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PROMOTION OF TECHNICAL AND INDUSTRIAL CO-OPERATION
BETWEEN DEVELOPING AND INDUSTRIALIZED COUNTRIES
THROUGH ACTIVE PARTICIPATION OF NGO'S*

Report of the visits to India, Indonesia and Pakistan

by

Ranko Sotra
UNIDO Consultant

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Terms of Reference

Introduction

International technical and industrial cooperation has become an important means for rapid industrialization of developing countries. The Lima Declaration and Plan of Action on Industrial Development and Cooperation invited developed countries to increase their cooperation with developing countries, in order to make available to these countries the resources required to sustain the growth effort essential for accelerating their social and economic development. Cooperation among developing countries should also be promoted and improved by sharing of experience in industrialisation by those who have already acquired this knowledge.

Following recommendations of the Lima Conference and suggestions expressed by delegations to the Industrial Development Board, UNIDO has approved a project to send four consultants to a number of selected developing countries. The consultants will in close cooperation with appropriate non-governmental organisations (chambers of commerce and industry, federations of industry and/or manufacturers' associations), identify industrial branches and areas amenable to cooperation with companies or institutions in

developed and/or other developing countries. The consultants will also contact already identified enterprises and institutions willing to enter into cooperative arrangements with similar organisations from developed/developing countries in order to prepare background papers and basic information on envisaged forms of cooperation, which will serve for the organization of meetings during 1978 between identified partners from developing countries visited and similar organizations from developed/developing countries.

In particular the consultants will undertake the following:

1. Identify industrial branches or sectors suitable for international technical and industrial cooperation;
2. Identify organizations and/or industrial institutions dealing with promotion of technical and industrial cooperation, review their programmes and needs in establishing cooperative links with international and national organizations dealing with the same subject (UNIDO, ICA, etc.);
3. Identify firms, institutions interested and capable of cooperation, collect and/or process specific proposals for technical/industrial cooperation;
4. Assist these firms or institutions in identifying prospective areas of cooperation with similar partners from developed/developing countries including the following:

- Manufacturing cooperation (subcontracting),
 - Joint ventures,
 - Joint construction of industrial projects,
 - Transfer of technology and know-how for new products,
 - Technical assistance (sending experts, transfer of patents, licences),
 - Training of managerial and technical personnel,
 - Joint technological research;
5. Identify specific products (production line) for which these enterprises would need partners for cooperation, including:
- Transfer of production plants from developed/developing countries (redemployment),
 - Transfer of technology,
 - Joint investment (joint ventures);
6. Assist these firms and institutions in formulating proposals for identified specific projects for cooperation in order to submit these to UNIDO for further action, and specifically for the preparation of envisaged meetings during 1978;
7. The consultants will orient and assist identified enterprises and institutions on possibilities for requesting UNIDO's assistance in establishing and promoting forms of cooperation with partners from developed/developing countries;
8. Based on findings in the countries they will visit, the consultants will prepare a report on their mission which will include recommendations for follow-up action, and particularly those concerning meetings to be organized in 1978 in Poland and Yugoslavia.

Introduction

The identification of industrial branches/sectors of industries suitable for international technical and industrial cooperation, and the identification of firms or institutions having an interest to establish cooperative links with other enterprises or institutions from developing or developed countries, presents a very complex and delicate task. The reason for that is not only in the specifics of each country in relation to its economic development and needs, but also because the success of such an activity is to great extent dependent on the conditions in which the identification is carried out. The quality of the work is very much influenced by the set-up of industries in responding countries, by the role of NGO's, by the location of industrial centers and the ways in which the contacts are organized.

The consultant has visited three countries:

India
Indonesia
and Pakistan

all of them great in respect of the population and area. The visit lasted for nearly five weeks and included the travel to different industrial centers, many of them even two thousand kilometers apart.

In spite of all this, UNIDO's activity has been accepted and appreciated by all personalities and people contacted in all the three countries, as a new and very practical form

to assist industries in their efforts to speed-up their development programmes.

The contacts and discussions were established with most important and outstanding personalities from non-governmental organizations and, in some cases, even with officials from the governments.

It is worthwhile to mention that full cooperation of responding UNDP/UNIDO officers followed these visits in all the three countries.

All that, including the approach expressed in the Terms of Reference, although not completely, attributed to the results of this undertaking.

May it be permitted, and solely for the purpose of further success of these activities, to point out the following:

1. It is general thinking that industrial and technical international cooperation is the only way to establish continuous export/import relations which will, to great extent, replace pure export/import trade of the traditional finished goods or raw materials. It is evident that many countries tend to become self-sufficient in many areas of industrial production, primarily because of the need to improve their balance of payment and for the sake of saving in hard currencies, and, if so called "classical trade", is not at the right time replaced by some other form, total exports or imports will be decreased to insignificant figures.

2. The fact that contributes very much to the co-operation is the complementarity of the economic development, specifically in cases where the methods of production are more sophisticated, and the countries belong to the group of, so called, more developed developing countries.
3. Only direct contacts with authorized and responsible executives in enterprises can really discover their actual needs in relation to product, technology and capacity development. All "intermediates" can distort the picture and bring in some non-realistic conclusions. That refers specifically to the views that economic and industrial level reached in some countries (India, for instance) is such that the industry is able only to offer the assistance, know-how or the partnership in joint execution of industrial projects in "third countries", and nothing to receive. Such a feeling of self-sufficiency expressed at many levels (chambers or associations or institutions in India, which the consultant has visited) is only apparent and should not mislead further efforts of UNIDO. What is actually necessary is the direct and detailed discussion with enterprises to get some idea on actual needs and interests. Some of the identified firms are the best proof for that.
4. The identification of enterprises and institutions (according to Mr. Poddar - President of the Federation of Chambers of Commerce and Industry of India) has been based too broad (in relation to the Regions or the sectors of industries). He is of the opinion that the next activities should be

limited to the specific countries or regions. India, for instance, has some specific interests to develop industrial cooperation with some specific regions or countries (Asean countries, Middle East countries, Yugoslavia, Poland, some African countries, Common Market countries, etc.). Naturally, the consultant has indicated that, although not explicitly mentioned in the Terms of Reference, the fact that the meetings are planned in Yugoslavia and Poland, the proposals should, from practical reasons, relate to such or neighbouring countries, or the countries which are reasonably close to the two mentioned countries.

5. There were some doubts that the official governmental bodies will not be in favour of such direct contacts with the institutions or enterprises. In fact, the case was completely different.

Excluding Pakistan, where, from purely technical reasons, such collaboration was not established, in India and Indonesia the contacts and visits were not only organized and assisted by official bodies (Ministry of Industry), but also even very responsible and important official personalities, actively participated in this action (Indonesia). It is completely clear that UNIDO, in this way, provides only a forum for the contacts and negotiations of the enterprises from developing or developing and developed countries. The possible partners, according to their interests and possibilities make their decisions on all forms and contents of their cooperation. UNIDO's assistance, in addition to that, is rendered only through the normal forms and channels when "the Projects" are defined and accepted in

the sense of the Guidelines.

6. It is the fact that a Government will primarily support all projects which fit into country's official plans or priority groups. That means that a consultant should keep in mind the importance of a product or product line for the responding county, but that does not necessarily mean that "non-priority" enterprises are excluded. A number of industries have really a great need to establish cooperative links with other companies in different countries. Indonesia, for instance, and to some extent Pakistan, are promoting small scale or private industries, especially when they intend to enter into joint venture agreements with foreign companies, with only limitation that such companies, if not in the list of "priorities", will not enjoy the preferences and facilities offered to the "priorities".
7. Both private, public enterprises and government undertakings have the interest to establish international cooperative links. The consultant has proposed a number of enterprises from differently owned industries.

Because of the time available, and some technical difficulties, it is to expect that the Chamber of Commerce and Industry of Indonesia (Kamar Dagang Dan Industry, Indonesia - KADIN) will send the proposals collected from Indonesian Private Industries and, also, the Directorate General of Land Transport and Inland Waterways (Mr. Giri S. Hadinhardjono - the Director), the interests and proposals of the enterprises included in that Directorate.

8. Out of all forms of cooperation the greatest interest is shown for manufacturing cooperation (subcontracting), simply because the enterprises aim to establish long-term sales and increase their exports.

The following forms of manufacturing cooperation are met during the visits:

8.1 A. Developing country firm \longrightarrow B. Developing country firm
 \longleftarrow

(The firm A has sold (transferred) know-how and/or licence to B, assisted it and trained the staff and became capable of producing the parts or subassemblies for A. The companies are looking for some extension of their cooperation, by entering into some new agreements - for new products).

