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**TOWARDS NEW FORMS AND MECHANISMS OF
ASEAN INDUSTRIAL CO-OPERATION**

A Discussion Paper

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LIST OF ABBREVIATIONS

ADB	- Asian Development Bank
AEM	- ASEAN Economic Ministers
AFC	- ASEAN Finance Corporation
AEI	- ASEAN Export Industry Scheme
AIC	- ASEAN Industrial Complementation Scheme
AIGA	- ASEAN Investment Guarantee Agreement
AIP	- ASEAN Industrial Projects
AIJV	- ASEAN Industrial Joint Ventures
APDC	- Asian and Pacific Development Centre
APEC	- Asian-Pacific Economic Co-operation
ASEAN	- Association of Southeast Asian Nations
ASEAN-CCI	- ASEAN Chamber of Commerce and Industry
ASMI	- ASEAN Co-operation in the Small- and Medium-Scale Industries
CAD	- Computer Aided Design
CAM	- Computer Aided Manufacturing
CBI	- Caribbean Basin Initiative
CNC	- Computer-numerically-controlled
COIME	- Committee on Industry, Minerals and Energy
COTT	- Committee on Trade and Tourism
EAEG	- East Asian Economic Grouping
EC	- European Community
ECSC	- European Coal and Steel Community
EEC	- European Economic Community
EPZ	- Export Processing Zone
FTA	- Free Trade Agreement
GATT	- General Agreement on Tariffs and Trade
IC	- Integrated Circuit
IFC	- International Finance Corporation
LE	- Large Enterprises
MOP	- Margin of Preference
MPC	- Multiproject chip
MVA	- Manufacturing value added
NAFTA	- North American Free Trade Agreement
NIE	- Newly Industrializing Economy
NTB	- Non-Tariff Barrier
OPEC	- Organization of Petroleum Exporting Countries
PTA	- ASEAN Preferential Trading Arrangement
SME	- Small- and Medium-Scale Enterprises
SMI	- Small- and Medium-Scale Industries
TNC	- Transnational Corporation
WGFAF	- Working Group on Food, Agriculture and Forestry
WGIC	- Working Group on Industrial Co-operation
WGT	- Working Group on Trade

I. INTRODUCTION

The continuous search for new forms and mechanisms of industrial co-operation reflects the strong commitment of ASEAN in its drive to establish a more integrated economy among the member countries. ASEAN has adopted a forward-looking, consensus-based, and flexible approach to economic co-operation, which to some extent has been credited for the strength of ASEAN as a regional group.

Until now, ASEAN economic co-operation in trade and industry has moved, as one observer described it, at a "leisurely" pace of development. Economic co-operation has proceeded gradually since 1976 when ASEAN laid down the priority areas for economic co-operation. Now, 15 years later, growing pressures arising from the rapidly changing global economic environment have led ASEAN to look for new forms of industrial co-operation which can be more effective in bringing about greater regional economic integration.

The joint statements during the 23rd ASEAN Ministerial Meeting in 1990 reflect this ambition. The Ministers expressed their desire to assess comprehensively the position and interests of ASEAN within the regional and global context. They also recognized the need to establish clear objectives and to form effective strategies that will enable ASEAN to meet the challenges of the 1990s.

In this context, UNIDO was requested by the Chairman of COIME to prepare this report with a view to providing some broad directions for the development of new forms of ASEAN industrial co-operation. The specific objectives of this report are:

- (i) to provide a broad assessment of the emerging global and regional economic trends in the 1990s and how they affect ASEAN's competitive position with respect to the international market;
- (ii) to review the status of ASEAN economic co-operation and to assess its prospects, in the light of recent international and regional economic developments;
- (iii) to make preliminary proposals, based on the assessment of the problems encountered by ASEAN in its regional co-operation efforts, on how ASEAN can further improve its overall framework for ASEAN industrial co-operation; and
- (iv) to draw up tentative schemes, for further study, on how ASEAN can enhance industrial co-operation.

The present report was prepared in August 1991 under severe time constraints and without the benefit of direct consultations with COIME or other ASEAN institutions. It thus represents a first exploratory discussion paper of selected issues of and prospects for ASEAN industrial co-operation, taking into consideration the conclusions and recommendations of related previous studies.

While an attempt has been made to suggest some new directions and schemes for ASEAN industrial co-operation, these should in no way be considered as formal and final proposals. It is understood that this report is only the starting point for an iterative process of collaboration between COIME and UNIDO in the course of which the various concepts will have to be further substantiated.

II. THE GLOBAL AND REGIONAL SETTING: KEY TRENDS

Both global and regional developments exert a tremendous influence on ASEAN economies because of their strong outward orientation and their heavy reliance on external markets. In general, the economic trends in the 1980s had a favourable impact on ASEAN export performance as well as its economic and industrial growth.

The emerging trends in the 1990s, however, on the whole appear to be less favourable for ASEAN. The start of the 1990s has already created changes in the economic environment that may lead to a scenario of slower industrial growth for ASEAN. The emerging trends are likewise creating a situation which would require closer economic co-operation among ASEAN members if they are to maintain their international competitiveness as a group. While the economic situation in the 1990s may thus pose a threat to the sustainability of ASEAN's growth performance, it also provides an opportunity for ASEAN to examine closely the role regional industrial co-operation can play in the overall economic objectives of ASEAN for the 1990s.

The issues confronting ASEAN with regard to global and regional changes are:

- (i) whether ASEAN will be able to face the challenges of the 1990s given its existing structure;
- (ii) whether adjustments in the existing ASEAN framework can bring about greater adaptability to the emerging regional and global trends; and
- (iii) whether ASEAN economic co-operation in trade and industry can have a more significant role in boosting the economic performance and international economic standing of ASEAN members in the 1990s.

1. Global Economic Trends

1.1 Shift towards Bilateralism and Regionalism

Changes in international trade have a direct bearing on ASEAN industrial development. All ASEAN members are greatly dependent on their export earnings for maintaining industrial growth. The unabated growth of protectionism remains a serious threat not only to ASEAN but to many developing countries in the Asia-Pacific region. It threatens to bloc ASEAN's access to vital markets that have been instrumental in propelling its members to higher levels of industrialization.

Recent developments in the Uruguay Round have confirmed the uncertainty of global trade liberalization. The slow progress and failure to find agreement on many critical issues covered by the multilateral trade negotiations under GATT have drawn a number of countries to move towards bilateralism and regionalism. This in turn has led to the declining importance of multilateral trade negotiations and a rise in the formation of regional and bilateral trading blocs.

Bilateral and regional free trade arrangements have become more popular in the 1990s, such as those between the United States and its major trading partners. The United States have clearly intensified efforts to establish new and improve existing free trade arrangements.

In January 1989, a free trade pact with Canada was signed which is to be fully implemented over a 10-year period, foreseeing the elimination of tariffs, the reduction of non-tariff barriers and the liberalization of investment policies. The same arrangement is now being sought with Mexico with a view to creating a North American Free Trade Agreement (NAFTA). Furthermore, a free trade agreement between the USA and Japan has been proposed and within the June 1990 "Enterprise for Americas" initiative, the Bush administration envisages that all countries of the Western Hemisphere will be "equal partners in a free-trade zone stretching from the port of Anchorage to the Tierra del Fuego". In a first step towards such free trade negotiations, bilateral framework agreements have been signed between the USA and Chile, Colombia, Costa Rica, Ecuador, El Salvador, Honduras, Nicaragua, Panama, Peru and Venezuela. Finally, the Caribbean Basin Initiative (CBI) was introduced by the US Government in 1984 for a group of 23 Caribbean and Central American countries, eliminating or reducing tariffs on a wide range of non-traditional exports. In 1990 legislation was passed for a second phase (CBI II) making permanent the original programme which had been set to expire in 1995. CBI II will give duty-free treatment for goods assembled from US components.

Australia and New Zealand also expanded a 1983 agreement in 1990. The revised agreement harmonized customs procedures, quarantine arrangements, business competition laws and technical barriers to trade. It also expanded product coverage to steel, garments and motor vehicles. The agreement may be extended to trade in services and uninhibited investment flows.

The ASEAN countries and the other Newly Industrializing Economies (NIEs) of Asia are particularly concerned about the wide-ranging implications of the NAFTA concept. Mexico - with its low wages and relatively good industrial infrastructure - is a close competitor in areas such as textile, cars and electronics. With free access to the US market, a significant expansion of exports from and foreign investment into Mexico may be expected to occur, therefore, at the expense of Asian economies.

