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Workshop on Industrial Co-operation among  
Selected Asian Developing Countries

Seoul, Republic of Korea  
12-16 June 1989

REPORT\*

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**EXPLANATORY NOTES**

<b>ECDC</b>	<b>Economic co-operation among developing countries</b>
<b>GDP</b>	<b>Gross domestic product</b>
<b>GNP</b>	<b>Gross national product</b>
<b>IPS</b>	<b>Investment Promotion Service</b>
<b>KIET</b>	<b>Korea Institute for Economics and Technology</b>
<b>MOST</b>	<b>Ministry of Science and Technology (ROK)</b>
<b>NGO</b>	<b>Non-governmental organization</b>
<b>R and D</b>	<b>Research and development</b>
<b>ROK</b>	<b>Republic of Korea</b>
<b>TCDC</b>	<b>Technical co-operation among developing countries</b>

## INTRODUCTION

The Workshop on Industrial Co-operation among Selected Asian Developing Countries was held in Seoul, Republic of Korea, from 12 - 16 June 1989. The meeting was co-hosted by the Korea Institute for Economics and Technology (KIET) and the UNIDO Investment Promotion Service, Seoul (IPS Seoul). It was co-sponsored by UNIDO and the United Nations Development Programme (UNDP). For the host organizations, the workshop was a further step in their programmes to promote economic co-operation at plant level between the Republic of Korea, particularly its industry, and other countries. For UNIDO it formed part of a series of special programmes offered for industrialists seeking to initiate or expand their long-term co-operation with counterparts in other developing countries. For UNDP and the Korean Ministry of Science and Technology (MOST), the meeting implemented activity 3 of the Government-executed project ROK/87/015 - TCDC, concerned with investment promotion and technology transfer among countries in the Asia region.

The purpose of the meeting was to:

- o To consider over 100 prepared project profiles in the fields of textiles, machinery, electronics, chemicals and other industrial branches in technical and economic discussions;
- o As a result of those discussions, to sign working agreements to co-operate among the enterprises, institutions and government organizations represented with a view to introducing new production techniques, increasing industrial productivity and improving the quality of industrial products;
- o To identify new mechanisms to establish and promote a more systematic approach to industrial co-operation among the countries' industrial enterprises, and further to facilitate contacts and a faster flow of information between them.

The meeting took place in the context of a notable shortfall in industrial co-operation among the major industrializing developing countries of South-East Asia and with other Asian countries compared to its potential. Part of the reason was the limited official contact between some Asia countries at government level and only intermittent contact at non-government (NGO) level, e.g. between chambers of commerce and industry or organizations representing industry. The meeting could therefore pave the way for both direct contact between enterprises in identified areas of interest and recommend mechanisms for direct permanent links between them and organized industry in other Asian developing countries.

## I. ORGANIZATION OF THE MEETING

The meeting was attended by 84 participants from 8 countries. The list of participants is attached as Annex V.

### Opening of the meeting

The workshop was opened by Dr. Park Sung-Sang, President of KIET. Further welcoming remarks were addressed to the meeting by Dr. Park Seung-Duk, Assistant Minister, Ministry of Science and Technology (MOST), Mr. N.S.

Subbaraman, UNDP Resident Representative and the Chief of the UNIDO Section for Economic Co-operation among Developing Countries.

The KIET President pointed out that technological innovation was the child of good co-ordination, born only when three ingredients--basic science, manpower and investments--were harmoniously available at the right time. Developing countries not having an abundance of these three recognized the importance of mutually beneficial transfers, particularly of technology. A large portion of the advanced technologies imported from industrialized countries were not well-utilized in developing countries, he underlined, because of differences in technological level and social environment. Moreover, industrialized countries were now very reluctant to share their sophisticated technologies.

In contrast, the Republic of Korea had considerably improved its overall technology level, becoming competitive in some high technology areas such as semi-conductors. This experience in developing high technologies from scratch within a short period could be repeated in other Asian developing countries as well, KIET believed. Technology transfer among those countries was a prerequisite to the enhancement and development of technology. A precondition for that, the KIET President said, was a technology transfer mechanism--an information network under which users and suppliers of technologies could easily get together and be offered easy access to procedural assistance from a public organization.

On behalf of the Government, the Assistant Minister said that to realize balanced development of society and the environment, there was a recognized need to develop emerging new technologies in well-planned and controlled applications. Nevertheless there was anxiety over increasing techno-nationalism and protectionism evident in the reluctance of advanced countries to transfer high technology or to demand tremendously high costs for it. This placed developing countries in a very difficult position in attaining self-reliance independently. No single country, regardless of its development stage, could realize further development without regional co-operation and interflow among nations, the Assistant Minister believed. There was no alternative but to seek out the means to solidify regional co-operation, centering on collaborative research, joint ventures and other joint development efforts. It was imperative for developed, newly industrializing and developing countries in the Asia region to come together at this most critical period in its history, overcoming the barriers erected in the path of progress. The Korean Government was ready and eager to share with other countries its experiences in the spirit of TCDC.

On behalf of UNDP, the resident representative noted that just as transfer of technology had become a catch-word for promotion of economic and technological co-operation between most countries, so ECDC and TCDC had become standard approaches in the promotion of joint activities, investments and actual technology transfer from one country to another and the sharing of facilities and knowledge between them. The workshop recognized that bilateral and multilateral arrangements constituted a fundamental aspect of the technical co-operation among developing countries emphasized in the Buenos Aires Plan of Action.

For UNIDO, the Chief of the ECDC Section underlined the opportunity offered by the workshop to industrialists in developing countries to initiate and expand co-operation with their counterparts elsewhere in the developing world. The Republic of Korea was notable for having undergone a process of very rapid industrialization which had resulted in a well-diversified industrial structure and mastery of advanced production techniques. Such achievements constituted an important driving force in industrial co-operation

among developing countries. Korea had much to offer other developing countries in terms of know-how, equipment and services. At the same time the progress made by other developing countries in Asia could benefit the host country in its endeavours to further industrialize.

UNIDO expected that the workshop would result in a large number of co-operation agreements between the enterprises, institutions and governments present. It also hoped that a recommendation could be adopted on the establishment of a mechanism to promote economic and technical co-operation among participating countries and facilitate further contacts and flow of information among them.

#### Election of officers

Dr. Park Sung-Sang (Republic of Korea), President of KIET was elected Chairman and Mr. Dayananda Wickremasinghe (Sri Lanka), Minister of State for Textiles, as Vice-Chairman. Mr. K.K. Taneja (India), Industrial Adviser, Directorate-General of Technical Development, Ministry of Industry, New Delhi was elected Rapporteur.

Members of a Working Group on Conclusions and Recommendations for a Mechanism to Promote Industrial Co-operation in the Asia Region under the chairmanship of the Rapporteur, were Mr. Zainal Abidin (Indonesia), Mr. A. Ghulamali (Pakistan) and Mr. C. Perara (Sri Lanka), assisted by Mr. Noh Hee-Mok (KIET consultant) and Mr. Zhu Wengen (UNIDO consultant).

#### Adoption of the agenda

The meeting adopted the following agenda:

Opening of the meeting  
Election of the Chairman, Vice-Chairman and Rapporteur  
Adoption of the agenda  
Formation of the Working Group  
Presentation of national papers  
Bilateral discussions on co-operation projects  
Report of the Working Group  
Discussion and adoption of conclusions and recommendations  
Closure of the meeting

The work programme is attached as Annex VI. Formal papers presented or made available for the meeting are listed in Annex VII.

#### Adoption of conclusions and recommendations

The meeting adopted the draft conclusions and recommendations at its last session on 16 June 1989.

#### Closure of the meeting

The head of the Indian delegation, on behalf of all participants, thanked the organizations that had arranged the meeting. The Chief of UNIDO Section for Economic Co-operation among Developing Countries thanked the host organizations in the Republic of Korea for their excellent arrangements and their generous hospitality offered to the meeting participants. He assured participants that UNIDO, if requested, would continue to provide the necessary support within the limits of available funds.

In his concluding remarks, the Chairman stressed the important results of the meeting and hoped the preliminary agreements reached would be implemented in the near future.

## II. SUMMARY OF STATEMENTS DELIVERED AT THE PLENARY SESSION

All the participants presented short summaries of their national papers (see Annex VII) outlining the prospects for foreign investment in their countries. The presentations highlighted the present status of the textile, machinery and electronics sectors, the problems encountered at enterprise level and possibilities for solving some of them by means of co-operation with enterprises in other Asian developing countries.

A representative of the UNIDO Special Projects and Activities Division explained the role of trust funds as a financial mechanism to assist industry at enterprise level, in particular as a vehicle to promote effective follow-up to working agreements reached between participants during the meeting. Trust funds were presented as a way in which UNIDO could respond quickly to requests for assistance with jointly-funded pre-investment activities, rehabilitation or revamping studies, training and technology acquisition. They were a mechanism, it was suggested, by which potential co-operation partners could save themselves time, trouble and money compared to a similar package of services from commercial, and less neutral, organizations.