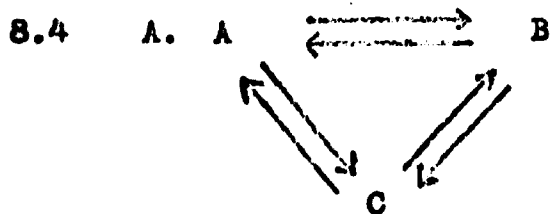
8.2 A. Developed country firm \longrightarrow B. Developing country firm
 \longleftarrow

The firm A has transferred know-how and/or licence for some product/ products, assisted B in starting the production and training staff. B has become capable to supply A and the flow of parts or sub-assemblies runs in two directions).

8.3 A. Developing country firm \longrightarrow B. Developing country firm
 \longleftarrow

\nwarrow \nearrow
C. Developed country firm

(C has transferred know-how and or licence for the same products to A (in one Developing country) and A and B cooperate in manufacture of the same products. There is a constant flow of innovations and exchange of experiences).



(The same case as 8.3 but C is using the parts and sub-assemblies both from A and B, as well as supplying A and B with more sophisticated parts or sub-assemblies_.

9. The consultant is of the opinion that the manufacturing cooperation, that already exists between some enterprises, when the partners show the interest to expand it to the new products, deserves the attention of UNIDO and has proposed some of such cooperations in the attached lists.

I N D I A

The visit took place from the 8th - 19th of January (N. Delhi, Bangalore, Madras) and the 31st of January and the 1st of February (Bombay).

The programme of visits was made with Mr. M.R. Malhotra, Programme Officer, UNDP, New Delhi and discussed with Mr. Polgar and Mr. G. Merrem.

The institutions and organizations visited:

1. Federation of Indian Chambers of Commerce and Industry
(Received by Mr. B.P. Poddar, the President, Mr. C. Rao,
General Secretary, Dr. R.G. Agrawal, Secretary).
2. The Associated Chambers of Commerce and Industry
(Received by Mr. R. Parthasarathy, Deputy Secretary).
3. Association of Indian Engineering Industry (Received by
Mr. S. Santhanam, President).
4. Engineers (India) Ltd., (Received by Dr. Aghrwala,
Manager).
5. Engineering Projects (India) Ltd., (Received by
Mr. Mohammad Fazal, Chairman).
6. Fertilizer Corporation of India (Received by Mr. Sharma,
Chairman).
7. Indian Drugs & Pharmaceuticals Ltd., (Received by
Dr. Bchl, Chairman).
8. Projects & Equipment Corporation of India Ltd., (Received
by Mr. Luther, Chairman).
9. Industrial Credit and Investment Corp., Bombay
(Received by Mr. S.S. Mehta, Managing Director).
10. Ministry of Industry (Received by Mr. Mehra, Joint
Secretary).

visits of delegations from India, visiting other countries for the purpose of contacting their counter partners and promoting the trade and cooperation. The list of such countries is pretty long (Asean countries, the Middle East, the Latin America, Yugoslavia, Poland, Romania, and many African countries). The meetings between Indian partners and partners having some interest to enter into business relations, are held regularly, and cover broad aspects and forms of trade and collaboration.

The Associated Chamber of Commerce and Industry of India is an organization with a membership of 4,000 enterprises and 14 regional chambers. Bilateral chambers with some countries are, also, affiliated in it, (i.e. India-Poland etc)

There is no specific programme of promoting technical and industrial cooperation, but the Association is very active in organizing the visits of the missions of Indian industrial teams to different regions and countries. A delegation recently visited Kenya and explored the possibilities of putting-up some industrial projects. There is, also, a programme of some other visits (Asean countries), and an activity to establish a collaboration with enterprises from the United Kingdom for joint execution of some projects in India and in other countries.

The Association of Indian Engineering Industry represents a whole engineering industry in India.

There are 1,100 members, including small, medium and large units from public and private sectors. It has 20 industrial divisions and 32 affiliated bodies.

Short stay in India and, of course, huge network of both Governmental and other institutions in that country, have not provided the possibility to study in more details the set-up and programmes of all organizations and institutions dealing with promotion of technical and industrial co-operation. With the assistance of UNDP Office - New Delhi, specifically of Mr. M.R. Malhotra, and Mr. G. Merrem, some information is collected what, naturally answers only a small portion of the points given in Terms of Reference.

1. Federation of Indian Chambers of Commerce and Industry, the Associated Chambers of Commerce and Industry, the Association of Indian Engineering Industry have no direct relations with UNIDO or other organizations of the United Nations. All activities are channeled through the Governmental bodies (Ministry of Industry, etc.).

The network of the Chambers is very large and includes local chambers in all states and bigger cities (Hyderabad, Gujrat, Bombay, Chandigarh, Agra, Calcutta, New Delhi, Ambala, Nagpur, Jaipur, Kerala, Madras, etc.), and, also, the bilateral chambers with some countries.

Federation of Indian Chambers of Commerce and Industry (FICCI) has been very active in promoting industrial cooperation with developing and developed countries.

FICCI acts as a coordinating body and a counter partner to other chambers of commerce and industry from different countries with which India has bilateral relations (joint councils, bilateral chambers, etc.). FICCI organizes the

Special attention has been paid in establishing the links with British, Belgian and French consulting firms.

In near future special groups will be visiting the consultants, in order to explore the forms of possible collaboration . All this is motivated by the efforts of India to participate more in the execution of industrial and infrastructural projects in other countries, where, the consultants from highly developed countries play an important role.

India has a number of very well organized and experienced institutions and consulting or contracting organizations, capable of rendering technical assistance or executing the works in developing countries.

There are 118 organizations of that kind and a number of other firms of engineers and consultants specialized for specific fields of services.

1. Engineer (India) Ltd., (EIL), specialized for petroleum, petrochemical, chemical, fertilizer & allied industries.

The firm is active in some projects in Yugoslavia (oil refinery), Negeria (petro-chemical complex) Indonesia (fertilizers), Oman (non-ferrous metals), Tanzania (lube oil blending plant).

It is very interesting to note that - this firm is in stage of forming joint-consulting companies in Nigeria and in Libya.

2. Engineering Projects (India) Ltd.

Basically the firm is Project contracting company. Its activities are in Yugoslavia (coke oven plant), Iraq (water treatment plant, steel plant), Saudi Arabia (power generation and distribution), Kuwait (steel plant), etc.

3. Fertilizer Corporation of India.

This firm has been involved in a number of projects on behalf of UNDP or the World Bank (Study for Phillipines - The World Bank), Burma - UNDP - Marketing Study.

India is negotiating a fertilizer project in Tanzania.

A training programme for making design of fertilizer plants is asked from Turkey (Azot Sanai Co.), and the Company would gladly accept UNIDO's participation in the costs.

There are some other projects on hand (Iraq - technical assistance, Yugoslavia - joint research on catalysts).

4. Industrial Credit and Investment Corporation, Bombay is a strong financing corporation extending the funds for industrial development and export promotion. ICIC has a continued support of the World Bank and the Kreditansalt für Wiederbau, as well as other financial institutions from Great Britain.

The influence of ICIC on industrial international cooperation is very great not only in the identification of projects and finding suitable entrepreneurs,

but also in supporting the projects where the technology for more sophisticated industrial goods is imported.

Branches and Sectors Suitable for
Industrial Cooperation

Indian industry has expanded and diversified in the past 30 years. The total number of factories employing more than 10 workers was 71,705 by the end of 1975. In that respect India is one of more developed developing country, self sufficient in many areas. Traditional industries (cotton textiles, jute, cement, sugar, paper, iron and steel and glass) were superseded by new industries involving both large capital as well as advanced technologies. The efforts of the country were directed toward self-reliance in economic development, so that some areas, such as the production of equipment and machinery have got specific accent. India has gone into the production of heavy electrical equipment (power turbines, generators). There is no need to mention the other areas (electrical transformers, motors, conductors, batteries, machinery for processing industries -sugar, cement, jute, paper, coal, dairy, then heavy mechanical equipment and mining machinery, machine tools, farm machinery, transport equipment, etc.).

In recent years considerable progress has been made in electronics, chemical industry and light engineering. In addition to that, there are nearly 200 specialised laboratories and institutions, besides universities, doing research work.

All this progress was supported by foreign assistance, investments and collaboration.

The total outstanding investment in India was of the order of 2,059.3 million dollars, by the end of March of 1973, amounting to 17% of the total investment.