At the same time, the "EC-92" concept may pose a serious challenge to ASEAN's European markets. Recent years have seen an acceleration in progress towards a Single European Market within the EC, with 1992 set as target date for the fully liberalized flow of goods, services and factors of production. The formation of a single market of this size, including the harmonization of industrial regulations, taxes, standards etc., will have a major impact on the world economy in general and the ASEAN economies in particular. There is concern in the ASEAN countries, like in other developing countries, that their interest may be overlooked in the administratively complex process of removing obstacles to a free market within the EC. Irrespective of whether the fears of an emerging Fortress Europe are justified or not, the relative attractiveness of peripheral EC countries as investment locations may be increased as compared to remote locations such as Southeast Asia.

Finally, the dramatic economic changes in Eastern Europe have created new conditions which may give rise to new strategic economic alliances and complementarities. For ASEAN, these developments provide further grounds for concern as the rapidly expanding markets and new opportunities in Eastern Europe may act as an overwhelming attraction for investment funds and commercial activity from Western Europe in particular.

In general, since the formation of trading blocs encourages shifts in the relative cost competitiveness of industries located in countries within and outside these trading blocs, there is a strong threat that trade diversion

will occur. This could have a serious impact on the overall growth prospects of ASEAN's major exporting industries and explains why ASEAN, along with other developing countries, has called for a return to multilateralism.

1.2 Technology and International Competitiveness

The outburst of technological innovations in recent years has had a far-reaching impact on the industrial development prospects for the 1990s. Technological progress is gradually rewriting the rules of industrial production and creating new parameters for international competition to which the ASEAN countries will have to respond. The rise of "new technologies", such as microelectronics, biotechnology and new materials, has provided new options for achieving greater industrial efficiency and increased international competitiveness.

- Computer-numerically-controlled (CNC) machinery and computer-aided design (CAD) are two major areas of application of microelectronics which have gained remarkable inroads into the industrial sector, with pervasive effects ranging from the clothing to the machine tool industry. They have contributed to more efficient materials utilization and higher product quality standards which are now becoming more important factors for increased international competitiveness.
- Moreover, the introduction of microelectronics has shifted industrial production away from the concept of 'economies of scale' to that of 'economies of scope'. With the application of microelectronics, automation has become programmable and flexible. This flexibility permits the move from one-product to multi-product manufacturing. To recover high investment costs it is no longer required to have large production series of the same product but to efficiently utilize the equipment for flexible small batch production of a variety of products.
- New materials technology - though still in its infancy stage - has produced engineered plastics, advanced ceramics, composites, advanced metallic alloys and superconductors which threaten to reduce the demand for traditional materials such as wood, aluminium, steel and other metals. With new technologies to create advanced materials, one can now start from the required properties and performance elements of a product and then develop and process tailor-made materials for the particular application. This will reduce the use of traditional materials in industrial production, thus jeopardising the long-term development prospects of raw materials exports on which most ASEAN economies still depend significantly.

The critical point to note is that many new production technologies can only be efficiently operated within an overall system of support services, such as telecommunications, advanced repair and maintenance services; and computer software expertise. Advanced telecommunication facilities are the backbone of the industrial infrastructure required to allow networking and systems operations. In general, there is an increasingly integrated hardware-software interaction, with industrial machinery and equipment being closely supported by know-how, experience, managerial and organizational skills.

While industrial support services are highly developed in industrialized countries, where the "new" technologies originated, this is not yet the case in most ASEAN countries. There is a need to upgrade telecommunications systems in order to match the increasing requirements for computer networking. It can be expected that there will be growing difficulties in the future, in terms of absorbing new technology and maintaining existing ones if telecommunication bottlenecks are not addressed immediately.

Moreover, technological advances need to be supported by human resources development to enable the ASEAN countries to adjust quickly to new sophisticated technologies and to reduce the economic and social costs of that adjustment process. Investments in expanding and improving secondary and higher education, as well as vocational training, will be important to strengthen the overall system of support services.

While ASEAN is still lagging behind the developed countries in the technology race, it has taken important steps towards strengthening its technological base for industrial development in co-operation with its dialogue partners, particularly Australia, EC and Japan. In microelectronics, the ASEAN-Australia Microelectronics Programme was established to enhance ASEAN capability in micro-electronic design. ASEAN is acquiring IC design hardware and software, undertaking manpower training, exchanging information within ASEAN and establishing a communications network. The first Multiproject chip (MPC) for fabrication at an Australian foundry was already designed.

ASEAN is giving strong emphasis on the development of biotechnology and recognizes it as an important sunrise industry. ASEAN currently has two biotech projects: the Research and Development and Application of Enzyme Technology in ASEAN and the ASEAN-EC Workshop on Nitrogen Fixation.

In materials science, ASEAN has a co-operation programme with Japan. Several projects are being implemented: prevention of corrosion in structures, atmospheric corrosion and metallic coatings, characterization of polymeric materials, corrosion of reinforced concrete structures and preparation and characterization of fine ceramics.

1.3 Environmental Issues

In recent years world-wide attention has been focused on environmental degradation as an issue of crucial importance to the survival of mankind and a major area for international and regional co-operation. Environmental issues are all-encompassing and interdisciplinary in nature, and cut across all development activities. In particular, the pressing global issues of population growth, natural resources, environment and economic development are all closely interlinked. It seems essential, therefore, that the question of industrial pollution should be considered in a broader context of the complex interactions among these issues.

Against the backdrop of the deepening environmental crisis, environmentally sound industrialization seems to be of paramount importance and is now receiving increasing attention in the ASEAN countries. Above all, environmentally sound industrial development calls for rational management of natural resources and adoption of low-waste or environmentally clean technologies. In recent years, there has been mounting evidence that growth and environment do not necessarily conflict with each other and can evolve in a complementary fashion. Many new clean or low-waste technologies cannot only

reduce pollutants substantially, but can also economize on the use of energy and raw materials to such an extent that resultant material and energy cost savings can more than offset initial higher investment costs, thus lowering unit production costs. In short, the new clean or low-waste technologies are economically profitable in their own right in many cases. Moreover, when a new plant is being built, the adoption of a clean process technology or the incorporation of pollution-abatement equipment is significantly cheaper than the installation of such equipment in an existing plant.

In assessing the impact of industrialization on the environment, it is important to recognize that rapid structural change in the world industrial landscape fuelled by dynamic technological development may bring about far-reaching environmental changes in different regions of the world. This is simply because changing world patterns of industrial production can shift the distribution of environmental pressures created by different industrial activities, and new technologies may open new avenues for reducing industrial pollution and economizing on the use of natural resources. In this regard, it seems important to note a marked redeployment in the past decade from the North to the South of traditional industries such as textiles, leather, iron and steel, industrial chemicals and petrochemicals. This overall trend toward rapid growth of traditional industries in developing countries seems likely to accelerate in the 1990s, and many of those traditional manufacturing industries are known to be heavy polluters.

At the same time, the technology-based industries such as micro-electronics - which in the ASEAN countries are growing faster than in most other developing regions - can create new types of pollution problems, e.g. by producing more complex toxic pollutants instead of traditional pollutants. These include heavy metals, toxic air and water pollutants and hazardous wastes. Worse yet, the environmental impacts of some of the high-technology industries are not well known, particularly in such areas as biotechnology or new materials.

There has been much research and debate on whether differences in environmental standards and regulations have been a major cause of redeploying highly polluting industries from the developed to the developing countries. While empirical evidence on this question is not conclusive, there are an increasing number of such cases with regard to the production of hazardous substances, including, inter alia, asbestos textiles, arsenic and refined copper, battery plants and pesticides. Specifically, a number of pollution-intensive Japanese investments have been channelled to Indonesia, Malaysia, the Philippines and Thailand.

The ASEAN countries, like other developing countries, will thus increasingly be facing difficult decisions regarding whether to create a favourable climate for foreign investment at the cost of the environment, or to protect the environment, at the cost of slowing down foreign capital inflows. In the absence of international and regional co-operation for the promotion of clean industrial technologies in developing countries, there is a danger that some countries may opt for development at the expense of the environment, particularly where industrial pollution has not yet reached a critical level.