The head of the UNIDO/IPS Seoul outlined the role of the UNIDO Investment Promotion Service, reminding the meeting that in the course of its rapid development, the Republic of Korea had faced its share of hardship. Major reforms in policies were necessary in the early 1980s to bring inflation under control and reshape and improve the economic structure. And while these policy measures produced the desired results within a short period of time, Korea would have to overcome many obstacles if it were to succeed in its endeavour to become an advanced country. Korean industries would have to diversify their products and markets through continued efforts for technological development and strengthening of competitiveness. Korea had first to increase industrial investment in line with readjustments in the global industrial structure and international division of labour. As part of that effort the Korea Government was actively pushing ahead through promotion of trade and industrial investment and transfer of technologies to increase and reinforce economic co-operation. These efforts included co-operation with nations with which the Republic of Korea still had no diplomatic ties.

The UNIDO Investment Promotion Service (IPS) in Seoul was first such UNIDO office in a developing country, the IPS Seoul representative continued. To date, over 600 investment project proposals for about 30 countries had been processed by IPS, the resulting information being distributed to institutions, business journals and companies. On request, selected institutions and companies were informed separately with concrete project proposals by direct mail. IPS Seoul had organized Korean missions to participate in UNIDO investment fora in six other countries. Missions were also organized to Brazil and Argentina. Under its delegate programme, investment promotion officials from other developing countries, e.g. Indonesia, Nepal and Poland, to promote their project proposals for co-operation directly with Korean industry.



The Director-General of the Export-Import Bank of Korea outlined recent developments in Korea's economy and Government policies on outward and inward direct investment. Korea had moved, he explained, from being the fourth largest debtor country in the early 1980s to being a model of economic development with per capita income in excess of \$4,000 and unemployment stable at 2 to 3 per cent. With the current account moving into surplus for the first time in 1986 and reaching \$14.3 billion in 1988, there was pressure, however, to open up domestic markets and appreciate the won. In response, the Government had removed restrictions on import of foreign goods, reduced tariffs on imports, eased foreign exchange regulations to facilitate Korean investment overseas, opened the trade sector to foreign investors and laid plans to internationalize the domestic capital market. The Economic Development Co-operation Fund (EDCF) was established in 1987 to contribute to economic co-operation with other developing countries.

To promote and encourage overseas investment, Government policy changes had featured expansion of the automatic approval system, reinforced financial assistance and tax incentives, boosted access to investment information, extended support for overseas investment insurance, increased the investment protection agreements (e.g. double-taxation agreements) and liberalized overseas direct investment.

Trends in foreign direct (inward) investment included a switch in motivation from availability of cheap labour to availability of a large potential domestic market, a relatively well-developed infrastructure and a highly industrious labour force. More investment was going into advanced technology and high value-added products such as electrical goods, electronics, metals, chemicals and medical products.

#### National papers

##### Republic of Korea

The KIET consultant for industrial co-operation proposals by firms in the Republic of Korea introduced the profiles prepared for the workshop with a brief review of the main selected sectors--electronics, machinery and textiles (see Annex I). The main problem facing electronics manufacturers, he said, was the keen competition with South East Asian and Japanese firms in the domestic market following import liberalization and tariff reductions on colour TVs, microwave ovens and most other consumer electronic products. Balanced growth of the electronics industry was hampered by an historical bias toward labour-intensive assembly of components imported from abroad. Another weakness was the low level of technology. Abroad, the industry faced tougher import barriers and rapid entrance of other developing countries in its major export markets. And the rapid appreciation of the Korean won and rising wages made it difficult for the industry to achieve high continuous growth. In response there would be rapid adoption of high technology in consumer appliances and increase emphasis on high added-value industrial equipment. The industrial electronics industry, but not the consumer sector, was expected to grow more rapidly than ever. Companies in the fields of data processing, telecommunications and factory automation were expected to become internationally competitive; the electronic parts and components industry would maintain a high growth rate due to technology improvement and development of new products. R and D would be increased to enhance domestic technological ability.

In the machinery sector, lack of indigenous technology was forcing Korean firms to import technology from developed countries. Furthermore they lacked the capability to develop and design internationally competitive independent models and components. In addition the quality of parts and components remained unsatisfactory due to the small scale of production and excessive dependence on imported raw materials. The longer term prospects as more promising, however, as several large companies concentrate on developing and producing more technology-intensive machinery such as NC machine tools and smaller firms diversified production of standard machine tools. Domestic demand was expected to rise due to investment increases in chemicals, automobiles and cement industries. Under the current five-year plan, supply of high-quality parts and components would increase under the influence of promotion measures by the Government, research institutes and companies.

The textile industry was experiencing a slowdown due to the won's appreciation, rising labour costs and raw material price instability. Many smaller firms seemed likely to go out of business as the sector lost competitiveness to China, Thailand and other Asian countries. Recently a growing number of such countries were setting up in South East and South West Asia, which had potential as export bases to North America and other markets. In response the Government was preparing a seven-year industry restructuring plan to upgrade product quality, diversify the range, develop technology to produce special fabrics, assist small- and medium-sized firms, and to diversify markets into China, Eastern Europe and the Soviet Union.

#### China

The head of the China delegation outlined the economic context in which co-operation with Chinese enterprises would take place. GNP and national income grew at over 11 per cent in 1987; major increases were registered in output of steel, coal, electricity, and industrial consumer goods; agro-industry products were in short supply. Exports increased by over 24 per cent in 1988 with an increasing share accounted for by manufactured goods. Foreign investment totally \$9.8 billion (a more than 16 per cent increase) and nearly 6,000 new enterprises were authorized with foreign participation. Government policy in this area was to give priority to importing advanced technology and key equipment to raise the quality and performance of Chinese capital goods. The aim was to increase the efficiency in using foreign funds and to improve the laws governing business relations with foreigners to improve the investment environment.

Introducing the two provinces to which meeting delegates were to be invited to visit later in the year as a group, the head of the Chinese delegation said that Shandong was rich in mineral resources, the climate temperate and its industry undergoing rapid development. Gross industrial and agricultural output ranked first in China. The textile and machine-building industries were firmly established; oil, metallurgy, chemicals, electronics, building materials, light industry and foodstuffs were also well developed. Output of coal, oil, petrochemicals, electric power, cement, synthetic leather, cotton yarn, silk, foodstuffs, clocks and watches, domestic appliances, paper-making machines, machine tools, tractors, porcelain and handicrafts were all significant.

Shandong also had economic and trade relations with more than 150 countries and regions. The province had signed over 700 contracts and agreements involving foreign investment of \$2.5 billion and spent \$750 million on 1,300 projects involving imported technology. Foreign investment was in

light industry, textiles, foodstuffs, machine building, electronics, energy, transportation and agriculture. There were 125 enterprises with direct foreign investment, of which 70 per cent were export-oriented and relied on advanced technology. The policy of the Provincial Government was to accelerate renovation of small- and medium-sized enterprises, raise their level of technology and management. In the sectors selected for special attention by the workshop, the machine-building industry would emphasize design and manufacturing technology and key equipment for numerically programme-controlled machinery, hydraulic pressure machines, energy-saving transformers, motors and instrumentation. Electronics would feature import of electronic devices and components, computers and telecommunication equipment. The textile industry sought technology and equipment for finishing, printing and dyeing to improve the quality of cotton, wool, silk and knitted goods, while adding more varieties to the range of products.

Liaoning was also rich in minerals, especially energy sources. Business relations were established with nearly 140 countries and regions and by 1987 over four thousand contracts had been signed with foreign partners to acquire technology worth nearly \$2 billion. Some 212 foreign-funded enterprises had been approved, of which 120 were already in business. Government policy was to transform the old industrial base of Liaoning with an injection of \$2 billion available for co-operation with foreign partners and introduction of new equipment, technology and management systems. Special province-level incentives for foreign investors included provisions for the foreign partner to maintain control of management and administration, guarantees of their decision-making power, assist to enterprises with export products or using advanced technology, retention of foreign exchange earnings, extension of the period of tax exemption, reduction of income taxes, and exemption or reduction of land use taxes.

The UNIDO consultant for Chinese co-operation offers introduced 40 profiles of potential co-operation projects prepared for the workshop (see Annex II). All were from Liaoning or Shandong provinces, the majority involved extension or modernization, and all were relatively small--involving investments of between \$500,000 and \$6 million. The products were either in short supply in China or were presently imported from abroad, and most were based on raw materials either immediately available within the province or could be acquired from another one. The preferred type of co-operation was by means of a joint venture, subcontracting or co-production but other forms were open for discussion. Some proposals had already been approved by the authorities, others would be approved when shown to be of interest to foreign partners.

Chinese banks would provide export-oriented enterprises with preferential loans to finance fixed assets and working capital. Foreign currency balances were very important and should be considered at the very beginning. Sino-foreign joint ventures were encouraged to export in order to balance their foreign exchange accounts. Those running into deficits could, however, reinvest their share of Chinese currency profits in other joint ventures capable of earning more foreign exchange.

In addition to supplying urgent domestic demand or substituting for imports, products of Sino-foreign joint ventures had to meet specification and quality requirements.

