shipping is less frequent, as once the plants are moved production would take place in the Andean countries.

5. We recognize that it will be sometime before your recommendations are made to UNIDO and discussed with the individual country representatives. I therefore invite you to give your impressions of the visit to factories and discussions with the Association members and possibly also give an indication of the areas of interest to the Andean Group for technology transfer.

In AIEI we are grateful to the CSIR for providing us with an opportunity to work together with them in the visit of the two Andean delegations and we are confident that out of these visits will emerge a major technology transfer programme.

Annexure XXV

RAIL INDIA TECHNICAL AND ECONOMIC SERVICES LTD

India has a very large railway system with over 60,000 kms of track covering broad gauge, metre gauge and narrow gauge lines. Since independence, a massive programme of expansion, modernization and development has been undertaken through the successive Five-Year Plan. Some of the major achievements are - addition of about 6,000 kms of new lines, most of the constructions being over difficult terrain across mountains involving high viaducts, long tunnels and large bridges; electrification of about 10,000 kms with planning for a further 5,000 kms in the next five years; establishment of micro wave telecommunications over large areas; track modernization, including welding of rails; laying of concrete sleepers with elastic fastenings, etc., and moderate increase of speeds over long lengths; and setting up of production units for electric and diesel locomotives; passenger coaches, EMUs and wagons; rails, fishplates, bolts, sleepers in steel, cast iron and prestressed concrete; and mechanical, electrical and electronic signalling systems. A number of training institutions in various disciplines have also been set up for imparting professional training to enable railwaymen at all levels to keep up-to-date with the rapid pace of modernization.

2. Such an ambitious programme of expansion and growth was made possible with the technological back-up afforded by the unique integrated organization with over 2,000 specialists established for carrying out all research, designs and standardization for the Indian railways in one campus (R.D.S.O.) at Lucknow. The developments have also been greatly helped by the policy of selecting the best technology the world has to offer, most suited for adaptation to the local conditions at the cheapest cost, which is of particular relevance to the needs of the developing nations, who have also to progress within the constraints of a developing economy.

3. To expand and progress rapidly, the sharing of this unique experience and knowledge with the sister countries of the developing world, started since the early 1960s, Indian railways have set up an organization in the public sector,

the Rail India Technical and Economic Services Limited. This Company can draw freely upon the entire reservoir of talent and expertise on the Indian railways, the RDSO and the training institutions and will be able to provide a range of consultancy services covering techno-economic feasibility studies; location studies, including preparation of drawings, designs, estimates and specifications; supervision and inspection, project scheduling and progress control during execution etc., for:

Construction of new lines;

Electrification projects;

Setting up of production units.

Consultancy services can also be offered for:

Modernization schemes for track and signalling and telecommunication systems;

Moderate increase of speeds up to 160 km/hr and 100 km/hr over existing standard and metre gauge track, respectively with the minimum of investment;

Training of personnel in all fields of railway technology;

Railway operation, inventory control, systems planning and management.

These are the more important fields in which we can share our expertise and collaborate with the Andean countries in their massive programmes for expansion and modernization of railway systems. Indian railways can also offer training for a limited number of Andean countries' personnel in the various disciplines in the training institutions in India.

Annexure XXVI

DEVELOPMENT CONSULTANTS

We, Development Consultants are the pioneers inthe field of consulting engineering in India, have now 25 years' experience in the project consultancy engineering and project management. Our activities have been spread out, beyond our national boundary to undertake assignments in various developing countries of the Middle East, South East, Africa and Latin America.

From the concept to the completion is the range of our services, which run through the complete spectrum of consulting engineering i.e. from feasibility study through design and financial engineering, construction project management to commissioning of the plant. Under the corporate roof, we have highly qualified professional men in all disciplines in engineering, science, economics, financial counselling, management consultancy etc. In addition, a special feature of our organization is our experience based on understanding and appreciation of the particular problem of a developing country, in the spheres of technology transfer, financial engineering, equipment manufacture and manpower management.