1.4 Increasing Private Sector Participation

Increased private sector participation in industrial development, including privatization programmes, has become a key feature of economic restructuring programmes. Private sector-led industrial development is regarded as an essential precondition for increased competitiveness in the 1990s. This trend is evident not only in a wide range of developing countries, most notably in the Asian and Pacific region, but also in the economic transformation processes that are now on the agenda in Central and Eastern Europe.

The key role now assigned to the private sector in many countries centers on its ability to adapt quickly to a rapidly changing competitive economic environment. This is particularly crucial for export-oriented economies, like ASEAN, which are easily affected by changes brought about by external factors.

The trend towards increased private sector participation is well reflected in individual ASEAN countries which have been implementing such a policy since the 1980s. However, with respect to ASEAN as a regional group, particularly with regard to its current organizational set-up, there remains a need to strengthen the ASEAN governments' formal link with the private sector. The private sector is officially represented by the ASEAN Chamber of Commerce and Industry (ASEAN CCI). But private industries, especially SMEs, are not fully represented in the ASEAN CCI. Moreover, except for a few, the regional and national industry clubs under the ASEAN CCI are not active. The contribution of the private sector has generally been limited to providing inputs in the form of suggestions and recommendations for industrial co-operation.

Greater partnership can be fostered if the private sector were to be more strongly involved in the whole process of planning and implementation of industrial co-operation schemes with a view to creating a dynamic environment within ASEAN. This is essential to enhance ASEAN's adaptability to changing global market conditions. It can likewise contribute to the replication, at the regional level, of the economic success that the individual members have achieved at the national level based on their strong private industries.

2. Economic Trends in the Asia-Pacific Region

2.1 Economic Dynamism and Increased Intra-Asian Trade and Investment Flows

The Southeast and East Asian region abounds with examples of efficient and successful industrial diversification, restructuring and growth. The exceptional growth achievements are due to a wide range of well-known factors. Some of these were external, such as currency realignments, strong export demand and massive inflows of foreign capital. Others were internal, such as timely and extensive policy reforms, encompassing trade liberalization, deregulation and privatization programmes, as well as the generally efficient interplay between state planning, private-sector initiatives and market mechanisms. The ultimate outcome is increased economic efficiency and high rates of domestic resource mobilization. Without doubt, the Southeast and East Asian region has clearly become the most dynamic growth area in the world economy.

UNIDO forecasts indicate that in the nineties this region will continue to outperform all other developing regions - as well as the developed countries. It will do so by a considerable margin in terms of both GDP and MVA growth. The region is expected to achieve average annual GDP growth rates of 5.5 per cent and MVA growth rates of 7.5 per cent, the latter almost twice the forecast world average. This, in turn, would raise the region's share in world MVA to 6.1 per cent by the end of the century, outstripping Latin America and the Caribbean which hitherto has always had the largest share of all developing regions.

In recent years, rapid industrial growth in the region has worked in favour of increased levels of intra-regional trade and investment flows. It has induced stronger interlinkages between the developing countries in the region. For instance, in 1988, Indonesia, Malaysia, the Philippines and Thailand together derived almost 60 per cent of their total imports from other Asian countries - with the East Asian NIEs supplying 27 per cent thus outranking Japan with 23 per cent.

Even more significant have been recent trends in foreign investment flows within the region. Particularly the ASEAN countries are not only major recipients of investment from OECD-based companies, but they are also preferred targets for relocating relatively labour-intensive industries from the NIEs in the region. NIE investments in Indonesia, Malaysia, the Philippines and Thailand have meanwhile exceeded Japanese investments - with a growing emphasis on the manufacturing sector and an increasing role played by small- and medium-scale investing companies. Reference can be made to the pertinent assessment by the Asian Development Bank in its 1990 Asian Development Outlook that "the strong investment flows from Japan and the Asian newly industrializing countries to South-East Asia are likely to reshape the regional structure of production over the next decade ... and make the region a more cohesive entity in the world economy." Major determining factors behind this trend have been the currency appreciation in Japan and the NIEs; the rising cost of land and labour in the NIEs with a resulting pressure on their export competitiveness; and the liberalization of foreign investment regulations in the ASEAN countries themselves.

However, there are signs now pointing to a possible deceleration of such investment flows in the future. First, some NIE governments have started to encourage investments in the local market instead of going overseas. For example, the Government of Taiwan Province has launched a six-year NT\$ 8.2 trillion (US\$ 300 billion) infrastructure development programme which is aimed at encouraging more local business to invest at home.

Second, there is the prospect of a slowdown in the appreciation of the yen, the won and the new Taiwan dollar, which means that investors would have a greater incentive to invest in their home countries rather than overseas.

Third, and most importantly, ASEAN host countries have experienced increasing strains in their economies as a result of the rapid inflow of investments. There are serious deficiencies now in basic infrastructure such as port facilities, roads, electricity supply and telecommunications. Also, there is a severe shortage of professional manpower, such as engineers and accountants. Industrial land is running into short supply too. These constraints have pushed up the cost of operations in these host countries and are threatening to discourage the further inward flow of investments.

Thus, with these emerging trends, ASEAN may find it increasingly difficult to maintain the high rates of economic expansion it experienced in the past. There is a pressing need to enhance the regional capacity to absorb investment by improving infrastructure and industrial support services as well as intensifying efforts in human resource development. Measures should be aimed at developing a stronger base for industrial growth in the 1990s.

At the same time, significant new opportunities for economic exchanges are opening up in Southeast Asia. In the past, the region's centrally planned economies, some of which are richly endowed and bear great economic promise, were not integrated into the regional division of labour and, on account of their distinct inward orientation and relative seclusion, they were neglected as important economic actors. With the gradual opening-up and economic liberalization of Cambodia, Laos, Myanmar and Viet Nam this situation is bound to change. Myanmar and Viet Nam in particular are rich in agricultural and mineral resources suitable for industrial processing; they possess vast pools of easily trainable cheap labour and may therefore soon become attractive targets for foreign investors from within and outside the region. While more precise predictions would be premature at this stage, it appears that, assuming a continued economic reform process, the emergence of economic competitors from Indochina will substantially change the medium-term parameters in the region. This will pose both new threats and opportunities for the region's established economic powers.

2.2. Increasing Asian-Pacific Regionalism

The general trend towards the formation of trading blocs has not left the Asia-Pacific region untouched. There are powerful political and economic interest groups which are looking toward greater regionalism in the area and are pushing for the formation of an Asia-Pacific trading bloc.

At present, two free-trade agreements (FTAs) exist in the region. These are the Australia-New Zealand and US-Canada FTAs (see also section II.1.1. of this report). There are also a number of preferential trading arrangements like the ASEAN Preferential Trading Arrangement (PTA), the agreement on Trade and Commercial Relations between Australia and Papua New Guinea and the South Pacific Regional Trade and Economic Co-operation Agreement. The USA is looking into the possibility of concluding FTAs with Australia, New Zealand, ASEAN, Japan, Republic of Korea and Taiwan Province. Malaysia has recently proposed the establishment of an East Asian Economic Grouping (EAEG) which seeks to establish a community of trading interests comprising ASEAN, Japan and its East Asian neighbours.

It is highly uncertain, however, in view of the absence of certain conditions typical of most trading blocs, that an Asia-Pacific trading bloc covering such a diverse region would be feasible in the near future. Three features which are common to most trading arrangements seem lacking: geographic proximity of the member countries, shared political and strategic objectives and similar levels of development or competitiveness.

Indeed, ASEAN has rejected the idea of an Asia-Pacific trading bloc, particularly in the form of the Asian-Pacific Economic Co-operation Council (APEC). ASEAN's position is that APEC should continue to be a loose, exploratory and informal consultative process; that the APEC process should not dilute ASEAN's identity; and that it should not be directed towards the

establishment of a trading bloc, as this would be contrary to ASEAN's support for the establishment of a fairer and freer multilateral trading system. It is evident that ASEAN is fearful of the prospect that it might be engulfed by a larger regional grouping and eventually lose its identity.

At the same time, the various initiatives for regional trade liberalization in the Asian-Pacific region highlight the importance for ASEAN promoting its own integration process in order to strengthen its economic clout and to maintain its export competitiveness vis-à-vis the other trade areas in the region.