### Bangladesh

The Bangladesh delegation outlined changes in industrial policy introduced in 1986 designed to increase the contribution of the industrial

sector to GDP. Key features of interest to the meeting included emphasis on the private sector, especially the small-, cottage- and handloom industries, encouragement of investment to move from assembly to intermediate and basic manufacturing, promotion of import-substituting and export-oriented (export linkage) industries, and development of indigenous raw material technology-based industry through research and adaptation. Foreign investment was encouraged, particularly in high-technology, export-oriented and labour-intensive industries. Institutional support and facilities included equipment lease financing, promotion of subcontracting, R and D, skill development, incentives for local innovation, investment counselling, quality control measures, and establishment of a consultative committee on technology assessment and transfer.

The engineering (machinery) industry in Bangladesh was being given priority as an instrument for raising technology levels generally. The sector itself was at a stage of being to manufacture simple agricultural equipment and machinery; a few firms could handle more complex manufacturing involving electrical machinery. In the small and cottage industry sector production ranged from capital machinery and equipment, through parts and components, to services and consumer goods. A subcontracting exchange programme provided linkages with large firms.

Electronics had been declared a priority sector, thereby reducing customs duty on imported parts and components for assembling and manufacturing to only 10 per cent. The sector was also freed from the need for formal approval or permission to set up production facilities where they were self-financed. Initial export successes had also paved the way for granting the sector the status of an export-oriented industry with corresponding incentives and facilities. For foreign investors, these included investment guarantees, repatriation facilities, fiscal and other incentives. An electronics complex was recently inaugurated in Dhaka to provide additional facilities to international investors.

### India

The Indian delegation drew attention to liberalization of licensing, economic policy measures, simplification of approval procedures, import liberalization for capital equipment and policy reforms that would provide better opportunities for joint ventures and investment in India. Since liberalization started, there had been a significant increase in industrial collaboration, especially in the form of equity investment in manufacturing and consultancy. A separate scheme promoted Indian participation in joint ventures in other countries.

The head of the delegation then introduced the capabilities of India in the field of industrial machinery with a review of the types of machines whose technology could be made available to other developing countries. This included a wide range of chemical equipment designed to international codes and subject to independent inspection. Mining machinery was offered with ancillary equipment; materials handling equipment reflected a systems approach to overall design. Equipment for pulp and paper manufacturing ranged up to 250 tons/day; dry process and precalcination technology cement machinery was offered for mini-cement plants and in sizes up to 1 million tons/day. Other machinery included oil-field equipment, metallurgical machinery, sugar plants, water and air pollution control equipment, plastics processing machinery, rayon and synthetic fibre processing plant and packaging machinery.

Liberalized policy measures for electronics included exemptions from the monopolies act for the larger firms in major sectors, broad-banding of licences, delicensing measures and participation of the private sector in manufacture of certain telecommunication equipment. The import duty structure was also being rationalized to promote manufacturing and backward integration. Delicensing of companies not covered by the monopolies and restrictive trade practices act (MRTP) and the foreign exchange regulations act (FERA) would relax local restrictions on investments up to about \$30 million for non-polluting industry. MRTP/FERA companies would benefit from delicensing of projects to manufacture components on an internationally competitive basis. One of India's six export processing zones, in Bombay, was exclusively devoted to electronics and an Electronics and Computer Software Promotion Council had been established to promote exports. India was collaborating with Japanese firms in areas such as TV components, passive components (such as potentiometers, plastic film capacitors and aluminium electronic capacitors), industrial electronics, office automation and computer printers. A small number of collaborations were active with other Asia countries, especially the Republic of Korea, and attention was drawn to the potential role of the Asian Electronics Union in this connection. A large number of electronic components were imported from Korea, Singapore, Taiwan Province of China and Japan. Initial steps had been taken to develop technology in micro-electronics, telemetry and advanced computers, as well as in application-oriented projects such as agriculture and health care. To upgrade indigenous production, the Government had started a standardization, testing and quality control programme and a number of courses and projects to develop specialized manpower for the industry had been initiated.

#### Indonesia

On behalf of Indonesia, the Indonesian delegate to UNIDO/IPS Seoul described the role of the Indonesia Investment Co-ordinating Board (BKPM), the government agency responsible for investment. For foreign investors in industry this aimed to be a one-stop service covering all approvals, licences and permits, and to receive fiscal facilities, grants and other incentives. Almost a rarity in the contemporary world, Indonesia had no restrictions on movements of currencies: overseas investors therefore faced no problems regarding transfer of profits or repatriation of capital. (The industrial co-operation proposals presented by the Indonesian delegate are listed in Annex I.I.)

#### Sri Lanka

The Permanent Representative of the Government of Sri Lanka to the Republic of Korea underlined Sri Lanka's interest in new technology and investment in textiles. His country's garment export industry was growing rapidly and spent around \$1 million annually on textile imports. This could be substituted if other developing countries invested in local production. Sri Lanka sought appropriate technology and investment from other developing countries and offered a very competent low-wage work force. Two special economic zones had already been established and a third was planned in the south of the country. Virtually the only restriction was that such investments should be 95 per cent for export.

#### Pakistan

The head of the Pakistan delegation drew attention to several inherent attractions for foreign investors in Pakistan: the large population of

approximately 110 million, a highly consumer-oriented society, inexpensive labour at all skill levels, low-cost raw materials, a cadre of dynamic entrepreneurs and a strong belief in private enterprise. Government policy was now highly supportive, witness the high-powered Board of Investment headed by the Prime Minister, reduced investment approval bureaucracy and incentives to invest in under-developed areas, key industries, the export processing zone near Karachi and export-oriented industries generally.

Opportunities in the textile sector lay in new production units and modernization or replacement of old ones. Large investments were required in high-technology equipment to produce defect-free yarn and fabrics. Technology and know-how would also be imported to raise the quality of textile output. Training and manpower development would be needed to produce managers capable of installing new spindles and looms planned for the early 1990s. Complete weaving and knitting factories using imported machinery were needed for export markets.

Electronics was designated a key industry and therefore entitled to a 4-year tax holiday and exemption from customs duty and sales tax on machinery, equipment, components and raw materials. Monochrome cathode ray tubes, rectifiers, capacitors and integrated circuits were already produced but there was a large potential demand. The focus should be on comparatively low-level, stable technology projects, the Pakistan Delegation said, such as printed circuit board laminates, connectors, edge connectors, integrated circuit sockets, RF coaxial cable connectors, quartz processing and polishing, loudspeakers, voltage stabilizers, fan regulators and long-range TV antennas.

In the engineering goods sector the big problems were low capacity utilization (30 to 40 per cent) and obsolescence. Most factories needed rebalancing, modernization and retooling. New or appropriate technologies had to be adapted to local conditions through local research programmes, if possible with the assistance of other developing countries. Particularly needed were raw material testing facilities, improved quality control systems, upgraded technical skills and know-how, and the ability to design for the real needs of end-user industries.

### Philippines

The Philippines delegation prefaced its presentation of trade and industry policy directions with a brief review of the positive trends in the Philippines economy. The decline in GNP had been reversed and the forecasts were for an average annual growth rate of 6.5 per cent up to 1992. Both exports and imports were increasing rapidly but the trade deficit was narrowing. In 1988 growth changed from being consumption-led to investment-led and capital outlays from foreign investors overtook those from domestic sources. Among equity investments, the chemical sector accounted for 19 per cent, electronics 18 per cent, textiles and clothing 10 per cent. Other important investment targets were construction, agriculture, aquaculture, the automotive sector, plastics and resins, rubber and processed foods. Propelled by this interest, the industrial sector grew by 8.9 per cent in 1988.

Government policy was to encourage a higher degree of private sector participation in industry and to privatise state-owned enterprises and holdings. Infrastructure was to be improved and expanded and the regulatory environment for local and foreign investment streamlined. Assistance would be offered in the development of new core industries. Special incentives were offered to investors in the 277 areas listed in the Investment Priorities

Plan. An Investment One Stop Action Centre had been set up where would-be investors in the Philippines could have their applications processed and approved within 24 days. Priority was given to projects that were export-oriented, offered a high degree of linkage, had high local content, generated high employment and complied with the policy of regional dispersal of industries. Priority sectors where the Philippines had a proven comparative advantage were marine and aquaculture, garments and textiles, computer services, gifts and housewares, processed foods and beverages, furniture and wood products, semi-conductors and electronics, ceramics, and steel, metal products and machinery.

### III. RESULTS OF BILATERAL DISCUSSIONS ON CO-OPERATION PROJECTS

The bilateral discussions, aimed at identifying co-operation opportunities among participating countries, were held on 14 - 16 June 1989. A total of 69 working agreements were reported. They included exchange of information, technical assistance, training, joint ventures, co-production, supply of components and representation.

UNIDO together with KIET and IPS Seoul would undertake follow-up activities to promote practical realization of the working agreements, in particular by means of two self-financed study tours to the Liaoning and Shandong provinces of China.

The results of the bilateral discussions are summarized as Annex IV.

### IV. CONCLUSIONS AND RECOMMENDATIONS

#### Conclusions

The meeting recognized the importance of industrial development as a key ingredient of Asian countries' social and economic development plans. Concern was expressed over growing "techno-nationalism" and protectionism, especially the increasing reluctance of advanced countries to transfer high technology and/or their demand for very high compensation for such transfers.

The resulting impediment to attaining self-reliance independently meant that no single country could realize further development without regional co-operation and exchanges among nations, the meeting agreed. In particular, the means had to be sought to solidify regional co-operation, centring on collaborative research, joint ventures and other development efforts.