India has invested in developing countries 695,000,000 Rs (i.e., 100,000,000 \$), for 310 projects out of which 83 have already gone into production, and 105 are under active implementation. Indian joint ventures in developing countries cover fairly large fields: textile, sugar, cement, steel furniture, steel foundry, diesel engines, automobile components, enamelled wires and cables, gas cylinders, sulphuric acid, caustic soda, antibiotics, welding electrodes, etc. In addition to this some joint ventures in other fields should be mentioned (consultancy, tourism, etc.).

There is a strong belief in India that the degree of maturity of Indian industry has reached the stage when India can participate in the progress of Asian and African nations, because the technology which India has developed, is more suited to the economic conditions in developing countries.

From that point of view, India may be regarded as the country capable of offering technical assistance as well as receiving it from other countries.

Below given list of industries, suitable for technical and industrial cooperation, is the result of very broad discussions with already mentioned institutions and organizations, and may constitute the basis for further considerations.

1. Engineering Industry

- + Farm Equipment
- + Heavy Earth Moving Machinery
- + Automotive Ancillaries
- + Machine Tools
- + Tools
- + Specific Machinery and Plants:
 - Cement Plants
 - Thermal & Hydroelectric Power Generating Plants (including transmission Lines)
 - Ports & Shipyards
 - Refineries
 - Specific Metallurgical Plants
 - Railway Systems.

2. Instrumentation and Electronics

- + Telecommunication Systems
- + General Consumer Goods
- + Specific Apparatus and Equipment

3. Chemical Industry

- + Fertilizers
- + Pesticides
- + Petrochemicals
- + Pharmaceuticals

4. Metallurgy

- + Mini Steel Plants
- + Integrated Steel Plants
- + Foundries and Forging Shops
- + Steel Rolling Mills.

5. Mining

- + Open Pit Mining
- + Specific Mining Equipment

From the point of view of the forms of technical and industrial cooperation, the above listed sectors are suitable for:

- Manufacturing cooperation:
- Farm Equipment
 - Heavy Earth Moving Machinery
 - Automotive Ancillaries
 - Machine Tools
 - Tools

- Joint Construction of Industrial Projects:
- Thermal & Hydroelectric Power Generating Plants
 - Ports & Shipyards
 - Railway Systems
 - Integrated Steel Plants
 - Mining Equipment (Plants)

- Transfer of Technology and Know-How and Technical Assistance:
- Farm Equipment
 - Heavy Earth Moving Machinery
 - Automotive Ancillaries
 - Machine Tools
 - Specific Machinery and Plants
 - Telecommunication Systems
 - Specific Apparatus and Equipment (Electronics)
 - Fertilizers
 - Pesticides
 - Petrochemicals
 - Pharmaceuticals
 - Production of Heavy-Duty Iron and Steel.

Transfer of Technology
and Know-How
and Technical Assistance:

- Castings & Forgings (Spec. for Automotive Industry)

Joint Technological Research:

- Pharmaceuticals
- Pesticides
- Fertilizers (Spec. Catalyst)
- Machine Tools.

2. Identification of Firms and Institutions
Interested in Cooperation

The firms interested and capable of cooperation may be regarded as:

A. The firms looking for some partners who can assist them in:

- introducing new technologies and products,
- increasing their production capacities,
- up-grading the existing products,

and B. The firms offering some assistance to other enterprises in developing countries.

It should be pointed out that for none of those projects feasibility studies are prepared, and that more detailed data, on project costs, even the planned volume of production, were not available. All this will be available for the conferences.

A. 1. M/S MAHINDRA & MAHINDRA LTD.

(Auto Division)
Gateway Building
Apollo Bunder
Bombay 40000

Mr. B.R. Sule, Director

The Company is one of the most important Indian vehicle producers manufacturing jeeps, tractors and agricultural implements (on IHC Licence), small diesel engines (on Peter Licence), and trailers (0.25 to 120 t).

1.1 The Company is looking for a partner to produce diesel engines for trucks up to 3 tons.

The form of industrial cooperation may be:

- Transfer of licence and Know-how, or
- As above, but including joint venture.

1.2 The Company is looking for technical assistance in upgrading the technology and quality of gray iron castings for cylinder heads and blocks produced in their foundry.

1.3 The Company is ready to enter into manufacturing cooperation with a partner from motor industry for the products already produced by M/S Mahindra & Mahindra Ltd., (jeeps, engines, trailers).

Mr. Sule is ready, either personally, or with the assistance of his technical staff to prepare specific background papers and other information for the planned meetings, and to attend such meetings.

UNIDO's assistance could be expected:

- for 1.1 Linking the partners together,
- for 1.2 Sending the experts or financing the training,
- for 1.3 Linking the partners together and financing the experts from such companies.

2. Usha Martin Black (Wire Ropes) Ltd.

14-Prinsep Road
Calcutta 700072

Mr. B.K. Jhavar, Managing Director

The Company is intending to enter into an agreement for a joint venture in Yugoslavia, for setting up new capacities in Yugoslavia for production of steel wire ropes. Planned capacity of the plant is 5,000 t/year and total investment is estimated at 8-9 million U.S. Dollars. Usha Martin Black have been in contact with a Yugoslav company "UNIS"- Sarajevo. This would be the very first joint venture of an Indian Company in Yugoslavia. Such a project includes preliminary studies (feasibility studies) and subsequent technical assistance and training of UNIS personnel in Usha Martin Black Facilities at Calcutta. For that purpose UNIDO's assistance is expected.

Mr. Jhavar will be ready to prepare all necessary papers to explain all details of such a venture and expected assistance of UNIDO.

3. BHARAT EARTH MOVERS LTD.

Kolar Gold, Fields 563115

Mr. M.P. Singh, General Manager

Mr. J. Swaminathan, Deputy General Manager

and

Brigadier G.K. Gokhale (Retd), Director-Technical

Unity Building

J.C. Road, Bagalore 560002

B.S. Murthy, General Manager, Marketing Division
Unity Building
J.C. Road, Bangalore 560002

The enterprise is a Government of India undertaking and came into existence in 1965. The turnover is about 570,000,000 Rs, and number of employees is 11500.

Product range:

- Crawler Tractors (Know-How Komatsu, Japan)
90, 180, 250 HP
- Motor Graders (Know-How Westinghouse,
115 HP. Airbrake Co., USA)
- Rear Dumpers
25, 35, 50 tons
- Motorized Scrapers (Air Brake Co., USA)
15/21 cu yards cap.
- Wheeled Tractors (Know-How Radoje Dakić,
130 HP Yugoslavia)
- Crawler Front End Loader (Own Design)
1,3; 2,3 cu.m.
- Wheeled Front Loader (Own Design)
1,6 cu.m and 3,6 cu.m. capacity.

The Company is producing about 600 units a year, in co-operation with mentioned partners. The production of above listed products is 72-85% indigenous.

B.E.M. are ready and willing and capable of cooperation in the range of earth moving machinery.

Specific interest is to develop and strengthen manufacturing cooperation with Messrs Radoje Dakić, Titograd, Yugoslavia (Loaders).

The Company is ready to assist the other countries in

organizing similar industries by sending the experts, training the personnel, or transferring know-how for the products designed by them.

B.E.M. are ready, if or when invited by UNIDO, to participate at planned meetings in 1978 and prepare specific proposals for the partners. It is estimated that UNIDO assistance should include financing of preliminary studies and training of technical personnel.

4. HINDUSTAN TELEPRINTERS LTD.

G.S.T. Road, Guindi
Madras 600032

Mr. S. Muthuswamy, Managing Director

The Company has specific interest to acquire technical expertise for the following items to be manufactured in their facilities:

1. Manufacture of Mosaic (Dot Matrix) Print Heads having 9 x 7.11 x 9 and 13 x 11 matrices.
2. Manufacture of stepper motors
3. Manufacture of Facsimile Equipment (both Analog and Digital)
4. Manufacture of Computer Peripherals, like:
 - i. Key to Magnetic Tape
 - ii. Key to Cassette
 - iii. Cassette Drive
 - iv. Key to Disc, and
 - v. Floppy Disc Systems.

- B. Enterprises looking for a partner to enter into manufacturing cooperation (sub-contracting) or offering technical assistance:**

1. AMALGAMATIONS GROUP

202 Mount Road
Madras - 600002

The Group is one of the largest engineering groups in India with an annual turnover of approximately U.S. \$ 173,000,000.

Specific proposals for industrial cooperation refer to the following enterprises, members of the Group:

1.1 SIMPSON & CO., LTD.

202 Mount Road
Madras 600002

Perkins Diesel Engines for automotive, agricultural and industrial applications.

1.2 ADDISON & CO., LTD.

158 Mount Road
Madras 600002

- Cutting Tools (Milling Cutters, End Mills, Reamers, Twist Drills, Taps, Carbide Tipped Tools, etc).