2.3 Growth of Sub-regional Industrial Centres

Since the seventies, small industrial production centers have cropped up in Southeast and East Asia above all in the form of export-processing zones (EPZs) which are geographically demarcated areas within countries offering more favourable investment and trade conditions relative to the rest of the country. These zones have mainly been established to encourage foreign investment in export-oriented industries.

Lately, science parks and high technology parks have been introduced in order to encourage the transfer of more advanced technology to host countries in the region. These are special areas or sub-regions within countries, like Indonesia, Malaysia and Singapore, where industries are made to operate in a more liberalized economic environment, with better infrastructure and institutional support and close links with industry-related research facilities. Like the EPZs, these parks, inter alia, are geared at attracting foreign investment.

It is a significant new development that some of these industrial centers appear to assume the function of a nucleus for greater industrial integration in the region. They are becoming more closely interlinked and are seen as a possible focal point for strengthening industrial co-operation.

Singapore has proposed that such innovative sub-regional industrial co-operation arrangements be considered under the ASEAN framework. This refers in particular to the "growth triangle area", comprising the Indonesian Batam Island, Johore in Malaysia and Singapore. This area has experienced a rapid growth in sub-regional industrial trade and investment as a result of Singapore's industrial expansion.

Other industrial centers in Malaysia, Indonesia and Thailand are looking at similar possibilities of strengthening sub-regional industrial and trade linkages to increase industrial integration (for a more detailed treatment see section IV.2.1. of this report).

3. Implications for ASEAN

The trends outlined above in general point to an increasing importance of regional economic co-operation in the years to come. This is valid both for developed countries - the various US initiatives as well as the EC-1992 approach bear witness to the recognition of intensified co-operation needs - and even more so for developing countries with more limited national capabilities and resources. Regional (and global) markets are becoming more

and more integrated and interlinked largely as a result of fast growing trade and cross-border investment flows as well as related financial transactions. Private industries have taken a lead role in these processes not only through trade transactions but also through establishing strategic alliances pooling their resources in fields such as expensive research and development programmes, the development of new industrial processes and products, joint market research and marketing programmes and others. Regional co-operation, therefore, is not primarily established by government fiat but is largely the result of economic and commercial forces.

Governments, however, play a critical role in creating an overall environment conducive to initiating and strengthening such commercial, market-driven integration forces. They can do so by reducing barriers to trade, harmonizing economic policies, and supporting private sector-led integration efforts through special incentives and the establishment of an appropriate institutional framework.

For ASEAN to respond to the global and regional trends analyzed above, its internal future industrial co-operation would need to be directed by the following broad guidelines:

- ASEAN must ensure that it maintains its competitiveness in an overall context of regionalized economic competition in the world economy. This calls for continued efforts to turn the ASEAN region into a dynamic center of both intra-regional and external trade and investment flows through reducing existing barriers to trade and increasing the attractiveness of ASEAN as investment location.
- At the same time, it is important to look beyond the trade liberalization dimension of industrial co-operation which has been the focus of attention in the past. Great benefits can be derived from the pooling of member countries' resources and capabilities in a number of industry-related areas. Technological development as well as joint efforts at environmentally sustainable development are cases in point.
- It is of paramount importance to fully integrate the private sector into the elaboration of future industrial co-operation schemes and induce it to take a lead role. The emergence of strong sub-regional industrial centers - such as the 'growth triangle' referred to above - is proof of the strength of the spread effects of private initiatives. These should be encouraged rather than inhibited by overall regional co-operation.

In chapter IV of this report, a number of concrete proposals for future industrial co-operation will be discussed in line with the above principles. Before, chapter III provides a brief summary account of main issues of ASEAN industrial co-operation in the past.

III. ASEAN EXPERIENCE IN INDUSTRIAL CO-OPERATION: PROBLEMS AND PROSPECTS^{1/}

1. Approach to Regional Co-operation

The ASEAN approach to regional co-operation has been based on gradualism and consensus building. ASEAN follows a very cautious approach in order to avoid diverging views among member countries and to ensure ASEAN solidarity. It adheres to the principle that co-operation should result in mutual gain to all member countries.

Unlike some other regional groupings, ASEAN is relatively heterogenous. Its members differ widely in land and population size, the endowment with natural resources and levels of economic development. On the one hand, there is Singapore which has the smallest land area and population size, with limited natural resources but the most advanced level of economic and industrial development. The other member states (with the exception of Brunei) share a more common set of characteristics in that they have a big land area, a large population size and plenty of natural resources, but lagging behind Singapore in terms of economic development.

These differences influence the way the individual countries design their policies for industrialization and direct their industrial restructuring process. It is not surprising, therefore, that ASEAN members have differing views with regard to how industrial co-operation should be tackled. For instance, the primary economic concern of resource-based ASEAN economies is to reduce dependence on traditional commodity exports whereas Singapore's strategy is aimed at establishing itself as a center of technologically advanced goods and services.

Indonesia which is the biggest country in terms of population size, and therefore has the largest potential market, is also the least industrially developed country in ASEAN. This is why Indonesia tends to avoid entering into arrangements which could make it a large-scale buyer from its partners before it has built up a commensurate domestic industrial base. In fact, Indonesia expressed strong reservation on the implementation of some ASEAN industrial co-operation schemes in the past.

Singapore obviously has a different interest in pursuing greater industrial co-operation. With labour cost rising fast and industrial land in short supply, Singapore has determinately moved to upgrade manufacturing from labour-intensive to technology- and capital-intensive products. It has also expanded its industrial operations in nearby areas, mainly Malaysia, Indonesia and Thailand.

Thus, by adopting a consensus approach, ASEAN members feel assured that there is mutual gain in regional co-operation. It is a mechanism for distributing gains and losses from co-operation. By arriving at a consensus, no member can feel pushed into an arrangement by force. However, there is a price to be paid for adopting such an approach. 'Conflict avoidance' rather than 'conflict resolution' slows down the progress of industrial co-operation. In a rapidly changing economic environment, this approach may hinder the required flexible

^{1/} In this chapter, the term "regional" refers to the ASEAN region.

adjustments and reduce the resilience needed to take advantage of new opportunities.

To some degree, ASEAN's slow progress in industrial co-operation is already shifting the group's attention towards more flexible arrangements. Although consensus building continues to be a basic principle, the group is now adopting schemes which would allow two or more ASEAN members to co-operate. This is, for example, a feature of the ASEAN Industrial Joint Venture (AIJV) scheme and it seems that this is an appropriate arrangement for greater and more effective industrial co-operation.

2. Framework for ASEAN Industrial Co-operation

The ASEAN Concord of 1976 declared that economic co-operation be undertaken through trade liberalization and industrial co-operation. Trade liberalization was achieved through the establishment of an ASEAN Preferential Trading Arrangement (PTA) while industrial co-operation focussed on complementation and a 'package deal' approach. Three industrial co-operation schemes were adopted by ASEAN:

- (i) ASEAN Industrial Projects (AIP)
- (ii) ASEAN Industrial Complementation (AIC) Scheme;
- (iii) ASEAN Industrial Joint Ventures (AIJV) Scheme.

Only recently, ASEAN has set the following specific goals in support of its long-term objective of accelerated sound industrial development:

- (i) increased flow of investments into the ASEAN region as well as increased intra-ASEAN investments to the level of at least 10 per cent of total foreign investments by the turn of the century; and
- (ii) increased manufacturing valued-added at an annual growth rate of 8 per cent.

Of the three schemes which were introduced beginning 1977 only the AIC and AIJV schemes have been fully implemented and show prospects for further improvements. The AIP scheme has practically failed, with only the urea projects in Indonesia and Malaysia operating. Both these projects are not doing very well, however, because of unfavourable fertilizer prices. The AIP also lost its attractiveness because it accorded low priority to the private sector. Thus, in the succeeding schemes adopted by ASEAN, more importance was given to the private sector.

The AIC experienced limited success in the implementation of the first package which involved industrial co-operation in the production of automotive parts and components. The scheme promoted simple horizontal specialization in production by which member countries were to specialize in producing different components or parts. Implicitly, the AIC scheme seemed headed towards the creation of an "ASEAN car" which together with administrative bottlenecks, discouraged most automotive manufacturers from actively seeking involvement.