In this context, delegates considered that the present workshop on industrial co-operation among Asian developing countries focusing on priority industrial sectors had been valuable in (1) promoting essential understanding of the investment climate and regulations in the participants' countries, (2) making available concrete offers of industrial co-operation in the form of prepared profiles covering a range of opportunities in the chosen industrial sectors, and (3) providing a forum in which those profiles could be discussed bilaterally and brought to the point of preliminary working agreements. It was the unanimous view that such meetings should be held further in the Asian region.

At the same time, delegates felt that more permanent arrangements were necessary to facilitate contacts between enterprises in different countries and promote industrial co-operation, including investment, among them. Following extensive discussion of possible mechanisms, the group felt that action could be taken on two levels: first to link offices and organizations such as KIET and UNIDO/IPS Seoul and others as may be available in the countries of the region to improve their effectiveness in promoting South-South industrial co-operation; secondly to improve the flow of information on business opportunities in each country.

Delegates felt that in this connection, the Government of the Republic of Korea could play a leading role in promoting and developing South-South co-operation in the Asian region. In this context, and as the current meeting had demonstrated, the existence of UNIDO/IPS Seoul was a valuable asset that could serve as the focal point for bilateral industrial co-operation at enterprise level between the Republic of Korea and other Asian countries.

Pending the establishment of similar services in other Asian developing countries, the meeting saw the need for a network of existing government and non-governmental organizations to coordinate in-depth contacts and arrange similar meetings to promote enterprise-to-enterprise co-operation. Customized industrial co-operation and investment promotion would strongly benefit from such a network arrangement, which would also enable investment promotion offices in different countries to co-operate in following up individual inquiries, arranging visits and study tours, mobilizing expertise and assisting in negotiations. The more advanced countries could co-operate in setting up or designating existing offices for such work. Again, the Republic of Korea, through KIET and UNIDO/IPS Seoul could play a major role in forming such a network.

The meeting agreed that improved flow of information on technology supply and co-operation opportunities was an essential tool for in-depth promotion of industrial co-operation. For this, the UNIDO Industrial and Technological Information Bank (INTIB) was a suitable vehicle for collecting and transmitting technology supply and industrial co-operation opportunities. Nevertheless, the group felt that even if information of this kind were available at national level with the INTIB focal points in each country, enterprises would not always receive it in good time. Other means of communication within each country would disseminate the information more widely and expeditiously. At the same time, organizations representing industrial firms and organizations could be effectively mobilized to collect information on enterprises' requirements and technological supply capabilities.

Finally, some members of the group expressed concern at the lack of preparedness and less-than-realistic expectations of some prospective investors in their approach to long-term co-operation negotiations. Attention was drawn to information materials and seminars designed primarily for companies from industrialized countries and it was felt that firms from developing countries in the region would strongly benefit from similar orientation activities conducted by the appropriate agencies in their own languages at the request and with assistance from the countries seeking investment or technology.

#### Recommendations

- (1) Based on contacts established during the meeting and identified areas for co-operation, workshop participants should continue negotiations in order to establish legally binding co-operation agreements. Consideration by



both parties should be given to UNIDO trust fund arrangements to overcome any stumbling blocks in those negotiations, to provide essential information in the form of feasibility and technical studies, and to arrange study tours and exchange of experts;

- (2) KIET, IPS Seoul and UNIDO should, on request of the co-operating partners, and subject to availability of funds, promote the follow-up of preliminary agreements reached during the workshop;
- (3) UNIDO should, subject to availability of funds, respond to specific invitations from Asian countries, organize similar meetings in future;
- (4) The UNIDO Industrial and Technological Information Bank (INTIB) should focus more on communicating technological information, co-operation offers and requirements of Asian developing countries, strengthening and extending the number of its own focal points in the region and working closely with manufacturers' associations, chambers of commerce and industry, industry support institutions and other industry representatives to collect from and disseminate such information directly to industrial enterprises;
- (5) The Government of the Republic of Korea, subject to funds, was requested to strengthen the financial and human resources of UNIDO/IPS Seoul with a view to extending its activities in promoting industrial co-operation and investment between Korea and other Asian developing countries; if possible, the delegates programme allowing countries to place their own investment promotion officials for several months in the Seoul office should be expanded; such an arrangement, could also be adopted in other countries of the region having a similar mechanism to that of IPS Seoul;
- (6) UNIDO should take the lead in creating a network of appropriate government and non-governmental organizations to facilitate day-to-day contacts between enterprises seeking investment and long-term industrial co-operation arrangements; in particular, UNIDO/IPS Seoul should be considered as the focal point of such a mechanism. Such an arrangement could also be adopted in any other country of the region with a similar mechanism to that of UNIDO/IPS Seoul existing or to be established;
- (7) Companies and enterprises interested in negotiating long-term industrial co-operation arrangements by providing investment/transfer of technology with counterparts in other Asian developing countries should be assisted by the appropriate local promotion agencies to raise their level of preparedness; accordingly these agencies should develop improved information and training materials, and hold regular seminars to disseminate the latest information on how to negotiate agreements in specific foreign markets, and to share experiences. This may be done at the request and with assistance from the countries seeking investment or technology.

## Industrial Technology Offered by the Republic of Korea

Project sponsor	Project title	Project description
<b>Electrical and Electronic Industry:</b>		
Hyundai Engineering Co., Seoul	Electrical lamp manufacturing plant	Sale of technology, turnkey plant, equipment supply and expertise offered for plant capacity of 2 million pieces/year
R-TECH, Seong Nam-City, Kyungki-Do	Manufacturing technology for carbon, metal and wire-wound resistors	Licensing and sale of technology, equipment supply and expertise for computerized resistor manufa- cturing equipment, high-speed sorting and cutting equipment, high-yield computerized painting equipment, high-accuracy quality monitoring and control equipment
ABCO Co. Ltd. Seong Nam-City, Kyungki-Do	Manufacturing technology for carbon, metal film and wire-wound resistors	Sale of technology, equipment and expertise supply for carbonizing, metalizing and wire winding equipment; high-speed-, sorting- and cutting equipment; high yield and computerized painting conveyor equipment. Products: metal, carbon-film, chip and wire-wound resistors, coil inductors. Plant capacity: 4,200 million pieces/year
Gold Star Cable Co., Seoul	Wire and cable manufacturing plant	Supply of technology to produce communications-, insulation-, power- and appliance cables including wire draw machines, extruder, twisting-, stranding-, unit-cabling-, jelly-filling- and sheathing machines together with auxiliaries. Plant capacity: 1,100 ton/year

Project sponsor	Project title	Project description
Korea Electro-Devices Mfg. Co., Guyunggi-Do	Manufacturing technology for molded wire harnesses	Cash investment, sale of technology, expertise and equipment supply for wire cutting, wire stripping and moulding process and final testing of finished products. Products: moulded-cable assembly for computers, public address amplifiers, wiring harness assemblies and FDS cable assemblies. Plant capacity: 300,000 - 1 million pieces/year
Jungpoon Products Co. Seoul	Manufacturing technology for potentionmeter (V/R) design and resistor screen	Joint venture, sale of technology and expertise supply for production of potentionmeters, switches, PIR sensors and telephones. Plant capacity: V/R 240 million/year, S/W 60 million/year, telephones 2 million/year
Goldstar Electric Machinery Co., Incheon	PLC (Programmable Logic Controller)	Cash investment, sale of technology and controller for factory automation.
Tae Yang Electric Lamp Co., Jeon Buk	Manufacturing technology for incandescent lamps	Sale of technology, equipment and expertise supply to produce incandescent lamps
Doosung Electronic Co., Chung Buk	Manufacturing technology for fly back transformer and deflection yoke	Sale of technology, cash investment, sub- contracting and equipment supply to produce high resolution products at low cost. Plant capacity: 1,5 million pieces/year
Korea Electric Co., Seoul	Traffic signal system manufacturing	Joint venture, subcontracting and licensing to produce ultramodern traffic signal system to solve traffic jam
Oriental Telecommunication Co., Kyungki-Do	Manufacturing and installation technologies for public digital switching system and PABX	Joint venture, subcontracting, sale of technology and equipment supply for manufacturing and installation of public digial switching system and PABX. Plant capacity: 600,000 subscriber lintes/year

Project sponsor	Project title	Project description
Bosung Electronics Co., Kyungki-Do	Manufacturing technology for condenser microphone	Sale of technology to provide condenser microphone manufacturing facilities to produce microphones. Plant capacity: 50 million pieces/year
Korea General Computers Co. Seoul	Monochrome monitor and CRT terminal	Sale of technology for CRT-monitor and CRT-terminal production. Plant capacity: 200,000 monitors; 15,000 terminals
Shin Il Precision Co., Kyunggido	Technology of mechanical timer and AC synchronous motor	Sale of technology, equipment and expertise supply for mechanical timer and AC synchronous motor production. Plant capacity: 200 million timers/year; 50 million motors/year
BOAM R&D Co., Seoul	Manufacturing technology and plant for inductor	Sale of technology and equipment supply to produce ferrite core inductors and transformer automatic coil winding machine. Plant capacity: 50 million pieces/year
Han Kook Core Co., Kyung Gi-Do	Manufacturing technology for EI core, block core, motor core and head case	Sale of material slitting processing, high punching, welding, grinding, deep drawing, trimming and annealing technology to produce different types of core. Plant capacity: 12,000 tons/year
BOAM R&D Co., Seoul	Manufacturing technology and plant for ferrite core	Sale of technology to produce ferrite core, inductors and transformer automatic coil winding machines.
Shin Kwang Enterprise Co., Inchon	Fluorescent lamp manufacturing plant	Equipment and expertise supply for plant creation and production of fluorescent lamps