1.3 SHARDLOW INDIA LTD.

Huzur Gardens, Sembiam
Madras 600011

- Steel Forgings and Stampings (Specially for more sophisticated products like crankshafts, connecting rods, etc.).

For all listed product lines the Group is offering:

- Transfer of Technology and know-how, and/or
- Training of Managerial and Technical Personnel, and/or
- Technical Assistance (sending the experts).

On behalf of the Group the contacts should be established with Mr. J.V.P. Rao, Chairman & Managing Director Addison and Company Ltd., Director Simpson & Co., Ltd. 158 Mount Road, Madras 600002, India.

1.4 Simpsons & Co., Ltd., and Tamilnadu Industrial Development Corporation, Madras, plan to build a foundry to produce, in the first stage 8,500 t/year cylinder heads, cylinder blocks and other castings for the engines and tractors of gray and nodular cast iron. The partners are FOB-LMK Belgrade and IMT Belgrade.

Joint venture and transfer of technology, include training of technical staff. The Company is looking for UNIDO's assistance in providing the training and technical assistance.

2. **HMT (Hindustan Machine Tools) LTD., Bangalore**
Dr. S.M. Patil, Chairman & Managing Director
V.A. Setty, General Export Manager
C.K. Venkatanarayanan, General Marketing Manager
Project Consultancy.

HMT is well known to UNIDO, because it participated in some projects in Nigeria (a feasibility study for setting up a machine tool manufacturing complex in Nigeria), in Philippines (a study of capital goods industry), in Indonesia (a study of capital goods industry).

UNIDO has sponsored a UNIDO-HMT Workshop in Bangalore, in November of 1975.

HMT has rendered the services to the following developing countries:

- Sri Lanka:** Collaboration with Ceylon Steel Corporation for Manufacture of HMT Lathes.
- Philippines:** Collaboration with MATOOLS for Manufacture of HMT Lathes.
- Iran:** Supply & Installation of Plant and Equipment for a Training Project.
- Algeria:** Services contract for a Machine Tool Factory.
- Kenya:** Feasibility Study for Setting-up a Machine Tool Manufacturing Complex.
- Malaysia:** Study conducted for establishing Foundry, tool making and metal working centre.

On the basis of such experiences HMT is capable of cooperation in the following areas:

- Know-How assistance in machine tools manufacture (from planning to commissioning),
- Consultances: (market surveys, feasibility studies, collaboration studies and project reports),
- Setting-up of projects on turn-key basis,
- Setting-up of technical training centres, tool-rooms, industrial estates and machine tool on a

turnkey basis.

- Training of technical personnel.

HMT are willing to participate at anticipated meeting and prepare the materials. They have specific project in mind with Rumania (watches assembling in Rumania).

Although HMT is not in position to invest money immediately, they have an interest to enter into cooperation with Yugoslavia to build a foundry at Pinjore, near Chandigarh.

3. SANDOZ (INDIA) LTD.

Dr. Annie Besant Road, Worli
Bombay 400018

Dr. J.N. Banerjee, Managing Director

Mr. V.S. Schon, Head Agrochemical Division.

Sandoz (India)Ltd., is a public limited company 60% owned by Messrs. Sandoz Ltd., Switzerland.

The company manufactures and processes drugs and pharmaceuticals. Product range includes calcium preparations, cardiac glycosides, haematinics, antihistamines, laxatives, intestinal antiseptics, anti epileptics, multivitamins, tranquillisers, etc., and pesticides.

The company is offering technical assistance in:

A. Pesticides

- Survey of general local resources
- Formulation
- Testing - toxicology
 - bio-efficassy
 - stability (shelf life)
 - residuals.

B. Dyes for leather industry.

The form of assistance for the latter would be sending the experts or training of technical personnel.

4. CENTRAL MACHINE TOOL INSTITUTE, BANGALORE

Bangalore 560022, India.

Mr. M.E. Visveswaran, Director

Mr. A.K. Seshakumar, Sen. Scientist.

The Institute actually commenced its technical activities in 1965. It has a staff strength of 400 of which about 150 are graduate and post-graduate engineers.

The Institute is very well equipped. A new laboratory has been built with the assistance of UNIDO. The main activities are:

- Design and development of machine tools, attachments and accessories,
- Research and investigation of machine tool problems, prototype and evaluation tests,
- Standardization of machine tools, machine tool elements and accessories,
- Development of tools and tooling,
- Production advisory services in the progressive machining techniques, solution to specific machining problems, selection of production equipment and group technology,
- Design, development and selection of NC machines and systems,
- Precision measurements,
- Training in machine tools and production engineering fields.

The Institute is capable of offering technical assistance to developing countries in training of technical personnel, transferring know-how and licences.

(At present the Institute is completing the project of a similar Institute in Iran).

I N D O N E S I A

The visit took place from the 19th till the 29th of January and included Jakarta and Surabaya.

The institutions and organizations contacted:

1. KAMAR DAGANG DAN INDUSTRY INDONESIA (KADIN)
(Indonesian Chamber of Commerce and Industry
- Industry Department)
Jr. K. Hadinoto, Chief Executive
A. Hamid
The address: Gedung Pola, Jalan Proklamasi 56
Jakarta

2. Ministry of Industry and other Institutions
Mr. Benito Kodiyat, Special Adviser to the Minister
of Industry
Mr. M. Pulungan - Secretary, Directorate General
of Chemical Industry
Mr. Imam Hidayat - R & D Center for Chemical Industry
Mr. Afiat - Directorate General of Chemical Industry.
Mr. Harsono - Director of Shipbuilding Industries
Directorate General of Metals and
Engineering Industry
Engineering Industry
Mr. Trisura Suhard - Director R & D Center
Metals and Engineering Industries
Miss Giatika Hamdani - Bureau of Planning
Ministry of Industry
Mr. Achmad Sjorfai - Bureau of Finance
Ministry of Industry
Foreign Econ. Relations.

Mr. Giri S. Hadihardjono, Director
Road Traffic & Transport
Directorate General of Land
& Inland Waterways

Mr. Nazar Noerdin, Secretary - Directorate General of
Land Transport & Inland Waterways

Mr. Suprpto, Coordinating Committee
International Technical Cooperation.

The Institutions dealing with technical and industrial cooperation, having some specific role in such activities are:

1. Ministry of Industry-
 - General Directorate of Metals and Engineering Industries
 - General Directorate of Chemical Industry
 - General Directorate of Textile Industry
 - General Directorate of Miscellaneous Industry and Handicrafts
2. Ministry of Communications and Transportation
 - General Directorate of Land Transport and Inland Waterways
 - General Directorate of Ship Building Industry
3. BAPANAS - Bureau of Planning (Ministry)
4. KADIN Pusat - Indonesian Chamber of Commerce and Industry
5. Research and Development Centers for each industrial branch

6. Agency for Foreign Capital Investment (BKPM)
7. Institution for Technology, Know-How and Science (LIPK)
8. Coordinating Committee International Technical Cooperation (Ministry of Industry)

There are 24 organizations offering technical assistance to other developing countries.

Chamber of Commerce and Industry in its Industry Department has 4 subdepartments:

- Miscellaneous Industries (Leather, Pharmaceutical Industry)
- Textile Industry
- Chemical Industry
- Metal & Engineering

Private Sector is strong in metal and chemical industries. The firms in food processing industries have just formed their federation. There is also a Federation of Food Processing Industries of Asean Countries. The Chamber is active in establishing more convenient relations with European Economic Community in the field of exports of textile products.

There is also a Timber Society of Indonesia. The Chamber is active in promoting the transfer of know-how. A delegation is planned to the World Fair on technical Know-how exchange in the USA, in the course of this year.

INDUSTRIAL BRANCHES AND SECTORS SUITABLE
FOR TECHNICAL AND INDUSTRIAL COOPERATION

Indonesia at present is in the fourth year of the Second Five Year Plan. The Second as well as the First Plan have put their focus on the agricultural sector. The industrial sector in the First Five Year Plan was given the main priority in the following areas:

1. Industries promoting agricultural growth
2. Industries with high foreign exchange earning or saving capacity
3. Industries promoting employment of labour
4. Industries consuming relatively more domestic materials and components than imported inputs
5. Industries generating further regional (provincial) development

The Second Five Year Development Plan places overall priority on the development of industries which process raw materials into semifinished or finished products.

The Government is promoting large scale key industries such as cement, fertilizer and other petrochemicals as well as miscellaneous agroindustries set up on a small scale.

Table one shows the industrial output in 1975/76.