The introduction of a 'brand-to-brand complementation' in 1988 was an important innovation of the AIC scheme. This new AIC scheme involves the exchange within the region of parts for a particular brand at 50 per cent reduced tariff. Thus, it encouraged industrial companies to integrate their investment plans in the region. At present, three Japanese car manufacturers (Toyota, Nissan, and Mitsubishi) have taken part in the scheme. Four European car manufacturers (Mercedes Benz, DAF, Renault and Volvo) have likewise expressed interest in setting up AIC projects.

The advantage of this new AIC package, from the perspective of car manufacturers, is that they are not forced to use standardized parts for their car models, thus maintaining the identity of and the corporate standard for the car brands and models they are marketing in the region. The approach taken to regionally integrate the production operations of individual car manufacturers rather than of the whole industry, thus, seems more practical and easily implementable. It also provides a model which can be duplicated by other TNCs in other industry sub-sectors and branches.

The AIJV scheme has proven to be even more promising than the AIC. It provides for more flexibility, in terms of the minimum number of ASEAN participants (two only compared to four for the AIC) and foreign equity ownership (up to 60 per cent for those applications filed up to December 1993). The AIJV scheme also offers a minimum of 90 per cent margin of preference (MOP) compared to only 50 per cent MOP in the AIC scheme. The AIJV projects can be approved by the ASEAN economic ministers concerned as long as they are likely to yield benefits to the participating countries at no unacceptable costs to the other members. Local content accreditation is granted if the project involves the manufacture of any product in the participating countries which has a local content programme. Thus, AIJV products are given national treatment in the context of the local content programme existing in the participating countries.

To some extent, the more attractive incentives and arrangements under the AIJV may have actually reduced the attractiveness of the AIC. But still, more improvements and adjustments have to be carried out to further make the AIJV scheme attractive to potential investors. Many investors continue to find the process of applying for AIC or AIJV status cumbersome. To address this problem, a new pre-approval approach was adopted by ASEAN for the AIJV scheme. Proposed AIJV projects will now automatically gain AIJV status if the proposed AIJV product is in the priority AIJV product list and if it is not currently being manufactured in the participating countries and has a total import value of at least \$ 5 million. However, COIME reports that this is difficult to implement and ineffective in expediting the approval of AIJV projects.

Efforts are also underway to arrive at a common effective preferential tariff for AIJV products. At present, the 90 per cent MOP applied to AIJV products traded between the host and the participating countries are calculated on the basis of the national tariff levels. But since the national tariff levels are not identical among participating countries, the effective preferential tariff varies. This is currently being revised in order to arrive at a common effective tariff. Two options are being considered: (i) extending the necessary MOP to arrive at the agreed rate of common effective tariff on a product by product basis; or (ii) directly applying the agreed common effective preferential tariff on AIJV products.

The waiver period for the tariff preferences by non-participating countries was lengthened from 4 to 8 years. This lengthens the exclusive enjoyment of tariff preference by the participating countries for a particular AIJV product. It also means that non-participating members will not enjoy PTA privileges for the AIJV product for 8 years in the market covered by participating countries.

Recommendations to discontinue the exclusivity privilege granted to "new" AIJV products are currently being considered because it impedes investment expansion. AIJV projects involving "new" products, at present, enjoy a three-year protection period against similar projects once they have commenced commercial production. This means that these ASEAN projects enjoy a "monopoly" for three years. However, in reality, this exclusivity privilege may be effective much longer depending on the length of the construction period. Thus, the clause hinders the entry of investments in similar projects. For "existing" products, no exclusivity privilege is allowed.

An ASEAN Investment Guarantee Agreement (AIGA) was signed in 1987 in order to provide safeguards against non-commercial risks of investments among contracting parties. Among others, the AIGA provides safeguards against expropriation or nationalization as well as guarantees on immediate repatriation of capital and remittance of earnings in freely-usable currency.

3. Industrial Specialization and the Preferential Trading Arrangement (PTA)

The PTA is the centrepiece of ASEAN's trade liberalization efforts and is aimed mainly at increasing intra-ASEAN trade. But it is also closely linked with the ASEAN industrial co-operation schemes, in that the main incentive provided to products produced under any of these schemes is the reduction of tariffs.

The ASEAN PTA was started in 1977 and has undergone a sequence of improvements through time. ASEAN first adopted an item-by-item approach but later agreed on 'across the board' tariff reductions on lightly trade items. The improvements introduced in the PTA, however, have not led to a significant increase in intra-ASEAN trade. Hence, they have not contributed much to increased industrial specialization in ASEAN because the margin of preference, which is 50 per cent, was not high enough to stimulate such a trend. The Committee on Trade and Tourism (COTT) has recommended that the MOP be deepened to 75 per cent for existing PTA items and 50 per cent for new items.

The PTA was also made less effective since some of the incentives it offered are already provided by individual ASEAN governments through their national investments priorities plans. In fact, national programmes may even offer more incentives.

A further shortcoming inherent in the PTA has been the privilege of member governments to draw up 'exclusion lists' identifying products they do not want included in the PTA. This has been used frequently by ASEAN members to ensure that their major export industries remain protected from competition from more efficient ASEAN producers. Thus, most of the products covered by the PTA are confined to those which are not highly traded or non-sensitive items. COTT has therefore recommended that the number of items in the exclusion lists be reduced to 5 per cent of total trade.

The rules of origin clauses also act as bureaucratic constraints for traders. The procedure causes too much delays in certification and lead to increased administrative costs.

Other factors which have contributed to the weak impact of the PTA are the low depth of tariff cuts as well as the use of non-tariff barriers (NTB), such as import licensing, quotas and import prohibitions. However, even if tariffs were reduced more significantly, this is unlikely to lead to a substantial increase in intra-ASEAN trade. This is because of the present low growth potential of intra-ASEAN trade resulting from member states' greater orientation towards non-ASEAN markets. Since ASEAN economies are geared more towards serving external markets, industries of ASEAN members have a low complementarity and limited prospect for industrial specialization in the region.

The need to increase intra-ASEAN trade is consistent with ASEAN member countries' strategy to use trade as the engine of industrial growth. But with most industries geared for non-ASEAN markets, especially Japan and United States, and the PTA primarily aimed at increasing intra-ASEAN trade, it seems that some reorientation would have to be made in the overall objectives of the PTA in order to be better in line with other major economic policies of ASEAN.

4. Institutional Machinery for Industrial Co-operation

COIME has the overall responsibility for industrial co-operation programmes. It works directly under the ASEAN Economic Ministers (AEM), from whom it receives policy guidance for its activities. It works closely with the private sector through the ASEAN-CCI.

The ASEAN-CCI comprises the six national Chambers of Commerce and Industry from each member state. The Governing Council administers the affairs of ASEAN CCI. It has three working groups: Working Group on Industrial Co-operation (WGIC), Working Group on Trade (WGT) and Working Group on Food, Agriculture and Forestry (WGFAP). Under WGIC there are several regional industry clubs and, below these, national industry clubs. ASEAN-CCI also co-sponsors Business Councils with the United States, Japan, Australia, the EEC, and New Zealand.

The WGIC of the private sector corresponds with COIME. The WGIC develops and proposes measures to the ASEAN governments aimed at implementing co-operative projects, among others.

In terms of procedures for the approval of AIJV products, COIME invites nominations for AIJV products from the ASEAN-CCI and ASEAN member countries. Proposals are put together in a tentative list after being examined by the ASEAN member countries. A final list, consisting of projects supported by at least two ASEAN member countries is drawn up, submitted to the AEM for approval, and made available to the ASEAN-CCI. New AIJV products are given six months from approval date of the final list to obtain approval from the appropriate government agencies. Participating countries then inform COIME of those projects approved by government agencies.

One of the common complaints of many investors is that the whole process of applying for projects approval under any of the industrial co-operation schemes is too lengthy. Specifically, it is felt that too many decisions are

required to be taken at the apex of ASEAN decision making, with the result that action gets delayed and enthusiasm dissipates. An attempt to address this problem through the implementation of the pre-approval concept was made by ASEAN but it did not prove too successful.

The government-private sector co-operation appears to call for further improvements. Although the private sector is working closely with the ASEAN committees, it is not formally integrated in the whole machinery. ASEAN committees merely co-ordinate with ASEAN private sector groups through the WGIC. This means that the ASEAN government-private sector co-operation is largely dictated by the commitment of the ASEAN governments. ASEAN ministers have full control over the meeting's agenda and can limit the discussion to the issues of their choice.