Project sponsor	Project title	Project description
<b>Machinery Industry:</b>		
Se Dae Machinery Co., Seoul	Paper making machine and equipment	Turnkey project to produce paper making machinery, hydro-screens and waste-water treatment equipment
Samsung Precision Ind. Co., Nam-Ku, Incheon	Furniture component plant	Sale of technology and equipment and supply of expertise for manufacturing hinge and drawer runners. Monthly plant capacity: 100,000 drawer runner sets; 1,400,000 concealed hinges
Hyundae Metal Co., Dae Gu	Manufacturing technology for ANSI 3 cylinder lock set	Sale of technology, equipment and expertise supply to produce door locks and lighting fixtures with low investment cost and low labour requirement. Annual plant capacity: 1,200,000 sets
Dong Il Chemical Co., Pusan	Footwear making plant	Sale of technology and equipment, and supply of expertise to manufacture sports footwear, shoe soles and uppers. Annual plant capacity: 936,000 pairs
A-Seong Ind. Co., Pusan	Manufacturing technology for machine vice and grease nipple	Joint venture to supply manufacturing technology to produce high precision machine vise and grease nipples. Plant capacity: 500,000 sets/year.
Yuil Measures Mgf. Co., Kangwon-Do	Thermometer making plant	Equipment supply, joint venture or turnkey project to produce high-pression liquid in glass thermo- meters and digital thermometers and hygrometers
K-Ron Engineering Kyung Buk	Manufacturing technology for rack and rack cabinet	Cash investment, sale of technology and equipment supply to produce rack cabinet and signal converters to international standards. Cost of plant to manufacture rack, rack cabinet and signal converter: \$300,000 plus \$100,000 working capital

Project sponsor	Project title	Project description
Han Kook Special Printing Co., Cheongju	Screen printing decals, offset printing decals, name plates by alumite, etching, screen printing and stickers	Sale of technology and equipment supply for manu- facture of integrated screen printing facilities, including layout and techniques, printing substrates, screen printing supplies. Plant capacity: 130,000 colours/day - decals
Korea Kae Sung Ind. Co., Buchun-City, Gyeonggi-Do	Mould for engineering plastic	Manufacture of moulds for engineering plastics, injection moulding engineering plastics and assembly of electronic parts. Plant capacity: mould - 500 sets to mould 40 million pieces each
POSCO Engineering Co., Kyung Buk	Anode casting plant	Sale of technology and equipment supply for zinc anode casting. Plant capacity: 6,600 mt/year
Korea Resources Engineering Co., Mapo-Ku, Seoul	Non-metallic floatation	Cash investment and sale of non-metallic or metallic floatation technology for mine plant design, geological surveys and non-metallic mine development
Dae Dong Metal Ind. Co., Youngdo-Ku, Pusan	Manufacturing technology for metal bearings	Sale of technology and know-how for anti-corrosion metal bearing to be used in industry and kilmet metal for high-speed and high-load bearing
Dong Bang Special Steel Co., Pohang-City, Kyunbuk	Annealing and pickling line process	Equipment for improving mechanical and physical properties and removing internal stress to increase ductility of stainless steel and special wire rods. Plant capacity: 65,000 tons/year
Dae Sei Ind. Co., Buk-Ku, Inchon	Manufacturing technology for steel drums	Equipment and expertise supply for establishment of steel drum manufacturing plant; supply of 200-1 closed steel drums. Plant capacity: 100-300/hr

Project sponsor	Project title	Project description
Korea Iron and Steel Wires Ltd., Nam-Ku, Pusan	Manufacturing technology for steel wire ropes, PC wire and strands, bead steel wires	Cash investment and sale of manufacturing technology to produce steel wire rope, PC wire and strands by heat treatment, plating and drawing. Plant capacity: 72,000 tons/year steel wire ropes, 24,000 tons/year PC wire and strands, 24,000 tons/year bead steel wire
Han Sung Industry, Sung Dong-Ku, Seoul	Technology for wet milling or crushing	Sale of technology for clean wet milling or crushing made from stainless steel to crush effectively without any change of heat
Dong Hwan Ind. Co., Changwon	Car heater and cooler manufacturing technology	Joint venture to supply car heater and car cooler technology. Plant capacity: 100,000 ea/year.
Kye Sung Paper Co., Osan-City, Kyungki-Do	Manufacturing technology for carbonless copy paper	Sale of know-how (including <i>in situ</i> polymerisation and microcapsule technology), equipment and expertise to produce wood-free coated paper, wood-free uncoated paper, wood-free copy paper, cast coated paper
Korea Steel Pipe Machinery Co., Ansan-City, Kyungki-Do	Installation of tube mill plant for the production of 1/2" - 14" ERW steel pipes	Supply of technology of manufacturing process, equipment and facilities, auxiliary equipment and antipollution facilities for production of black and galvanized pipes. Plant capacity: black pipes - 60,000 tons/year, galvanized pipes - 30,000 tons/year
Tae Yang Steel Co., Yeongdeungpo-Ku, Seoul	Manufacturing technology for extruded polyethylene coatings for exterior of 1/2" to 14" steel pipes	Cash investment and sale of technology to produce polyethylene coated steel pipes, steel pipe fittings, steel pipe scaffoldings, asphalt coated steel pipes. Plant capacity: 300,000 tons/month
Han Il Precision Ind. Co., ChungNam	Manufacturing technology for shaft and gear pins	Supply of low-investment technology of shafts, gear pins and guide poles

Project sponsor	Project title	Project description
Tong Yang Metal Chem. Seoul	Establishment and management of high priority trace minerals plant	Cash investment, expertise and equipment supply of manufacturing know-hows, plant-design, equipment/machinery, installation, laboratory and management of chemical plant for all kinds of sulphate compounds in accordance with special requirements of animal feed additives, fertilizers and industrial uses. Plant capacity: 3,000-7,000 tons/year
Tong Yang Metal Chem. Seoul	Establishment and management of premix plant for animal feed	Cash investment, expertise and technology supply to produce premixes and concentrates of vitamins, minerals and amino acids for animal feeds. Plant capacity: 5-10,000 tons/year
Dea Hyun Co., Buk-Ku, KwangJu	Manufacturing technology for sur- face grinding machine, cylindrical grinding machine	Technology and equipment supply to manufacture hydraulic surface grinding machines and cylindrical grinding machines. Plant capacity: 200-800 sets/year
Shin Il Precision Co. Kyunggido	Technology of mechanical timer, technology of AC synchronous motor	Technology, equipment and expertise supply for production of mechanical timers, mini synchronous AC motors and line filters. Plant capacity: 200 million sets/year of mechanical timers; 50 million/year synchronous motors
Hyundai Engineering Co., Seoul	Crushing plant	Sale of technology to produce aggregates for construction and civil engineering works. Plant capacity: 80 tons/hour
Han Kook Core Co., Kyung Gi-Do	Manufacturing technology for EZ core, block core, motor core and head case	Sale of technology for raw material splitting and punching, welding, grinding, precision pressing and drawing processing, trimming, carbide-die processing and annealing to produce cores and cases. Plant capacity: 12,000 tons/year



Project sponsor	Project title	Project description
Dong-Ah Engineering Co., Seoul	Concrete pole and pile making plant	Establishment of concrete pole and pile making plant. Plant capacity: prestressed concrete piles, 80 pieces/day; poles, 80 pieces/day; hume pipes, 180 tons/day
Kolon Engineering Inc., Seoul	Towel manufacturing plant	Shuttle loom technology and expertise supply for towel manufacturing plants. Plant capacity: towel loom 85": 96 sets, 200-3,000 kg/day
Saewon Industrial Co., Taegu	Grey and ductile cast iron and foundry equipment	Sale of technology and expertise for production of grey and ductile cast iron (sand control, material control and product technology). Technology and expertise foundry plant (moulding, sand treatment and grinding and shot blasting line)
Dong Sun Ind. Inc., Seoul	Batch synthesis of foodstuff antioxidant, from p-ethoxyaniline and acetone	Sale of technology for production of ethoxyquin. Plant capacity: 156 tons/year
Hyundai Engineering Co., Seoul	Galvanized iron sheet plant	Sale of hot-dipping and corrugating technology, equipment and expertise supply for production of galvanized iron sheet. Plant capacity: 15,000 tons/year
Hyundai Engineering Co., Seoul	Steel drum making plant	Sale of technology, equipment and expertise for steel drum production. Plant capacity: 240,000 drums/year
Tong Yang Metal Chem. Seoul	Establishment and management of trace minerals plant	Cash investment, equipment and expertise supply to produce feed additives for animal feeds and animal drugs, foliar fertilizers, trace minerals for fertilizers and ceramic pigments. Plant capacity: 3,000 - 4,000 mt/year