<u>Indonesia</u>		Department of Industries, Gov. Indonesia
		1976
Textile	10^6 m	1017.1
Weaving yarn	10^3 bales	445.4
Urea fertilizer	10^3 t	396.6
(NH ₄)SO ₄ fertilizer	10^3 t	118.7
Cement	10^3 t	1.088.7
Paper	10^3 t	46.8
Glass	10^3 t	31.4
Automobile types	10^3 t	2.432.8

H ₂ SO ₄	10 ³ t	18.4
Al ₂ SO ₄	10 ³ t	13.7
Coconut oil	10 ³ t	265.0
Cooking oil	10 ³ t	30.0
Soap	10 ³ t	161.0
Detergent	10 ³ t	35.5
Cigarettes	10 ⁹ pieces	21.0
Clove cigarettes	10 ⁹ pieces	31.1
Matches	10 ⁶ boxes	780.0
Toothpaste	10 ⁶ tubes	53.0
Accumulators	10 ³ units	220.0
Wireless sets	10 ³ units	1100.0
Television sets	10 ³ units	166
Galvanized iron sheets	10 ³ t	170
Automobile assembling	10 ³ units	78.9
Motor cycle assembling	10 ³ units	300.0
Sewing machines	10 ³ units	520.0
Dry batteries	10 ⁶ pieces	180.0
Pipes	10 ³ t	94.0
Electric lamps	10 ³ pieces	21.0
Concrete iron bars	10 ³ t	162.0
Air conditioners	10 ³ t	23.0

It is important to mention that Indonesian industries have introduced great number of the new products (polypropylene, industrial chemicals, various sorts of textile products such as synthetic fibres, blended weaving yarns, suiting and shirting, blended wovens, embroidery and finished garments, then electric

and telecommunication, cables, electric appliances, agricultural tools and machinery, automotive components, sheet glass, various processed foods, beverages, wheat flour, detergents, processed wood products, optics, fluorescent tubes, etc.

The goods exported from Indonesia are: textiles, metal and engineering products, chemical products and to greatest value (90%) oil, miscellaneous and handicrafts.

Indonesia succeeded in producing and even exporting some more sophisticated products like integrated circuits, light emitting diodes, cassette recorders and other light industrial products, to America, Japan and Europe.

In the period between 1968 and 1976 there were 1701 domestic and 430 foreign investments projects in Indonesia. Most of the foreign investments projects have a local capital content.

The main characteristics of foreign investments are that they are using more advanced technology, which are mainly directed towards fields where domestic entrepreneurship and skill are still inadequate. There is also a significant trend towards upstream projects (polypropylene, sheet glass, spinning, cement, plywood, industrial chemicals, etc.)

Small scale industries also deserve the attention. These industries are generally labour intensive, and supported by official policy by special credit programmes.

Since foreign investments play very important role with regards to technical and industrial cooperation, it is worthwhile to see the magnitude of such investments by countries of origin.

Period 1967-1976

	No of project	000 US\$
Japan	122	880.415
Hong-Kong	70	219.437
USA	46	169.769
W. Germany	19	161.414
Holland	29	119.943
Singapore	29	64.849
Australia	32	61.768
India	11	52.105

	No of project	000 US\$
Switzerland	6	40.851
France	2	35.700
Republic of Korea	8	31.815
Republic of China	3	20.097
Great Britain	15	18.054
Malaysia	16	14.489
Panama	2	10.000
Thailand	9	9.550
Norway	2	5.510
Italy	2	4.066
Poland	1	3.000
Canada	3	2.889
Phillippines	2	2.672
Denmark	2	2.500
Belgium	3	2.196
Luxemburg	1	1.200
New Zealand	1	1.080
Lichtenstein	1	500
Ghana	1	500
Zanzibar	1	250
	<u>439</u>	<u>1.936.619</u>

Out of all foreign investments the industries by type participate:

	% of the total	
	Projects	Investment
Miscellaneous Industries & Handicrafts	52	18
Textiles	15	37
Metal & Eng. Industries	24	22
Chemical Industries	9	23

Evidently the biggest investments per project were made in chemical and textile industry, specifically in oil industry.

It is obvious that the identified industrial branches and sector, being suitable for international technical and industrial cooperation have direct link with existing structure of Indonesian industry, joint ventures and priorities given each by the official policy of the country.

General characteristics of Indonesian industry are clearly seen from officially accepted policies in five year plans: Development of industries which process raw materials into semifinished or finished products and promoting large scale industries-cement, fertilizers, petrochemicals. Textile, fertilizers (urea and ammonia), cement, rubber are the main products of Indonesian industry. Most of more sophisticated goods are imported or assembled (automobiles, sewing machines, etc.). Food processing industries play an important role (sugar factories, vegetable oil industry, fishing industry, processing of agricultural products-cassava, coffee, rice, maize, corn, milk, tea and cattle food).

Indonesia is very specific in regard to its geographic position and very variable conditions in main development areas. Common problems for all provinces are communications (rivers, roads, railways), power plants and power supply, drinking water supply and irrigation. The basic potentials are in exploitation and processing the main resources: oil, earth gas, ores and coal, rubber and timber and other agricultural goods.

The industries amenable for industrial and technical cooperation naturally fit with the main priorities and are listed below in full concordance with all consulted institutions in Jakarta. It is expected that the Chamber of Commerce and Industry subsequently sends some additional corrections, but the list is sufficiently correct for further use.

1. Food processing industry
2. Textile & Leather industry
3. Chemical industry: *fertilizers
*pesticides
*petrochemicals
*drugs & pharmaceuticals

4. Non metallic minerals: *glass
*cement based products

5. Engineering industry:*agricultural and farm tools and machinery
(mechanical&electrical)
 - *equipment and plants for processing industry
 - *road making and earth making machinery
 - *railway wagons and stock
 - *foundries, forging shops
 - *metal pressing & stamping shops
 - *micro power plants
 - *pumps
 - *manufacture of electr. transformers and switches
 - *shipbuilding and ship repair
 - *power generation plants

7. Construction:
Civil Eng.
industries
 - *harbour construction
 - *irrigation works
 - *road & bridge construction

IDENTIFICATION OF FIRMS INTERESTED IN INDUSTRIAL AND
TECHNICAL COOPERATION

1. **P.T. Semen Gresik (Persero) Gresik**
Jalan Veteran Gresik
Mr Sotio Ardjanggi, Man. Director
Mr Ch. Santoso, Project Manager

The company presently makes 500.000t/year of cement. The expansion of the plant is under way to increase the capacities for additional 1.000.000tons. Up-to-date American technology is applied for the new project.

To develop further the global concept of company policy toward diversification, the following product lines are planned: (in addition to cement).

- I Refractories
- II Gypsum *natural
*synthetic (based on local resources, mainly oil industry by products)
- IV Civil engineering materials
 - *asbestos cement (sheets, pipes)
 - *hollow bricks
 - *ready mixed concrete
 - *prestressed concrete
 - *vessels

The Company has capabilities and is prepared to enter into negotiations with responding companies from other countries for the following products out of above listed:

	<u>Form of assistance</u>
Refractories: *high duty for cement industry, based on locally available raw materials	A Transfer of technology
	B Training
	C (Joint Venture)

Gypsum	Synthetic gypsum (production based on some products of oil industry)	Joint technological research
Civil eng. materials	low cost construction materials for housing and other purposes including prestressed and prefabricated elements (for houses, bridges, etc.)	Technical assistance (experts) training joint technological research transfer of technology

**The Company is instructed and will be ready to prepare all
necessary information for the meetings.**

IDENTIFICATION OF FIRMS AND INSTITUTIONS INTERESTED IN
COOPERATION

F P.T. Barata (Persero) (Public)
Jalan Nqagel 109, Surabaya
telex: 031-329

Mr. I.R. Noertajib Mahdi, Engineering

Barata have already a number of joint ventures. A new steel (& iron) Foundry has been completed. Total investment 6.6 billion Rs. Contractors Santokogyo in cooperation with BRC from Switzerland and Zimmermann from W. Germany. The foundry will be producing roughly 5000t Mn-Steel and other alloys grades of steel. The main product lines are road rollers, produced in cooperation with 14 October, Kruševac, Yugoslavia. The firm interested in entering into the following activities and would need the responding partners for negotiations:

Product line:	Products (new)
A Road making machinery	caterpillar tractors excavators wheel loaders

For these products the following forms are required:

- A Transfer of technology (licence, know-how)
- B Technical assistance (experts)
- C Training of technical & managerial personnel

B Plants and products for processing industries	heat exchangers for food and agricultural products processing industries small boilers for above spherical tanks for storing gas
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The forms of assistance:

- Ad 1. A Transfer of technology

B Technical assistance

C Training

Pakistan

The visit took place from 1st of February to 9th of February 1978. The programme of the visits and contacts in this country were organized with the assistance of Mr Skoumal from UNDP Office, Islamabad.