Our Design Engineering Division has its own team of process experts, engineers and designers in various disciplines, technicians and draughtsmen to convert the basic process design to detailed specifications and drawings for mechanical, civil, structural and electrical work of the industries.

We have been closely associated with the countries development programme and the special problems in more than two decades. We are very much conversant with the issue and constraints of a nation trying to enter into an era of industrialization.

Particularly, in the field of pulp and paper industries, our experience is second to none in India. In addition to having our own process technology for the utilization of conventional raw materials, we have been successful to utilize various types of agricultural residues like bagasse, grass, reeds etc., which were left un-utilized till recently, though much needed for the paper industry. The possibility of utilization of mixed deciduous woods for the

manufacture of newsprint, cultural and wrapping paper was a challenge for us, and our success in the development of process technology in this direction was well accepted by the industries.

So far we have been responsible as a consultant for the development of 31 mills of various types and magnitudes in the field of pulp and paper industry. Out of these 31 assignments, about half a dozen mills involve utilization of bagasse and hard wood for the production of both cultural and newsprint paper.

Forced utilization or utilization under compulsion of various types of agricultural residues like bagasse has always kept us alert about the latest development of the process technology all over the world. We are, therefore, in an eminent position to supply complete process technology apart from the design engineering services for the utilization of bagasse in your proposed venture.

In addition to having a strong technological base of our own, we have tie-up arrangements for technical collaboration with paper experts all over the world. This also enables us to keep ourselves posted with the latest developments in the world in this sophisticated and fast changing technology.

Your proposed bagasse based paper mill with a capacity of 40,000 tonnes/annum would have a similar technology and the problems that we have already experienced while planning the bagasse based mill in India and we are confident that our experience in this field would be useful to your esteemed organization. Preliminary information about the project is not available with us at the moment. But assuming the usual infrastructures and communication facilities are available with the plant site, the estimated project cost shall be in the region of 50-55 million dollar. This investment cost does not, however, take into account the debt service charges which will largely depend upon the financial planning of the mill. This is a matter of fair details and can only be established after thorough investigations have been made.

Preparation of feasibility report is an essential prerequisite for a project of this nature which we understand you propose to undertake immediately to establish the various facts and figures, merits and demerits, problems and solutions, financial implications and economic viability. We shall not only be interested to undertake preparation of feasibility report under your guidance, but also be pleased to render our specialized engineering services up to commissioning of the plant on a turn-key basis.