The private sector is also not directly participating in the planning and implementation of projects. In fact, no institution is involved in these activities. The AEM and COIME are involved in project approvals while the private sector bodies are involved only in project proposals. Although the Secretariat is tasked to initiate plans and programmes of activities for ASEAN regional co-operation, this is not efficiently being done. The failure of the AIPs and the slow progress of the AIC and AIJV schemes give a clear evidence of the poor planning and lack of private sector involvement in these critical areas.

The ASEAN Finance Corporation (AFC) is another important regional institution involved in industrial co-operation. The AFC is involved in the promotion of industrial development, the promotion of financial co-operation within ASEAN and the mobilization of financial resources. However, it has not been able to support or provide financing for any AIC or AIJV projects. Aside from the inadequate amount of loanable funds, its interest rates are not sufficiently different from those offered by commercial banks to be attractive. It has been suggested that Brunei be incorporated as a sixth shareholder and that AFC be linked with the International Finance Corporation (IFC) to enhance its financial basis and other resources.

5. Role of ASEAN Dialogue Partners

The ASEAN dialogue partners play a very important role in promoting industrial co-operation in the region. The fact that ASEAN has recognized these countries as dialogue partners reflects their importance to ASEAN countries individually or collectively. Indeed, irrespective of the broader ASEAN framework, its dialogue partners (Australia, Canada, EEC, Japan, New Zealand, the United States and the United Nations Development Programme) will remain the leading economic partners of each of the six members not only in trade and investment but also in terms of financial and technical assistance.

The individual ASEAN members obviously are not as important to their dialogue partners as these are to ASEAN. This highlights the reason why ASEAN countries have decided to co-operate and consolidate their individual positions on common issues. The six members have effectively used ASEAN for presenting a common position to their dialogue partners through a system of consultations that allows the individual members to harmonize their positions and strengthen their bargaining power during negotiations.

However, the same coherence was not achieved in the area of ASEAN industrial co-operation. The indecision and the lack of consensus among ASEAN members, in many instances, on issues relating to its industrial co-operation schemes have disillusioned its dialogue partners, mainly the United States. The experience of the United States with regard to the ASEAN industrial co-operation schemes is a striking example of how unresolved ASEAN conflicts may drive investors away. The failure of the Singaporean AIP, a diesel engine project, which has a United States TNC (Cummins Engine) participation has discouraged US investors from taking any major role in the AIP scheme. This was the result of ASEAN's inability to resolve the issue of duplication of this AIP with national projects.

The unsuccessful participation of another United States TNC (Ford Motor Company) in the AIC scheme was also a discouraging experience for United States investors. Aside from institutional and technical problems in ASEAN, the national governments had wide differences in their levels of commitment to rationalize the automotive industry. These examples of failed United States involvement with regard to the ASEAN industrial co-operation schemes have induced the country's firms to seek incentives and guarantees through the national investment programme rather than the ASEAN framework for industrial co-operation.

The EC, on the other hand, has also not been active in seeking participation in the regional schemes, based on the perception that ASEAN in fact is not one but six different markets. This is considered by the EC as the single most important impediment to EC participation. Thus EC investors have tended to take a bilateral approach in their investments in ASEAN.

Japanese investors seem to have the keenest interest in investing through the industrial co-operation schemes as shown by their strong commitment in many ASEAN projects. Japan recognizes the significant complementarity of its economy with those of ASEAN. Japan is ASEAN's major market for primary commodities while ASEAN is . . . of Japan's major markets for manufactured exports. Japan also considers ASEAN an important investment area for declining labour-, energy-, resource- and pollution-intensive industries.

The growing importance of the other Asian NIEs to ASEAN cannot be neglected. ASEAN should seriously consider establishing closer and more formal ties with these countries. It is a positive development that ASEAN is already considering establishing a dialogue arrangement with the Republic of Korea, which has become an important trading partner and investor in ASEAN.

The role of ASEAN dialogue partners in the industrial integration of ASEAN is vital to the continued growth and development of industries in the region. The dialogues should not only be used as a forum for resolving common bilateral issues but also as a means to better understand the industrial and investment requirements of its individual dialogue partners.

IV. ASEAN INDUSTRIAL CO-OPERATION IN THE 1990s: A TENTATIVE AGENDA

Many suggestions for improving the framework for industrial co-operation have been forwarded since the mid-seventies when ASEAN began to intensify regional economic co-operation. It was emphasized in these proposals that ASEAN economic co-operation cannot be boosted by merely coming up with new schemes for industrial co-operation, nor by approaching co-operation in a loose and piecemeal or ad hoc manner.

The high expectations on ASEAN economic co-operation by member countries and their economic partners as well as the increasing pressures exerted by the international economic environment require that a more systematic and comprehensive approach for industrial co-operation be taken by ASEAN. It is important to stress that for any new scheme or mechanism to be effective in enhancing ASEAN industrial co-operation, an environment conducive for such schemes would be necessary. It can be noted in this context that e.g. the EEC's concept of industrial co-operation has focussed on establishing the overall enabling conditions for industrial expansion to take place.

As such this chapter provides some suggestions on how ASEAN can create an enabling environment for regional economic co-operation and how it can further promote regional integration. It is however, not the intention here to present a thoroughly integrated framework although that will certainly be the final objective when a more comprehensive study on this matter is undertaken.

1. Creating an Enabling Environment for Regional Co-operation

1.1 Setting Directions for ASEAN Economic Integration

The basic issue with regard to setting directions for ASEAN economic integration lies in the need for ASEAN to decide what form of economic integration (i.e. free trade area, customs union, common market) would be applicable to ASEAN. Many studies have been conducted on what form is desirable for ASEAN but none seems readily acceptable to ASEAN governments up to this time. ASEAN has exercised extreme caution in this area knowing that any strategic decision will have serious implications for the future of national industries and for trade and investment flows. Nonetheless, it is a fact that the indecision of ASEAN on this matter is to some extent hampering further significant improvements in ASEAN industrial co-operation.

Indeed, there appears to be some reluctance to intensify co-operation given the excellent recent performance of most of the ASEAN economies. In some sense, a competitive spirit seems stronger now than ASEAN's desire to co-operate and promote the entire region's interest. A perception appears to prevail that the exercise of setting directions for ASEAN co-operation may not be as urgent as the need to maintain the yearly high rates of economic growth. Intensifying economic co-operation seems more of a long-term goal now than one which requires immediate attention.

However, although economic co-operation may be more of a long-term goal, it nevertheless, requires some basic decisions now. ASEAN's experience in industrial co-operation proves that it takes time to put the right elements of an effective form of co-operation together. It took, for example, several years for the AIP scheme to evolve into other more effective forms like the AIC and the AIJV schemes. Setting directions for ASEAN economic integration

would thus be crucial for creating an enabling environment to reduce uncertainty and enhance the predictability of ASEAN's future direction, in particular for investment planning purposes.

1.2 Harmonizing National Economic Policies

Much has been said in the past on the need to harmonize national economic policies if closer regional integration of ASEAN is to be achieved. Any such efforts necessarily involve difficult and complex decisions given the diverse economic structures and strategy differences in the individual member countries. Yet it may be borne in mind that e.g. the EEC's integration was essentially based on the harmonization of its members's trade and investment policies which created a conducive environment for regional industrial expansion.

If and in what areas national economic policies require greater co-ordination, is in itself a strategic decision to be taken by ASEAN. This brief report cannot go beyond suggesting a few selected fields for policy harmonization which appear to merit special attention.

Foreign investment-related policies are a case in point. It was recently stated by the Malaysian Minister for Finance that "it cannot be denied that individually ASEAN member have benefited from inflows of foreign capital, but collectively we can gain more. However, I regret to say that progressive thinking has been conspicuous by its absence, insofar as regional efforts to promote the group as an investment centre are concerned".^{1/} Indeed, ASEAN members have been reluctant so far to steer towards any harmonization of foreign investment legislation and institutions. Given the political will, and without sacrificing overall national sovereignty, this could be done in areas such as the rules governing foreign participation in industrial joint ventures; conditions affecting financial flows, specifically the repatriation of profits and capital as well as access to domestic credit markets; the extent and speed of indigenization of management control; ASEAN-wide local content regulations; and dispute settlement mechanisms.

As regards government procurement policies, the establishment of ASEAN-wide procurement arrangements could expand the market in certain key branches for ASEAN companies. As a first step, a comparative assessment of the legal, economic and technical aspects of public procurement in the different member countries would be required.