In addition to Islamabad, the Administrative Center of the country, the Consultant has visited Lahore and Karachi.

The organizations and institutions contacted:

1. Chamber of Commerce and Industry, Lahore
(Mr Latif M.Chandry, Secretary)
2. Chamber of Commerce and Industry, Karachi
(Mr Agha M.Ghouse, Secretary and Economic Adviser)

Both Chambers represent the bulk of Pakistan industry (Chamber from Karachi for instance 60% of all industry), and are the forum for representing the interests of private industry in that country. There are about 6000 members of Karachi Chamber, only. The Chambers organize the visits and contacts with missions (The World Bank, Asean Development Bank, UNIDO, ILO, UNCTAD, etc.) and economic mission from different countries, they organize different seminars (on development of indigenous technology) and dissipation of information relevant to private industries.

Pakistan with a total area of 307374 sq miles and population of 73.510.000 is administratively divided into the provinces of Baluchistan, Punjab, Sind and North Western Frontier Province and administered Areas. The consultant has visited only Federally Administered Areas and Punjab and Sind.

Out of all population of Pakistan 70% live in rural areas and directly or indirectly depend on agriculture.

The shortage of capital, lack of suitable technology and pretty low standards of living and health are some of the factors responsible for low level of productivity.

In last years some measures have been taken to develop appropriate technology. Out of all employed labour force in the occupation group of agriculture, animal husbandry and forest workers comprises 56.6% and in production 20.7%.

Agriculture: The largest sector of the economy - the agriculture had a rate of growth of 2.2%, during 1976-1977.

Manufacturing is the second largest sector with a constant trend of decline from 1971, because of the floods, low cotton production, rise in oil prices and political disturbances.

The main agricultural products are:

Wheat	9,000.000 t (1977)
Rice	2,589.000 t (1977)
Cotton	2,416.000 bales (1977)
Sugarcane	27,709.000 t (1977)

The consumption of chemical fertilizers is 700,000t (N).

To reduce dependance on imports Pakistan has initiated a huge programme to build new factories (Pak-Arab fertilizers, LTD: at Multan, Pak-Saudi fertilizers LTD at Mirpur Mathelo, Hazara fertilizer Complex at Haripur and Fauji fertilizer Complex at Machi Goth, with a total capacity of 785000 Nutrient tons of nitrogenous and 170000 nutrient tons of phosphatic fertilizers, planned to be completed by 1982-83.

The total import of tractors in 1977 amounted to 15000 and 85 bulldozers. In 1978 the Government made the decision to buy the licence to produce agricultural tractor from Massey Ferguson, Toronto.

Pakistan is a great producer and exporter of hides, skins, hairs, and poultry products.

Livestock population: (1976)	millions heads
Buffaloes	10.42
Cattle	14.37
Sheep	18.13
Goats	20.88
Others (horses, camels, donkeys)	3.039
Poultry	32.42

The total output of timber is estimated at 44 million cubic feet against annual requirement of 52 million cubic feet. The production of fish was 211,000t in 1976 and fishing industry is well established.

Manufacture and mining

Cotton textiles (cotton yarn and cotton cloth) participate in the total industrial production with 26.9%.

In last years some new projects in heavy and basic industries have been started. In 1977 a new foundry and forge at Taxila was inaugurated, with a total melting capacity of 61000t of iron and steel, for the production of steel billets and iron and steel castings. (The plant was built with the technical and financial assistance of China.

A new refinery, built with the assistance of Romania (the National Refinery) will produce 1.5 million tons of refined products.

There is also a new Ceramic Complex at Shaidu, for the production of 0.14 million sanitary wares and 1.2 million tiles annually.

The base of heavy industry is Karachi Shipyards and Engineering Works, the Machine Tool Factory at Landhi, Peoples Steel Mill - capacity 20000t, at Karachi, and the Heavy Mechanical Complex at Taxila.

INDUSTRIAL PRODUCTION

		1976
Cotton yarn	mil kg	349.7
Cotton cloth	mil m ²	520
Art skill and rayon cloth	mil m	9.9
Vegetable Ghee	000 t	273
Sugar	000 t	623
Cigarettes	Bill.NOS	27.5
Nitrogenous fertilizer	000 N/t	314.9
Phosphatic fertilizer	000 N/t	11.8
Sulphuric acid	000 t	46.2
Cement	000 t	3223
M.S.Products	000 t	230.7
Cycle tyres & tubes	000 Nos	7399
Electric fans	000 Nos	148.2
Writing & printing paper	000 t	18.5
Safety matches	Mil Boxes	589.6

The main Government enterprises are:

Federal Chemical and Ceramics Corp.

Federal Light Engineering Corp.

National Fertilizer Corp.

Pakistan Automobile Corp.

Pakistan Industrial Development Corp.

State Cement Corp.

State Heavy Engineering & Machine Tool Corp.

State Petroleum Refining & Petrochemical Corp.

Private industries are allowed to invest into textiles, sugar, leather industry, cigarettes, light engineering, etc. Industrial units even in the case of the nationalised sector can be set up by private entrepreneurs on joint venture basis with foreign investors.

Institutions for promoting industrial development

- Investment Advisory Centre of Pakistan, Karachi
(management consultancy to private and public sector)
- Pakistan Industrial Technical Assistance Centre (PITAC)
engaged in tool production, product development, advisory and consultancy services, and training.
- Central Testing Laboratories, Karachi, Lahore
(assessing the quality, grade and standard of various goods, products and materials)
(built with the assistance of UNDP)

In 1976/77 384 applications for the grant of patents for new inventions were filed, out of which 9 originated in Pakistan, the rest received mainly for pharmaceuticals-antibiotics, herbicidal, pesticidal and fungicidal compositions, etc. Special efforts, since 1974, have been made to upgrade the quality of leather industry products (supported by UNIDO experts), then a project was started by Cotton Textile Industry Research and Development Centre and UNIDO to assist the Cotton Textile Industry to increase its efficiency and productivity.

The main large scale industries

Cotton textile industry has the capacity of 3.51 million spindles and 2000 open-end spinning rotors and 20000 looms. To insure full utilization of production capacity nearly 45% of its products must be exported.

Woolen and worsted industry has the capacity of 19678 and 10874 spindles, respectively, or 20 million kgs of woolen yarns.

Jute industry has the capacity of 1769 looms and 20024 spindles, which produce 42000 t of jute goods per year, what is much below the country's demand.

Sugar industry - There are 27 sugar mills in the country. Some of them are: D.G.Khan, Kamalia, Pattoki, Pasrur, Samundri, Ahmadur East, Kot Adu, Dadu Thatta, Sudher and D.I.Khan.

Cement industry-The present installed capacity of the existing 9 cement plants is 3.4 million tonnes. There is a constant trend in increasing the demand of cement. The following projects are under implementation: Javedan Cement Project (Expansion), Mustehkam Cement Project (Expansion), Pak-Iran Cement Project, Kohan Cement Project, Thatta Cement Project, Dandot Cement Project and D.G.Cement Project.

Heavy Foundry and Forge, Taxila-The total estimated cost was about 61 million US\$, and as mentioned earlier, the annual capacity of the melting plants is 61000t. The total capacity is 46000 tonnes of grey iron steel and non ferrous castings and forgings. The maximum piece weight of a casting is 20 tonnes.

Karachi Steel Mills

A new integrated steel mill, at Pipri, near Karachi is being set up, with the financial and technical assistance of USSR. The estimated (revised) capital cost of the project is 1342 million US\$. The Mill is expected to start partial production in 1978/79, and at full capacity in 1983/84 and the product-mix will be provisionally:

	tonnes
Billets	160.000
Formed section	120.000
Hot rolled sheets	445.000
Cold rolled sheets	90.000
Galvanized sheets	100.000
	<hr/>
	1.015.000
Pig iron	135.000
Coke	215.000

The plant is planned to operate with imported iron ore and coking coal and manganese ore. Other material will be supplied locally (limestone, dolomite, bauxite).

Mining- This sector, generally speaking, was neglected in the past. Among the minerals being exploited are baryte (30000 tonnes), China clay, marble (12500 tonnes), some projects are under implementation or in the planning stage (ferro-chrome manufacturing plant, the fertilizer factory based on rock phosphate deposits, sulphur refining plant). Recently published reports of a special working group on minerals proposes the investments in the Saindak Mineral Complex, designed to yield 15000 tonnes of blister copper, 77000 tonnes of steel billets and 148000 tonnes of sulphuric acid. The report is proposing the production of 60000 tonnes of baryte, 3.000000 tonnes of coal, 4,500000 tonnes of copper ore, 300000 tonnes of dolomite, 100000 tonnes of fireclay, 1500000 tonnes gypsum, 950000 tonnes of iron ore, 12.000.000 tonnes of limestone, 50000 tonnes of magnesite, 125000 tonnes of marble, 500000 tonnes of phosphate rock, 650000 tonnes of rock salt.