Annexure XXVII

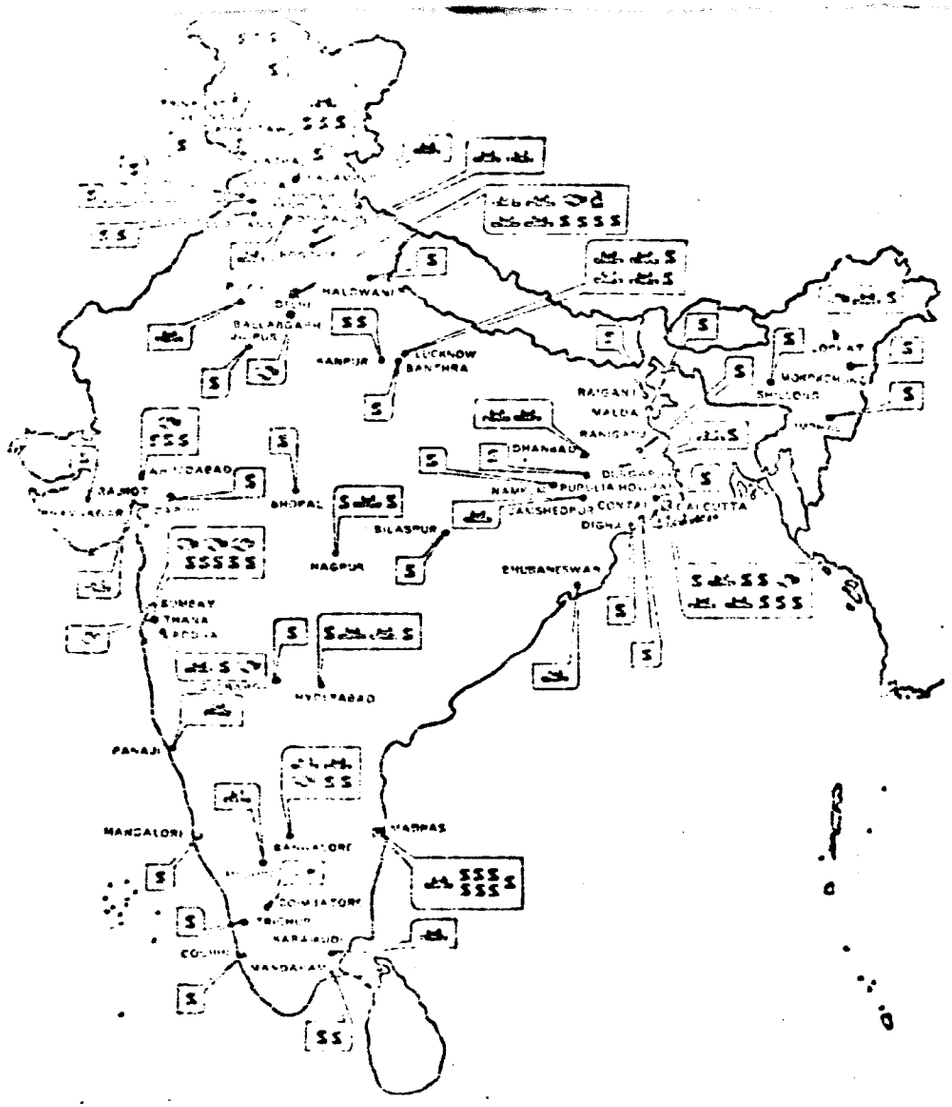
COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

Meeting of the delegations from Andean Development Corporation with the Inter-Ministerial Committee held on Tuesday, 4 November 1975 at 12 noon in the CSIR Conference Room

(Participants are requested kindly to append their signatures)

Ser.No.	Name and Organization/Ministry	Signatures
1	Terry SUERO - C.A.F.	[Signed]
2	Vinces Z. Fausta - Director C.A.F.	"
3	Ernesto FLOREZ	"
4	Vela B. JORGE	"
5	Alfonso CRIALES	"
6	R. DURANALHA	"
7	V. KOLEHIN - UNDP	"
8	G.S. GOURI - UNIDO	"
9	V. VELTZE-MICHEL - UNIDO	"
10	A.K. GUHA - Scientist, CSIR	"
11	C.G. SUBRAMANYAN - Chief Engineer, NRDC	"
12	Dr. K.V. SWAMINATHAN - Director, DST	"
13	Purinder GANJU - EPI	"
14	M.N. Berg - Chairman	"
15	P.N.	"
16	KWGHN - CSIR	"
17	A. Rahmov - CSIR	"
18	M.M. LUTHER - Chairman, PEC	"
19	K.D. MARIWALIA- Chief Consultant, NIDC	"
20	N. BISWAS - DGTD	"

Ser.No.	Name and Organization/Ministry	Signatures
21	P.V. MAMMEA - DGTD	[Signed]
22	P.N. RAMAMOORTHY - Dept. of I.D.	"
23	A.R. SEN - Director, DCSSI	"
24	Pradeep GOORHA - Dep.Div. Overseas Sarabhai Internal	"
25	J.C. SRIVASTAVA - CSIR	"



The territorial waters of India extend into the sea to a distance of twelve nautical miles measured from the appropriate base line.
Bhutan is a state in special treaty relations with India.