Further areas for policy harmonization efforts would, inter alia, include customs regulations, including classification and valuation of trade items; industrial standards; and intellectual property rights.

It is recommended that an agreement among ASEAN members be worked out regarding the scope and pace of economic policy harmonization with a view to providing investors - foreign and domestic alike - with a programme on which corporate investment plans could be based.

^{1/} Daim Zainuddin, ASEAN Economic Co-operation. Agenda for the 1990s, ISEAS, Singapore 1990, p.6.

1.3 Strengthening the ASEAN Institutional Machinery

An important part in the creation of an enabling environment for regional co-operation is the strengthening of the ASEAN institutional machinery. This need has been identified by all studies related to improving ASEAN economic co-operation. Without an effective ASEAN institutional machinery there can only be limited improvements in the performance of ASEAN industrial co-operation schemes.

The weaknesses of the existing machinery include poor planning and technical capabilities, inadequate participation of the private sector in the planning and implementation of regional schemes, lengthy decision-making processes and cumbersome procedures for approval of industrial co-operation projects.

At present, there are five committees directly under the ASEAN Economic Ministers with the ASEAN Secretariat having no direct link to these committees. Also, there is no entity directly responsible for integrating the related programmes of all five committees. The absence of some kind of a 'technical committee' above these five committees, to provide an overall integration of the various regional programmes, leaves room for unco-ordinated developments between the different economic committees.

Although the committees co-ordinate with each other on matters of common concern there is a need for a higher-level technical committee with the technical expertise in integrating programmes and in drawing up regional development strategies. This is extremely important for ASEAN to develop a more coherent framework for regional economic development where all the aspects of economic co-operation (i.e. marketing, finance, production, technology, etc.) are given due importance.

It would also be possible to strengthen the technical capability of the ASEAN Secretariat so that it could serve as the 'technical committee'. However, in that case more direct links between the Secretariat and the ASEAN Committees would need to be established to make co-ordination more effective.

Furthermore, it is essential at this point in time to consider formalizing the involvement of the private sector in the organizational structure of ASEAN. A formal tie up between the government and the private sector may be the key to better planning and implementation of ASEAN economic co-operation programmes, particularly ASEAN industrial co-operation schemes. With regard to industrial co-operation, the strengthening of ties between COIME and the ASEAN-CCI, particularly the WGIC, would be important. However, the ASEAN-CCI would have to strengthen its planning and technical capabilities in order to be able to better analyse the issues and problems blocking progress in ASEAN industrial co-operation.

The concerns of the small- and medium-size enterprises (SMEs) have been largely neglected too in the overall planning process. The ASEAN-CCI basically represents the interest of large enterprises. This calls for closer co-operation between the large enterprises (LEs) and the SMEs within the ASEAN CCI. This could be a first step towards the development of a more integrated ASEAN industrial co-operation scheme which provides significant roles for both the SMEs and the LEs.

ASEAN's decision making process is another critical area requiring major improvements. Lengthy procedures have often been cited by investors as a major impediment to regional investments. ASEAN should continue to find ways to streamline this process and provide for more automaticity with regard to project approvals. In this connection, it may also consider a subsectoral approach, as suggested by UNIDO in 1987^{1/}, in order to avoid the cumbersome procedures associated with the item-by-item approach. The choice of priority subsectors will depend to a great extent on the ASEAN government and private sectors' assessment of what industries require promotion given market conditions or future regional requirements. It will also require a concerted investment programme if the subsectoral approach is to be effective (see also section IV.2.2. below).

ASEAN should further consider integrating the existing industrial co-operation schemes so as to cut bureaucratic procedures and reduce administrative costs and to ensure their closer integration with the PTA. In general, as discussed earlier, more focus should be given by ASEAN to external markets in its industrial co-operation schemes and the PTA.

In this context, the agreement for the establishment of a UNDP-sponsored panel of five Eminent Persons to study and make the necessary recommendations on strengthening and revamping the structure and mechanisms of ASEAN, in particular the ASEAN Secretariat, is a positive development.

2. New Forms of ASEAN Industrial Co-operation

2.1 Developing ASEAN Industrial Growth Centers

Recent trends within ASEAN indicate that industrial co-operation is proceeding to some extent outside the formalized ASEAN framework. As an outstanding example, the emergence of industrial areas situated around a growth axis has led to a proposal for the establishment of a "growth triangle" region.

Singapore is the main economic growth axis within ASEAN and has the capacity to hasten industrialization through the spill-over effects of industrial activities on neighbouring areas. As a result of its rapid industrialization, Singapore has been experiencing increasing cost of industrial land and labour, infrastructural bottlenecks and labour shortages. Thus, it is exploring the potential of nearby areas like Malaysia's Johore State and Indonesia's Batam Island for further industrial expansion within the framework of a "growth triangle" concept.

Singapore's proposal to form a "growth triangle" region is aimed at tapping the unique mix of resources and infrastructure, labour and skills in that region. While Singapore can offer highly developed telecommunication links and management expertise in this form of industrial co-operation, Indonesia and Malaysia can offer abundant land and cheap labour which Singapore lacks. This complementary arrangement could also be effective in attracting transnational corporations to invest in this ASEAN industrial sub-region.

^{1/} UNIDO, New Forms of Industrial Co-operation and Investment Policies in Regional Arrangements, PPD/R.14, 11 March 1988.

Although this concept does not include all ASEAN countries, it is nonetheless one way ASEAN members can work together to maintain ASEAN's regional comparative advantage in attracting foreign investment. Such industrial growth centers may contribute to the continuous spillover of the center's dynamism to a wider area in the sub-region. They may also be an effective mechanism for ASEAN not to lose trade and investment opportunities to non-ASEAN countries.

The establishment of the proposed "growth triangle" could serve as a model for other ASEAN sub-regions to examine the potentials of their areas and to take stock of opportunities which may contribute to increased industrial co-operation. Indeed, there could be further cases made for the establishment of industrial growth centers. There is already a proposal for a second "growth triangle" region extending from Medan in North Sumatra to Southern Thailand with Penang and neighbouring Malaysian states at the core. This could also have a significant impact on the regional dispersal of industrial development. Moreover, the role of SMEs could be given prominence in such sub-regional arrangements.

In this context, it is important to recall a proposal made earlier by the Asian and Pacific Development Centre (APDC) to put more emphasis on small- and medium-scale industries (SMIs), which comprise the majority in the ASEAN industrial sector. The APDC study advocated a new scheme, the ASEAN Co-operation in the Small- and Medium-Scale Industries or the ASMI scheme.

In the original APDC-proposal it was suggested that ASMI be undertaken at the overall ASEAN level. As to whether SMI promotion is a suitable field for overall regional co-operation can however be questioned. There is no proof that regional co-operation in promoting SMI will help overcome constraints more effectively and at much lower cost than individual efforts at the national level. It may be more effective, therefore, to encourage industrial co-operation among SMIs at the sub-regional level where the capacities of SMIs can better match the needs of larger industries in the industrial growth centers.

Although the industrial co-operation approach outlined in this section would be confined to a limited number of cross-country growth centers, it could nevertheless provide the foundation for a region-wide industrial co-operation scheme. It may provide an appropriate channel through which sub-regional activities can be integrated into the overall framework of ASEAN industrial co-operation.^{1/}

2.2 Formation of a 'Product Community'

At the May 1990 ASEAN Special Senior Economic Officials Meeting, it was proposed that "the concept of Product Communities should be further looked into. New ideas towards this objective should be explored." The product

^{1/} Reference is made in this context to the 22nd Meeting of ASEAN Economic Ministers in October 1990. In the Meeting Reports it was stated "that such sub-regional economic co-operation among ASEAN member countries should be used as a model for further strengthening ASEAN economic co-operation."

community concept obviously would pursue the objective to move away from a pure product-by-product or project-by-project-approach in industrial co-operation and to designate instead entire industrial sub-sectors as special integration industries. The idea appears to be aimed at allowing a free exchange of goods and services among ASEAN countries in the specified sub-sectors which would possibly function as the nuclei for an ASEAN free trade area to be launched at a later stage.

This would indeed represent an innovative approach of ASEAN industrial co-operation which would directly address many of the shortcomings of previous schemes, as identified above in this report. Before launching such an approach, an in-depth study would be required of its appropriate orientation and its scope as well as the economic and political obstacles it would be facing. UNIDO has suggested such a study before and would be ready to undertake it upon request.