Natural gas is produced in large quantities from 9 gas fields (the reserves are estimated at 16.74 trillion cubic feet), the production in 1976 amounted to 4980 million cubic meters.

Crude oil is produced in a quantity of 2.030.000 barrels.

The coal reserves in Lakhra Coalfield in District Dadu have been estimated at 244 million tonnes and will be used for large scale power generation.

The copper deposits of Saindak (Baluchistan) are estimated at over 524.000.000 tonnes of ore with a copper content of 0.38 to 0.64%. It is estimated that this project will provide over 50000 tonnes of copper metal per year, starting from 1981-1982.

It is estimated that the total reserves of iron ore are over 400 million tonnes, and have been located in Punjab in Mianwali District, and with average content of 32% Fe.

BRANCHES AND SECTORS SUITABLE FOR INTERNATIONAL
COOPERATION

The industries suitable for technical and industrial cooperation are, naturally, closely linked with available resources. The list was made and discussed with both Chambers.

Textile industry

Food processing industry

Leather industry

Chemical industry : Pharmaceuticals

Fertilizers

Petrochemicals

Heavy chemicals (acids)

Engineering

Farm machinery

Machine tools

Foundries, forgings

Metal working industries-rolling, pressing,
stamping

Automotive ancillaries

Power generation and
power transmission

Electrical Apparatus production

Non-metallic materials

*Cement

*Low cost construction materials

*Refractory material

Mining and metallurgy

*Coal

*Copper

*Steel

Civil engineering
industry

*Road construction

*Ports and port facilities

IDENTIFICATION OF FIRMS AND INSTITUTIONS

1. Service Industries, LTD.

80-E-I, Main Boulevard

Gilberg II, Lahore

Mr Mohammad Saeed, Director

The group has three companies:

*Service Industries LTD. (leather goods)

*The Hilal tanneries, LTD.

*Service Industries (textiles) LTD.

And a total turn-over of approximately 18 million US\$, including 6 million US\$ exports.

The group has a specific interest to enter into following forms of industrial cooperation with other companies:

*for finished leather and rubber /canvas shoes

*for the tanneries- upgrading the quality of the leather

The forms of cooperation:

1.1. For leather & rubber/canvas shoes: Manufacturing cooperation and technical assistance for the purpose of streamlining the production in accordance with the demand in the developed countries markets, (upgrading the quality, design and finish).

1.2. For the tanneries: Technical assistance (sending the experts and training).

2. Shezan International LTD.

Bund Road, Lahore

Mr Saifi Chaudhary, Director Marketing

The company manufactures products processed or fruits and vegetables: mango juice, orange juice, fruits in syrup, squashes, pickles, ketchups, jams (jar and cans), and canned vegetables. In 1963 Shezan Int. started in Lahore with American collaboration, but in 1970 the complete unit was taken over by local Pakistan owners. The turn over is about 2,000,000 US\$. employing normally 400 persons and in the season about 2000. Shezan International is a private limited company, a member of the group (Shezan restaurants, Shahtaj Sugar Mills - the biggest in Pakistan - at Mandi Baha ud Din, and Shah Nawaz LTD., importers of vehicles and tractors) . The company intends to introduce new products - high protein drinks (chocolate milk and similar). For this purpose they are looking for a partner for technical know-how and assistance (sending the experts and training). They will be ready to prepare all necessary information and present their ideas on possible cooperation to other partners.

3. Pakistan International Corporation,

70 Garden Road, Lyric Cinema

Building, Karachi

Mr Shaikh Haroon Rashid, Director

P.I.C. manufactures industrial chains (Pakistan Industrial Chains LTD., Karachi) and automotive vehicles batteries.

They have got the licence to organize the production of 50,000 batteries per year for automotive vehicles in Baluchistan.

P.I.C. is looking for a partner for possible joint venture arrangement, technical know-how transfer and supply of specific machinery.

Mr Rashid will be ready to submit all other data and prepare the information for both envisaged meetings.

4. Abdullah Corporation

Mr Ahmed Abdulla, Chairman

P.O.B. 5465 Karachi-2

Mr Akbar A. Abdulla, Director

The Corporation has got three companies:

Amie Investments LTD.

Awami Construction Co. LTD.

Investment Enterprisers LTD.

This private group was engaged in metal re-rolling and had the biggest production capacities (35000t/year) of rolled and drawn steel and was taken over by the Government in 1972. They started the same activities again and organized new rerolling units, production of cable conductors and wire knitting products. In addition to this they have a solvent extraction plant at Kotri, producing and exporting cattle food. Awami Construction Co. LTD., is civil engineering company engaged in building and selling the apartments and housing.

At present the Corporation manufactures

- Al -conductors for electricity supply and Al-wire
- Rolled steel products
- Expanded metal wire netting

The Corporation has the intention to expand in the fields of:

- 4.1.
 - *Aluminium rolling for round cable conductors
 - *Aluminium drawing (for cabling)
 - *For these activities they are looking for a partner for joint venture

- 4.2. The oil is extracted from rice bran-the material that was earlier wasted in Pakistan. Such oil is used for making soaps for industrial purposes and exported for cattle food. It is the intention of the Corporation to make this oil suitable for human food namely to purify and refine it to the extent of quality of an eating oil. They are looking for a partner who could assist them in know-how and technology.

- 4.3. To expand in the field of civil engineering construction a specific interest is shown for the cooperation in the production

of low cost construction materials, including the production of prefabricated elements and houses.

For this purpose they would enter into a cooperation with a partner from other countries. The forms of cooperation are flexible: know-how transfer or /and joint venture.

Mr A. Abdulla will be ready to attend the planned meetings and to submit his ideas and proposals to possible partners.

RECOMMENDATIONS

1. It would be advisable to confirm the receipt of the proposals and interests, to all identified enterprises, to show them that immediate action of UNIDO is under way.

2. Since the right procedure in establishing the contacts with possible counterparts of the identified enterprises is essential for the success of envisaged meetings, the consultant would suggest:

either 2.1 To appoint the consultants who will find out such firms or institutions which are capable and have an interest in meeting the identified enterprises, assist UNIDO in organizing the work throughout all stages of preparations for the meetings,

or 2.2 To ask responding institutions, both in Yugoslavia and Poland, to do this on behalf of UNIDO.

It is important to mention that unorganized approach of identified enterprises, before the meetings, might cause a confusion and introduce some undesirable consequences. It is, therefore, essential that the contacts with the identified enterprises are carried out through one channel only.

3. It might happen, because of some reasons, that the personalities contacted in each enterprise, do not convey the proper instructions to their subordinates, (how to prepare the information for the meetings, etc.).

A new written explanation would be desirable. It is worthwhile to prepare a list of the key points which all participants should carefully consider before coming to the meetings. That, specifically applies to such proposals, for which no feasibility studies were available, during the visits of the consultants.

A. THE ENTERPRISES LOOKING FOR THE PARTNERS OR WISHING TO STRENGTHEN THE EXISTING COOPERATION

Branch	Sector	Country	Enterprise	Subject	Form of Cooperation
Engineering Industry	Diesel Engines	India	MAHINDRA & MAHINDRA Bombay	The engines for the vehicles up to 3 t.	Licence Know-how Technical Assist. Training
		India	AMALGAMATIONS GROUP (Private) LTD. SIMPSON & CO., Madras	Manufacturing Cooperation with INR - Belgrade, Yugoslavia	Training
	<u>Tractors</u>	India	AMALGAMATIONS GROUP (Private) LTD. TAFE, Madras	Manufacturing Cooperation with INR - Belgrade, Yugoslavia	Technical Assist.
		India	BHARAT EARTH MOVERS, Kolar Gold Fields	Manufacturing Cooperation with "Radoje Dakic" - Titograd, Yugoslavia	Technical Assist. Training
Engineering Industry	<u>Earth Moving Machinery</u>	India	HINDUSTAN EARTH MOVERS, Baruda	Manufacturing Cooperation with "14 Oktobar" - Kru- sevac, Yugoslavia	Technical Assist. Training

Branch	Sector	Country	Enterprise	Subject	Form of Cooperation
		Indonesia	BARATA, Metal Works & Engineering, Surabaya	New Products: Loaders, Diggers and Expansion of Existing Manufacture Cooperation With "14 Oktober, Kruševac, Yugoslavia	Licence Technical Assist. Training
Plants and Products for Processing Industry	Indonesia	Indonesia	BARATA, Metal Works & Engineering, Surabaya	New Products: - Heat Exchangers - Small Boilers - Gas Storage Tanks, etc.	Transfer of Know-how Technical Assist. Training

Branch	Sector	Country	Enterprise	Subject	Form of Cooperation
	<u>Foundries</u>	India	MAHINDRA & MAHINDRA Bombay	Up-grading the quality of the castings for Cylinder Heads and Blocks	Technical Assist. Experts and Trainings
		India	HMT - Bangalore	Planned new iron foundry and tractor parts.	Know-how and Technical Assist.
		India	Motor Castings Ltd. Madras	Planned new Foundry - Joint Venture with FOB-IMK, Belgrade, Yugoslavia	Know-how Technical Assist. Training
	<u>Wire Ropes</u>	India	USEA MARTIN BLACK. Calcutta	Planned new Factory - Joint Venture in Yugoslavia	Technical Assist. Training.
	<u>Automotive auxiliaries</u>	Pakistan	PAKISTAN INTERN. CORPORATION Karachi	Planned new Factory	Know-how Joint Venture.