Project sponsor	Project title	Project description
Tong Yang Metal Chem. Seoul	Establishment and management of premixes plant for animal feeds	Cash investment, equipment and expertise supply to provide manufacturing technology of premixes and concentrates composed of vitamins, minerals and amino-acids for animal feeds. Plant capacity: 5,000 to 10,000 mt/year
Dea Hyun Co., Kwang Ju	Manufacturing technology for surface grinding and cylindrical grinding machine	Cash investment, sale of technology and equipment supply to manufacture hydraulic surface grinding and cylindrical grinding machine. Plant capacity: 200 - 800 sets/year
<b>Textile Industry:</b>		
Beom Woo Chemical Co., Kyoungbuk	Warp sizing agent for shuttle looms	Sale of technology and licensing for production of water soluble acrylic resin, water dispersible polyester resin, other textile auxiliaries. Plant capacity: 10,000 tons/year
Dong Yang Vinyl Ind. Co., Busan	Plastic sheet and film	Sale of technology, expertise supply, sub- contracting for rigid PVC sheet, PVC shrink film and cellulose acetate sheet
Young Hin Chemical Ind. Co., Seo-Ku, Dae-Ku	Sizing agents	Sale of technology and expertise supply to manu- facture sizing agents for water jet looms handling nylon and polyester and shuttle looms procession polyester, nylon and cotton. Also available: emulsion and solution copolymerization of acrylics. Plant capacity: 8,500 tons/year
Sam Won Chemical Co., Kyoungbuk	Manufacturing technology and plant for acrylic copolymer	Sale of technology, licensing, equipment supply to produce acrylic sizing agents, acrylic pressure and repellent for textile, anti-foaming agent for pulp washing process

Project sponsor	Project title	Project description
Bum Han Chem. Ind. Co., Seoul	PH stabilizers for direct and discharge printing of textiles	Distribution arrangements and sale of technology to produce textile conditioning agent direct printing and discharge printing of textiles. Plant capacity: 1,800 tons/year
KOHAP, Seoul	Polyester, nylon and staple fibre manufacturing plant	Sale of energy-saving technology, licensing, equipment and expertise supply for continuous polymerization and direct spinning of polyester filament yarn, nylon filament yarn and staple fibre production. Plant capacity: polyester, 42,000 t/year; nylon, 28,000 t/year; staple fibre, 10,500 t/year
Oh Shung Chem. Co., Incheon	Fabric softeners	Joint venture to produce softening agents for all textiles of good compatibility and stability. Plant capacity: 400 tons/year
Baik Yang Co., Seoul	Manufacturing technology of all kinds of under wears, T-shirts	Joint venture to provide knitting, dyeing and finishing process to produce all kinds of under wears and T-shirts. Plant capacity: men's vests, T-shirts and briefs 1 million pieces/year of each
<b>Chemical Industry:</b>		
Dae Boo Chem. Ind. Co., Seoul	Manufacture of calcium hypochlorite	Joint venture for production of high quality hypo- chlorite and byproduct bleach liquor
Pesco Corp., Kwangju	Technology for heat-sealing between thin polyethylene film and polyethylene rings	Technology supply for manufacturing of disposable drapes for dental, medical, surgical use

Project sponsor	Project title	Project description
Hyundai Engineering Co., Seoul	Woven polypropylene cement bag manufacturing plant	Sale of technology, equipment and expertise supply for construction of polypropylene tape plant and cement bag manufacturing unit. Plant capacity: 30,000 bags/day (3 shifts/day)
Young Shin Ind. Co., Ansan-City, Kyunggi-Do	Heat-treatment equipment	Supply of industrial furnaces and heat treatment equipment for machinery and electronics parts
Shin Heung Ceramic Ind. Co., Ansan-City, Kyunggi-Do	Manufacturing technology for glaze colours	Sale of technology and equipment supply for manu- facturing glaze colours for porcelain and earthenware. Plant capacity: 120 tons/year
Shin Heung Ceramic Ind. Co., Ansan-City, Kyunggi-Do	Manufacturing technology for glass enamels	Sale of technology and equipment supply for acid and alkali resistant overglazes. Plant capacity: 240 tons/year
Hyundai Engineering Co., Seoul	Anaerobic filter process for waste water treatment	Sale of technology, equipment and expertise supply in connection with anaerobic filter process for solid organic wastes
Hyundai Engineering Co., Seoul	Polypropylene woven bag making plant	Sale of technology, equipment and expertise supply for polypropylene woven bag production. Plant capacity: 12,000,000 bags/year
Hyundai Engineering Co., Seoul	PVC compounding plant	Construction of PVC compounding plant to produce rigid and soft PVC compound in powder and pellet form. Plant capacity: rigid PVC powder, 25,000 tons/year; rigid PVC pellets, 10,000 tons/year; soft PVC pellets, 15,000 tons/year
Dae Woo Engineering Co., Seoul	Unsaturated polyester resin plant	Construction of plant to produce unsaturated polyester resin. Plant capacity: 5,000 tons/year

Project sponsor	Project title	Project description
Dongbo S.C. Corp., SongPu-Ku, Seoul	Antistatic agent additives and textile chemicals	Sale of technology for plastic additives (anti- static agent) for biaxially-oriented polypropylene and textile chemicals. Plant capacity: 1,500 tons/year
Daelim Engineering Co., Seoul	Formic acid manufacturing plant	Sale of technology for methanol carbonylation to manufacture formic acid with minimum concentration of 85 wt-per cent. Plant capacity: 20,000 tons/year
Korea Zinc Co., Seoul	High purity chemicals as reagents	Sale of technology, equipment and expertise supply to produce high purity chemicals (H <sub>2</sub> SO <sub>4</sub> , HF, H <sub>2</sub> O <sub>2</sub> , NH <sub>4</sub> OH) for semiconductor processing or reagent chemicals. Plant capacity: 5,000 mt/year
Lucky Ltd. Seoul	PVC flooring manufacturing plant	Sale of technology and equipment supply to produce PVC flooring. Plant capacity: 4.8 million linear meters/year
Lucky Ltd. Seoul	PVC tile manufacturing plant	Sale of technology and equipment supply to produce PVC tiles. Plant capacity: 38 million pieces/year
Sei Ki Chemical Ind. Kyongnam	Manufacturing technology of M.E.K.-P.O.	Sale of technology, equipment and expertise supply to produce methyl ethyl ketone peroxide. Plant capacity: 1,200 tons/year
<b>Others:</b>		
Dong Sung Co., Seoul	Manufacturing technology for hide, pig and lamb skin	Supply of technology for high quality hide, pig and lamb skin manufacturing. Plant capacity: hide - 752,286 pcs; pig skin - 729,713 pcs; lamb skin - 90,023 pcs

Project sponsor	Project title	Project description
Sungyong Magnetic, Seoul	Manufacturing technology of audio tape	Sale of technology and expertise supply for audio cassette and audio reel tape manufacturing. Plant capacity: 200,000,000 pcs/month
Baik Nam Mool San, Chonbuk	Cosmetic brush and tooth brush plant	Cash investment and supply of injection technology and training for brush manufacturing. Plant capacity: cosmetic brush 5,000,000 pcs/year, tooth brush 5,000,000 pcs/year
Non Shim Co., Seoul	Manufacturing technology and plant for instant noodles and foods snacks	Sale of technology and supply of equipment for construction of plant for wheat-based instant noodles and snacks. Plant capacity: noodles - 100,000 pcs/8 hours, snacks - 400 kg/hour
Jae Il Color Ind. Co., Seoul	Silica coated lead chromate	Sale of technology to produce inorganic deluxe pigment based on lead chromate or lead molybdate. Plant capacity: 100 tons/month
Mo Hak Tape Ind., JeonJu	Elastic band making plant	Joint venture and supply of marketing expertise for elastic band production. Plant capacity: 60,000,000 m/year
Han Dok Alps Optical Co., Choongnam	High vacuum multi coating system HMC-1050	Equipment supply for high vacuum multi-coating which stresses the stability and economy of lenses. Plant capacity: 300 lenses/year

**Co-operation Offered by  
China's Machinery, Textiles and Electronics Industries  
Shandong Province, China**

Project title	Project sponsor
<b>Machinery and Tools:</b>	
1. Production of 1.8-3 liter engines for light trucks	Laiyang Power Machinery Works
2. Light automobile speed variator	Zibo Automobile Gear Factory
3. Forgeable pieces of connecting rods for petrol engines	Boshan Forging Plant
Forging pieces of connecting rod assemblies for petrol engines	
4. Joint venture for international standard containers	Weifang Container Factor
5. Joint venture for transducers	Jinan Machine Tool Maintenance Station
<b>Textiles:</b>	
6. Joint venture cardigan factory	Yantai Cardigan Factory
7. Initiation wool knitting yarn etc.	Yantai Woolen Mill
8. Polypropylene tow for cigarette filter	Jinan Synthetic Fibre Plant
9. Nylon-6 staple fibre	Jinan Chemical Fibre Factory
10. Western printed bed sheet	Jining Bed Sheet Plant
11. Knitted T-shirts	Jining Knitting Plant
12. Rabbit hair cardigan plant	Linyi Warp Knitting Plant
<b>Electrical and Electronic Industry:</b>	
13. Electronic components	No. 6 Radio Factory Zibo
14. Deflection yokes for colour TV sets	No. 3 Radio Factory Dezhou City
15. Analogue and digital panel meters	Yantai Electrical Meter Factory
16. Computer keyboard manufacturing	Shandong Computer Company