CSIR Establishment

Industrial Research Association

Regional Station

Research Centre

BOLIVIA

COLOMBIA

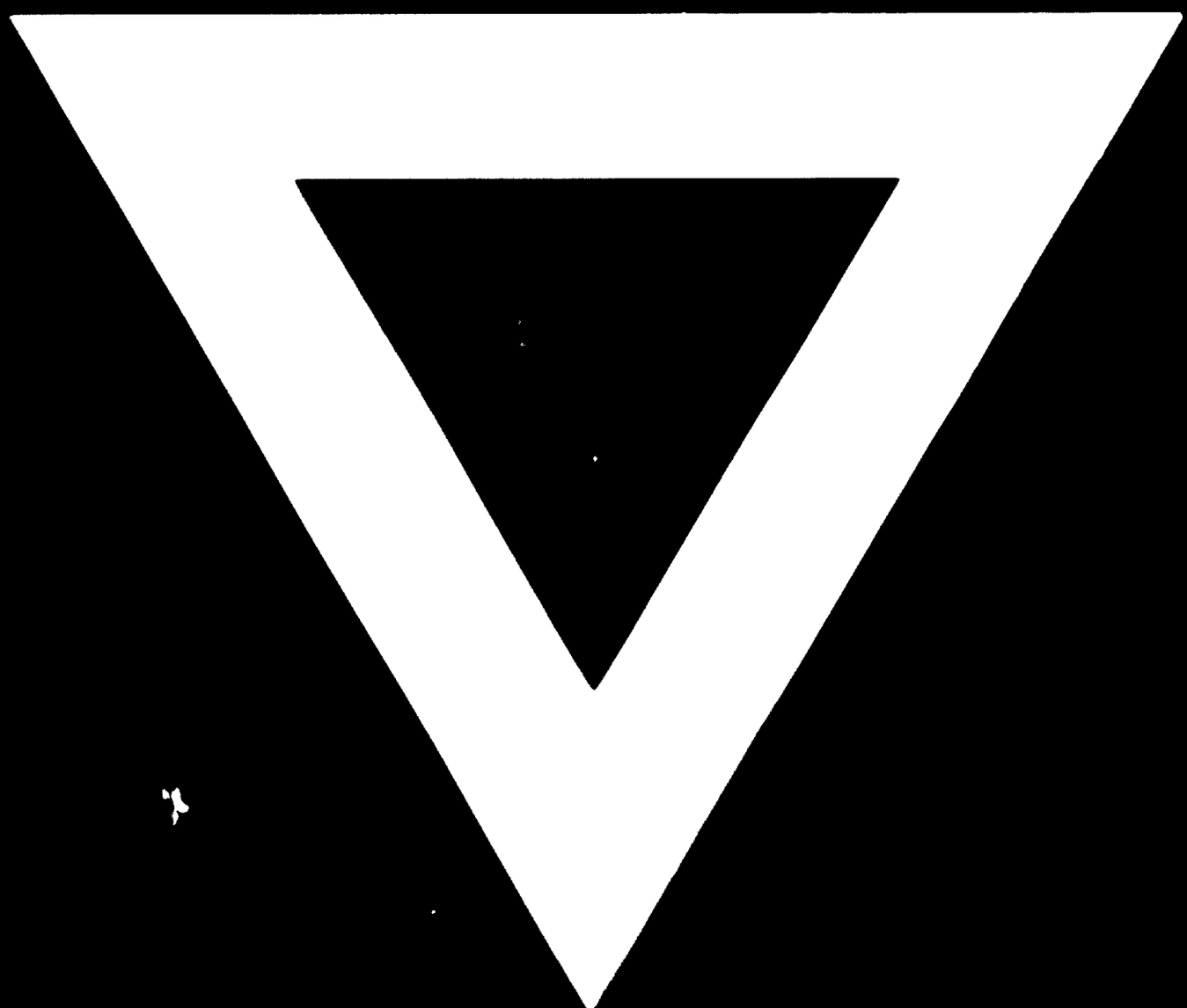
CHILE

ECUADOR

PERU

VENEZUELA

G-331



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