Branch	Sector	Country	Enterprise	Subject	Form of Cooperative
<u>Electrical Engineering</u>	<u>Electronics</u>	India	HINDUSTAN TELEPRINTERS LTD. Madras	New Products: + Mosaic (Dot matrix) + Print Heads + Stepper Motors + Facsimile Eq. + Computer Peripherals	Licence Technical Assist.
<u>Metal Processing Industry</u>	Aluminum Rolling and Drawing	Pakistan	ABDULLAH CORP. Karachi	New Products: Al-conductors and expanded metal wire netting.	Know-how and joint venture.

Branch	Sector	Country	Enterprise	Subject	Form of Cooperation
<u>Non-Metallic Minerals</u>	<u>Low-cost Civil Engineering Materials</u>	Indonesia	SEMEN GRESIK Surabaya	New Products: + Prefabricated Elements based on cement. + Prefabricated Prestressed elements. + Synthetic Gypsum	Technical Assistance Training Joint Technological Research.
		Pakistan	ABDULLAH CORP. Karachi	New Products: Prefabricated elements for housing.	Know-how (Joint Venture)
	<u>Refractories</u> (for Cement Industry)	Indonesia	SEMEN GRESIK Surabaya	New Products: (Based on local raw materials)	Know-how (Transfer of Technology) Training (Joint Venture)

Branch	Sector	Country	Enterprise	Subject	Form of Cooperation
Food Processing Industry	<u>Fruit & Other</u> <u>JUICES</u>	Pakistan	SZESAM INTERNATIONAL LTD. Lahore	New Products: High Protein Drinks	Know-how Technical Assistance
	<u>Fatig Oil</u>	Pakistan	ABDULLAH CORP. Karachi	New Technology: Refination and Purification of Rice Bran Oil.	Know-how Technical Assistance

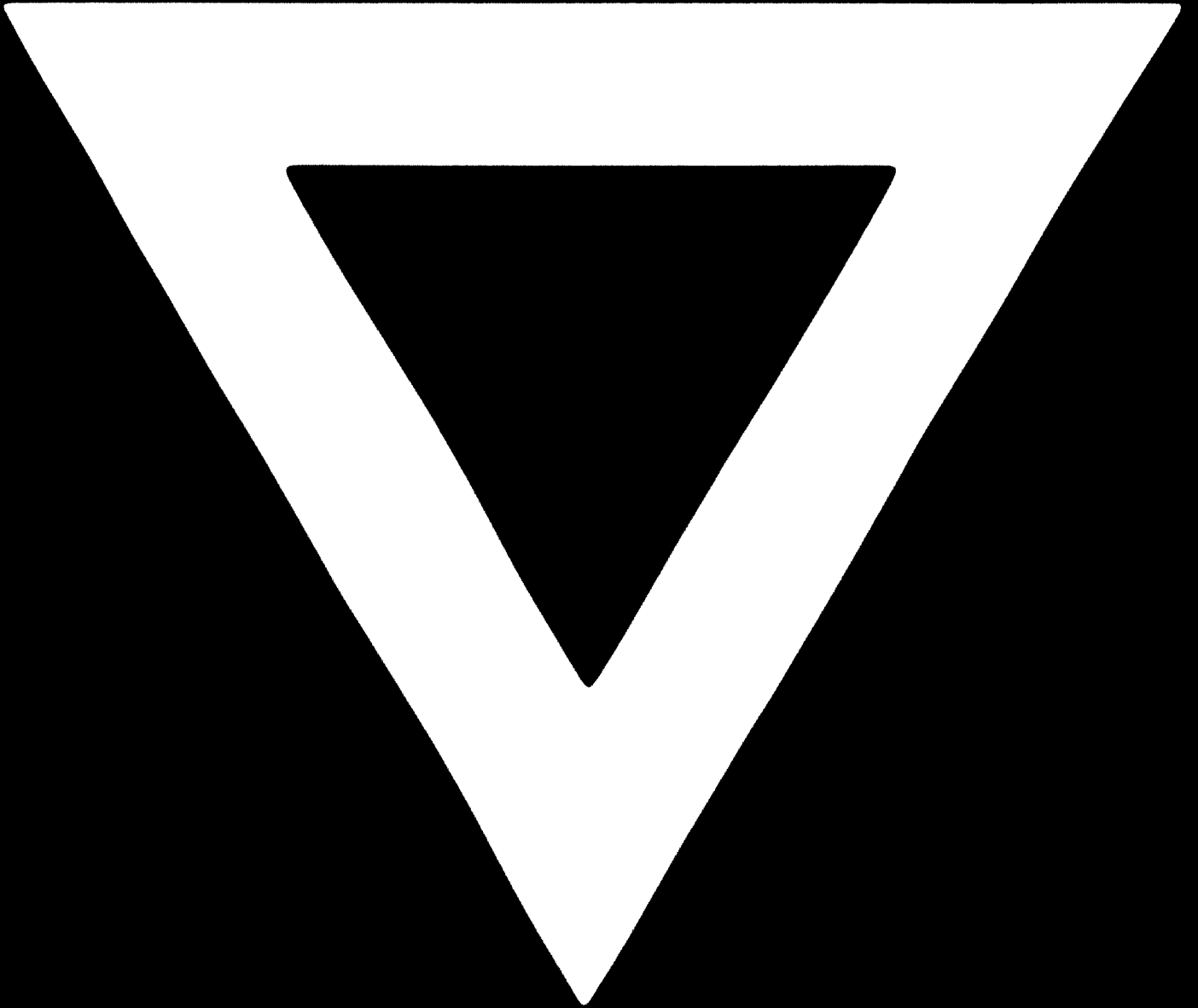
Branch	Sector	Country	Enterprise	Subject	Form of Cooperation
Leather Industry	<u>Finished Leather Goods.</u>	Pakistan	Service Industries Ltd. Lahore	Upgrading the quality and stream lining the leather goods (shoes, etc.)	Technical Assistance
	<u>Tanneries</u>	Pakistan	- " -	Upgrading the quality	Technical Assistance

**B. THE ENTERPRISES AND INSTITUTIONS OFFERING INDUSTRIAL/TECHNICAL COOPERATION
TO OTHER DEVELOPING COUNTRIES**

Industrial Branch	Sector	Country	Enterprise	Subject	Form of Cooperation
Engineering Industry	Machine Tools	India	HINDUSTAN MACHINE TOOLS LTD. Bangalore	A large Assortment.	Know-how Technical Assistance Consultancies Trainings
	Cutting Tools	India	ADDISON & CO., LTD. Madras	Milling Cutters and Mills, Drills, Taps, etc.	Know-how Trainings Technical Assistance
	Forgings	India	SHARDLOW INDIA LTD. Madras	Intricate Forgings for Engines and Vehicles	Know-how Technical Assistance Trainings
	Machine Tool Design and Testing	India	CENTRAL MACHINE TOOL INSTITUTE, Bangalore	Design and Development of Machine Tools, etc.	Consultancy Technical Assistance Trainings

Industrial Branch	Sector	Country	Enterprise	Subject	Form of Cooperation
Pharmaceutical Industry	Pesticides	India	SANDOZ (India) LTD. Bombay	Surveys Formulation Testing	Technical Assistance Training
	Dyes for Leather Industry	India	SANDOZ (India) LTD. Bombay	Surveys Formulation Testing	Technical Assistance Training

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