**Liaoning Province, China**

**Textiles:**

1. Production of spun yarn
2. Production of flannel fabric
3. Production of towels
4. Production of sports shoes
5. Production of bed covers and embroidered goods
6. Manufacture warp knitting fabric
7. Production of denim garments
8. Processing fabric with filament air jet machine
9. Manufacturing high class fabric
10. Production of polyester thread for sewing

**Electrical and Electronic Industry:**

11. Production of fire alarms and other safety products
12. Household electrical appliances, automobile performance test meters
13. Production of electric pianos
14. Medium or high voltage ceramic capacitors
15. Control and protection relays
16. Production of planet and dutch decelerators and electricity-saving instruments

**Machinery:**

17. Brick-making friction screw presses
18. Dry cells
19. Pressure vessel manufacturing
20. Production of non-touch point speed-regulator unit for battery fork lift



**Industrial Co-operation offered by Indonesia**

<b>Project title</b>	<b>Project sponsor</b>
1. Dehydrated vegetable processing	P.T. Kodel
2. Processing of ginger	P.P.T. Kodel
3. Tomato paste/canned vegetable	P.P.T. Kodel
4. Tropical fruit juice	P.T. Bukit Peark
5. Canned pineapple juice	P.T. Indisi
6. Processing of cashew products	P.T. Kodel
7. Tropical fruit packing house	P.T. Kodel
8. Marquisa juice (pure/concentrate)	P.T. Kodel
9. Coconut processing	P.T. Hasiluna Indonesia
10. Cocoa bean processing	P.T. Hasiluna Indonesia
11. Processing of menthol crystal	Tani Jaya
12. Cattle feed from sugar cane waste	Tani Jaya
13. Canned shellfish and mackerel	Tani Jaya
14. Yarn cotton manufacturing	P.T. Candi Makar
15. Medium-density fibreboard	P.T. Budhi Nyata
16. Wooden mould manufacturing	P.T. Budhi Nyata
17. Joinery and furniture manufacturing	P.T. Aceh Timber Co.
18. Rattan furniture manufacturing	P.T. Dinamika Nusa Tritama
19. Furniture and handicrafts	Parmico Ltd.
20. Printed circuit boards	P.T. Catur Yasa
21. Furfural production	P.T. Intan Prima Kartika
22. Freon plant	P.T. Intan Prima Kartika
23. Epoxy resin manufacturing	P.T. Intan Prima Kartika
24. High quality refractories	P.T. Intan Prima Kartika
25. Electric motor control gear	P.T. Pelita Bahari

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| 26. Industrial valves                        | P.T. Masindo Utama                     |
| 27. Drop forged ind. hand tools              | P.T. Gunanusa Utama Fabricators        |
| 28. Cutting tools for metalworking           | P.T. Puteraco Services and Engineering |
| 29. Industrial conveyor/components plant     | P.T. Kodel                             |
| 30. Industrial heating equipments            | P.T. Puteraco Services and Engineering |
| 31. Machine-grade iron foundry               | P.T. Davita Jaya                       |
| 32. Precision dies and moulds                | P.T. Wijaya Karya                      |
| 33. Food processing equipments and machinery | P.T. Wijaya Karya                      |
| 34. Marine containers                        | P.T. SAM Steel Co.                     |
| 35. Glass fiore manufacturing                | P.T. SAM Steel Co.                     |

## Results of bilateral discussions of co-operation projects

Proposer or Main Beneficiary	Country of Counterpart	Counterpart Organization	Type of Co-operation	Project Description
<b>Bangladesh:</b>				
Bangladesh Small and Cottage Industries Corp.	Republic of Korea	Keyang Electric Machinery Co., Ltd	Licence joint venture	Production of DC motor and other electrical machinery
Bangladesh Small and Cottage Industries Corp.	Republic of Korea	Sedae Machinery Co., Ltd	Licence transfer of technology	Sale of waste water treatment equipment
Bangladesh Small and Cottage Industries Corp.	Republic of Korea	Korea Special Machinery and Construction Co.	Licence	Export of pilot plant from Korea to Bangladesh
Banai Electrical Ltd.	Republic of Korea	Daewoo Corporation	Licence joint venture	Manufacturing of loudspeakers or any other items particularly electronic components
M/S Computech Ltd.	Republic of Korea	Korea Tele-communication Authority International	Licence	Transfer of technology of computer software; training of Bangladesh technicians in Korea
<b>China:</b>				
Shandong Machinery Corp.	Republic of Korea	Sedae Machinery Co., Ltd.	Joint venture	Production of waste water treatment machinery under countertrade arrangements
Shandong Electronic Industries Bureau	Republic of Korea	Hichein Antenna Co.	Licence joint venture	Production of satellite receiving antenna; sale of technology and assembling line.
Liaoning Society of Enterprises with Foreign	Republic of Korea	Hyun Dai Precision Co.	Co-production joint venture	Manufacture of machinery and plant under countertrade arrangements

Proposer or Main Beneficiary	Country of Counterpart	Counterpart Organization	Type of Co-operation	Project Description
Liaoning Society of Enterprises	Republic of Korea	Daesung Electric Co. Ltd.	Co-production	Production of general purpose relays
Liaoning Textile Economic Technical Import Export Corp.	Republic of Korea	Daewoo Corporation	Joint venture	Production of striped knit wear
<b>Pakistan:</b>				
Industrial Promotion Services Ltd.	Republic of Korea	Dae Kwang Machinery Ltd.	Licence joint venture	Production of materials to be processed for extrusion lamination and extrusion coating
Industrial Promotion Services Ltd.	Republic of Korea	Dongil Chemical Co.	Co-production buyback	Co-production and buyback of shoes; study tour of Pakistan specialists to Dongil Chemical Co. in Pusan
<b>Philippines:</b>				
Dept. of Trade and Industry, Bonded Export Marketing Board	Republic of Korea	Kukje Machinery Co. Ltd.	Co-production joint venture	Investment in and/or production of power tillers
Bonded Export Marketing Board	Republic of Korea	Samsung Precision	Joint venture	Sale of facilities of hinges
<b>Republic of Korea:</b>				
Keyrin Electronics Co. Ltd.	Bangladesh	Bangladesh Small and Cottage Ind. Corp	Co-production joint venture	Production of loudspeakers for export
E-Hwa Electrical Ind. Co. Ltd.	Bangladesh	Bangladesh Small and Cottage	Licence	Transfer of technology for production of various electrical products

Proposer or Main Beneficiary	Country of Counterpart	Counterpart Organization	Type of Co-operation	Project Description
Korea Electronics Co. Ltd.	Bangladesh	Bangladesh Small and Cottage Ind. Corp.	Joint venture	Production of electronic components such as diodes and TV parts
Sammi Sound Tech. Corp.	Bangladesh	Bangladesh Small and Cottage Ind. Corp.	Licence	Transfer of loudspeaker technology
Baik Yang Co.	China	Shandong Machinery	Joint venture	Manufacture of all kinds of underwear and T-shirts under countertrade system
Daewoo Corporation	China	Shandong Electronic Ind. Bureau Plan Dept.	Joint venture	Production of deflection yokes for colour TV set
Dong-il Chemical Co.	China	Shandong Machine Building Ind. Corp.	Licence co-production buyback	Production of high fashion footwear
Dong Yang Machinery Co.	China	Liaoning Textile Economic & Techn. Imp./Exp. Corp.	Co-production joint venture	Manufacture of pressure vessels
Lucky Goldstar Co. Ltd.	China	Liaoning Society of Enterprises	Joint venture with Foreign investment	Assistance in manufacture of VCRs in Liaoning Province
Hansung Free Mill	China	Shandong Machine Building Industry Corp.	Licence co-production	Information exchange to upgrade foodstuff machinery industry
Kabul Ltd.	China	Liaoning Textile Econ. & Techn. Imp./Export Corp.	Co-production	Production of synthetic fibre
Keung Yong Machinery Ltd.	China	Shang Dong Machinery Industries Corp.	Joint venture	Production of underwear

Proposer or Main Beneficiary	Country of Counterpart	Counterpart Organization	Type of Co-operation	Project Description
Keyrin Electronics Co. Ltd.	China	Liaoning Textile Econ. & Techn. Imp./Exp. Corp.	Co-production joint venture	Manufacture and export of micro speakers
Kolon Engineering Inc.	China	Liaoning Province	Joint venture	Production of towels
Kolon Engineering Inc.	China	Liaoning Textile Corp.	Co-production Compensation	Exporting of dyeing and finishing equipment under countertrade
Kolon International Corp.	China	CICETE	Co-production joint venture	Production of textiles, raw materials and equipment (filament, yarn, jin, etc.)
Korea Electric Co. Ltd.	China	CICETE	Licence	Transfer of technology for traffic light systems
Korea Electronic Ltd.	China	Shandong Machinery Ind. Corp.	Licence joint venture	Production or transfer of technology for power transistors under countertrade system
Korea Electronics Co. Ltd.	China	Liaoning Society of Enterprises with Foreign Inv.	Licence, technology transfer	Production of transducers and semi-conductors
Korea Elite Industrial Co. Ltd.	China	Liaoning Textile Econ. & Techn. Imp./Exp. Corp.	Co-production joint venture	Manufacture of coal boilers
Korea Special Machinery and Construction Co.	China	CICETE	Co-production joint venture	Production of heat exchanger and pilot plant
Korea Zinc Company	China	Liaoning Society of Enterprises with Foreign Inv.	Licence co-production	Plant to produce high purity chemicals for semi-conductors
Kukje Machinery Co. Ltd.	China	Liaoning Textile Econ. & Techn.	Joint venture	Setting up silk fabric mill

Proposer or Main Beneficiary	Country of Counterpart	Counterpart Organization	Type of Co-operation	Project Description
Kyung Dong Machinery Co. Ltd.	China	Liaoning Textile Econ. & Techn. Imp./Exp. Corp	Licence joint venture	Joint venture for boiler manufacturing company; technical support for drawing and production of parts
Rocket Electric Co. Ltd.	China	Liaoning Society of Enterprises with Foreign Inv.	Joint venture	Joint production of dry batteries LR20, LR14, LR6 (N) with counterpart enterprise in Shenyang in China
Sedae Machinery Co. Ltd.	China	CICETE	Licence co-production	Production of paper-making and waste processing machinery
Se-Jin Electron Inc.	China	Shandong Electronic Ind. Bureau	Joint venture	Production of keyboards and telephone keypads
Ssang Yong Machine Ind. Co. Ltd.	China	Liaoning Textile Econ. & Techn. Imp./Exp. Corp.	Licence	Manufacture of knitting machines.
Young Jin Chemicals Ind. Co. Ltd.	China	Liaoning Textile Econ. & Techn. Imp./Exp. Corp.	Joint venture	Expertise to develop weaving mill standards.
Bum Han Chemical Ind. Co.	India	State of Electronics	Co-production	Sale of technical know-how to India for dyeing and leeching for textile materials and dye large printing for padding
Shin Heung Ceramic Industry	India	Department of Electronics	Joint venture	Manufacture of ceramic colors and onglaze colors
Dong-Jin Machine Ind. Co. Ltd.	Indonesia	Investment Coordinating Board (BKPM)	Joint venture	Production of machine tools
Dong-Jin Machine Ind. Co. Ltd.	Indonesia	Investment Coordinating Board (BKPM)	Licence joint venture	Production of fish powder or processing of raw fish under countertrade system

Proposer or Main Beneficiary	Country of Counterpart	Counterpart Organization	Type of Co-operation	Project Description
Dong-Il Corp.	Indonesia	Investment Co-ordinating Board (BKPM)	Joint venture	Production of polyester thread
Dong Yang Machinery Co.	Indonesia	Investment Co-ordinating Board (BKPM)	Licence joint venture	Export of rollers; production of rollers and conveyors
Hai Tai Confectionary	Indonesia	Investment Co-ordinating Board (BKPM)	Licence	Technology licencing for chewing and bubble gum manufacture in Indonesia.
Hannam Chemical Corporation	Indonesia	Investment Co-ordinating Board (BKPM)	Licence	Joint co-operation in the field of petrochemical industry
Korean Ginseng Products Co. Ltd.	Indonesia	Investment Co-ordinating Board (BKPM)	Joint venture	Expansion of business in Indonesia through JV investment project; supply of equipment/machinery to the new projects in Indonesia
Lucky-Goldstar International Corp.	Indonesia	Investment Co-ordinating Board (BKPM)	Licence joint venture	Supply of technology and plants for chemicals, plastics, medicals, foodstuff and other industries; joint venture for printing ink and carbon black manufacturing
POSCO Engineering Co. Ltd.	Indonesia	Investment Co-ordinating Board (BKPM)	Technology transfer	Transfer of technology in connection with establishment of H.Q.R. in Indonesia
Ssang Yong Machine Ind. Co. Ltd.	Indonesia	Investment Co-ordinating Board (BKPM)	Joint venture	Production and export of textile machinery
Youngshin Industrial Furnace Co. Ltd.	Indonesia	Investment Co-ordinating Board (BKPM)	Licence joint venture, technology transfer	Provision of technology in the manufacturing of heat treatment equipment to Indonesia; equity participation or JV arrangement may be considered later on a case-by-case basis



Proposer or Main Beneficiary	Country of Counterpart	Counterpart Organization	Type of Co-operation	Project Description
Baik Yang Co. Ltd.	Pakistan Mills Ltd.	Gul Ahmed Textile	Joint venture	Production of all kinds of underwear and T-shirts
Bum Han Chemical Ind. Co.	Pakistan	Industrial Promotion Services Ltd.	Licence joint venture	Production of printing PH stabilizer
Daeboo Chemical Ind. Co. Ltd.	Pakistan	Gul Ahmed Textile Mills Ltd.	Joint venture	Manufacturing of calcium hypochlorite in Pakistan
Daewoo Motor Co. Ltd.	Pakistan	Industrial Promotion Services Ltd.	Co-production	Production of fertilizers, ERW pipes and packing machines
Dongbo S.C. Corp.	Pakistan	Industrial Promotion Services Ltd.	Licence joint venture	Production of textile chemicals
Dong Yang Viyl Co.	Pakistan	Industrial Promotion Services Ltd.	Joint venture	Production of rigid PVC sheets
Khe Sung Ltd.	Pakistan	Industrial Promotion Services Ltd.	Licence joint venture	Transfer of paper making technology; production of carbonized paper, wood-free paper, and carbonless paper
Young Jin Chemicals Ind. Co. Ltd.	Pakistan	Industrial Promotion Services Ltd.	Licence joint venture	Production of chemicals for textile industry
Korea Electronics Co. Ltd.	Philippines	Bonded Export Marketing Board of Investment	Licence joint venture	Production of power transformers
Kabul Ltd.	Sri Lanka	United Apparel Industries	Joint venture	Garment production

Proposer of Main Beneficiary	Country of Counterpart	Counterpart Organization	Type of Co-operation	Project Description
Kabul Ltd.	Sri Lanka	United Apparel Industries	Joint venture	Production of textile fabrics
Kukje Machinery Ltd.	Sri Lanka	State for Textiles	Joint venture	Joint venture of dyeing processing; transfer of finishing machinery and equipment to Sri Lanka
<b>Sri Lanka:</b>				
United Apparel Industries	China	Liaoning Textile Econ. & Techn. Imp./Exp. Corp.	Joint venture	Production of apparel

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**Work Programme**

Monday, 12 June

Registration

Opening ceremony

- Opening by Dr. Park Sung-Sang, President, KIET
- Statements by Dr. Park Seung-Duk, Assistant Minister, Ministry of Science and Technology; Mr. N.S. Subbaraman, UNDP Resident Representative; Mr. FAN Huishun, UNIDO, ECDC Section

Election of officers

Adoption of agenda

Formation of Working Group on Conclusions and Recommendations for a Mechanisms to Promote Industrial Co-operation in the Asia Region

Introduction to working session by UNIDO Secretariat and presentation of trust fund mechanisms for financing pre-investment activities required to complete working agreements

Policies on outward and inward direct investment of Korea by Mr. Lee Sun-Ho, Director General, Export-Import Bank of Korea (guest speaker)

Introduction of Republic of Korea project proposals

Presentation and discussion of national paper by the People's Republic of China and introduction of Chinese project proposals by Chinese consultant, Mr. Zhu Wengen

Tuesday, 13 June

Presentation of UNIDO investment promotion activities and role of UNIDO IPS/Seoul

Presentation and discussion of national papers by other participants and introduction of their co-operation proposals

Bilateral discussion of projects (assisted by consultants, KIET, IPS Seoul and UNIDO Headquarters staff)

Wednesday, 14 June

Continuation of bilateral discussions

Meeting of Working Group on Conclusions and Recommendations for a Permanent Mechanism to Promote Industrial Co-operation in the Asia Region



Thursday, 15 June

Visits to industrial manufacturers: Gu-Ro Complex, Jin-Do Co., Li-A Motor Co., Ban Wol Industrial Complex, Kye-Yang Electric Co., Sam-Sung Electronic Co.

Friday, 16 June

Visit to KIET

Presentation of KIET facilities and programmes

Continuation of bilateral discussions

Presentation of recommendations by the Working Group

Adoption of preliminary report and closing ceremony

**Formal Papers Presented or Made Available  
at the Workshop**

National papers

Sum-Ho Lee	Policies on Outward and Inward Direct Investment in Korea
Hee-Mock Noh	Outlook for Korean Industries in Co-operation Opportunities
Zhou Zheng	Outlook for Chinese Industries in Co-operation Opportunities
Zhu Wengen	Presentation of Chinese Projects for Industrial Co-operation
Saleh Ahmed	Industries -- Present Status and Prospects of Bangladesh
Kewal K. Taneja	Industrial Machinery Industry in India
R.B. Kokane	Present Status and Prospects of the Electronics Industry in India
Zainal Abidin	Indonesia - Investment Climate and Opportunities
Abdulla Ghulamali	Pakistan
Virgilio P. Mallari	Country Feature on the Philippines

Background papers (UNIDO Secretariat)

Activities of UNIDO IPS/Seoul

UNIDO Co-operation: Technical Assistance and Trust Funds