Primarily, two critical interrelated issues need to be addressed by such an approach, i.e. the objectives to be pursued through sub-sectoral co-operation^{1/} and, accordingly, the specific sub-sector(s) to be selected. In principle, two different strategies could be adopted:

- (1) defensive strategy: to rationalize regional production patterns of an established, relatively mature ASEAN industry, inter alia, through scaling down overcapacities, reducing intra-ASEAN competition and pursuing a regional restructuring of the sub-sector on the basis of each country's comparative advantage;
- (2) forward-looking strategy: to give support to the establishment of new, technologically advanced industries which, in the early stage of their development, could benefit from uninhibited flows of goods and services between the various member countries thereby achieving a high degree of regional specialization as well as competitiveness in the world market.

In the opinion of this report, the second strategy is to be favoured over the first one. The 'defensive strategy' would be faced with powerful vested interests of long-existing industries seeking to resist restructuring pressures. Strong demands for government support, i.e. subsidies, would certainly be put forward for at least a transition period and the whole approach could well risk losing its momentum at an early stage to the intricate political economy of structural adjustment.

One obvious choice for sub-sectoral industrial co-operation along the lines of a 'forward-looking strategy' would be in selected engineering industries, such as transport equipment (which then would require a thorough reassessment of the AIC scheme) or machine tools. Potential other areas include informatics-related industries and biotechnology.

The production of machine tools is given emphasis in all ASEAN countries as the development of indigeneous production technology in a wide range of

1/ It appears more appropriate to speak of 'sub-sectoral co-operation' rather than 'product community' as the latter may again be interpreted as referring to specific products.

industries depends directly upon the development of advanced machine tools. There is a vital need now to bring about a shift from conventional machine tools to CNC machine tools and CAD/CAM systems. At present, the machine tool industries in the various ASEAN countries are highly dependent on imported inputs from the developed countries. In the course of rising domestic technological capabilities, the scope for intra-ASEAN trade and specialization will, however, be substantially expanded and could significantly benefit from the prior removal of existing trade barriers.

With a view to stimulating the build-up of a strong and efficient ASEAN machine tool industry, special attention would need to be given to the creation of backward linkages in terms of raw materials and components supplies as well as to the development of required technological and engineering skills and co-operation in research and development. Therefore, any approach at sub-sectoral co-operation must go beyond the liberalization of intra-ASEAN trade and incorporate the pooling of resources and capabilities in crucial industrial support activities (see also section IV.2.5. below on resource pooling).

2.3 Setting up an ASEAN Export Industry Scheme

Export promotion and attraction of foreign investment in export-oriented industries are regarded as among the most important economic objectives of all ASEAN members. In fact, their outward-oriented policies have been a key determinant of the outstanding performance in the past years. However, as earlier stated, ASEAN as a regional group has so far been more inward-oriented thus contradicting the basic nature of ASEAN economies. It is recommended, therefore, for ASEAN to focus more on improving its export competitiveness in the future.

ASEAN's preoccupation with improving intra-ASEAN trade and investment has to some extent diverted its attention away from the objective of improving the export competitiveness of the region as a whole. There has been a tendency to increase intra-ASEAN trade with a view to reducing ASEAN's dependence on external markets, to the extent that the ASEAN market is being looked upon strongly as an adequate alternative export market for ASEAN commodities. As many studies have pointed out, however, there are narrow limits to such an approach given the lack of complementarities in the current economic structure of the member countries. Furthermore, the ASEAN economies are structured in a way that they cannot significantly reduce their dependence on external markets without slowing down economic growth.

Export promotion, regardless of the market (i.e. whether products manufactured through an ASEAN scheme are exported to an ASEAN market or a non-ASEAN market) is an important economic objective of all ASEAN members. Thus, ASEAN industrial co-operation schemes should be supportive of this common national policy to promote exports and to attract foreign investment in export-oriented industries

In support of these common national policies, ASEAN may consider setting up an ASEAN Export Industry (AEI) scheme, covering selected export industries or products. The scheme would be aimed at establishing regional arrangements to enhance the overall competitiveness in the world markets of new or existing ASEAN export industries. The idea would be to take innovative steps towards the reduction of the production cost of export industries and the strengthening of regional industrial support services for export industries with a view to increasing their international competitiveness.

Specifically, the proposed scheme would involve the provision of a whole range of services to ensure that trading between the ASEAN export industries and potential buyers is facilitated. This may involve:

- (i) facilitating the regional sourcing of production inputs needed by the export industry from ASEAN manufacturers;
- (ii) granting incentives to regionally integrated export production operations;
- (iii) the provision of marketing support (including market information services and trade promotion) and technical assistance at the regional level;
- (iv) sharing of training facilities and product experts;

The setting up of an ASEAN Marketing Organization may also be considered to assist in meeting the marketing requirements of selected ASEAN export industries or firms. This marketing organization should be a joint government-private sector entity. Although its main function would be to market the products of specific ASEAN export industries, it could also assist AIJV or AIC exporting firms in their marketing needs. It could also design the regional marketing strategy for ASEAN exports.

2.4 Reorienting the PTA

It is quite clear that ASEAN cannot depend on nor can it expect too much from intra-ASEAN trade given ASEAN's current industrial structure. At present, it is a poor alternative market and certainly inadequate to carry ASEAN industrialization. ASEAN, being among the most open economies in the world, would find it extremely difficult at this stage, to turn its internal market into an engine of growth. The PTA should take this important factor into consideration in order that its orientation can be made more consistent with the existing trade structure, policies and strategy of ASEAN.

The PTA's objective should not be confined to creating or developing an internal market to reduce dependence on external markets over the long-term period, but primarily it should be aimed at increasing the competitiveness of ASEAN industries in the international market. This requires a reorientation of the PTA towards serving the trade requirements of export industries, particularly cheaper inputs for export production. Duty-free entry or preferential tariff rates for inputs to export production could be one major new focus of the PTA.

A reoriented PTA could have a significant impact, not only in increasing intra-ASEAN trade in this segment of the internal market, but also in improving ASEAN's overall industrial competitiveness. It may also alleviate prevailing fears that the PTA may lead to the flooding of local markets with products from the most efficient producer in the region.

Thus, one important objective of the PTA in line with ASEAN industrial co-operation is to increase intra-ASEAN trade between existing and potential export industries. Thereby, the PTA would promote regional structural changes in the industrial and trade sectors with non-ASEAN markets in mind.

2.5 From Market Sharing towards Resource Pooling

In the past, industrial co-operation efforts in ASEAN - as in most other regional groupings among developing countries - have primarily focussed on market sharing arrangements. This has been pursued both through the granting of tariff preferences for trade between member countries and through mechanisms for allocating large industrial projects in a complementary manner to different member countries. While these approaches have their merits and are not suggested here to be given up, they have nevertheless resulted in too little attention being paid to the pooling of resources in critical industrial and industry-related areas.

In the past, the pooling of resources within ASEAN has centered on equity participation in joint industrial projects. Other areas for the development of joint capabilities and expertise have not so far received the same emphasis. This will be required, however, in the future to ensure that ASEAN industries create or maintain a dynamic comparative advantage. There is a growing recognition that export markets have become more sophisticated in terms of product development and quality requirements and generally also more competitive than in the past. To meet the resulting challenges, the limited national resources will have to be combined with a view to strengthening ASEAN's industrial basis.

In this respect, areas of special significance would include the generation and sharing of information; the development of specialized technological capabilities; the joint utilization of facilities for managerial and technical training; regional marketing programmes; and in particular early joint efforts at dealing with environmental issues of industrial development.

In section II.1.2 of this report it was stressed that technological innovation has become a critical determining factor of competitiveness in the global marketplace. Reference was also made to a number of existing ASEAN programmes in this field, including co-operation with OECD countries in selected areas. It is strongly recommended to further enhance co-operation programmes in science and technology. There are numerous fields in which regional co-operation efforts can yield high benefits, including inter alia, the monitoring of emerging trends in key technological areas; the networking of national technology information and development centers; incentives and support for consortia of enterprises (possibly involving also research institutes) active in high-tech areas; the establishment of joint telecommunication systems (e.g. satellite communication) or at least technical compatibility of national systems; technology specialization schemes; and joint approaches at promoting new technologies such as advanced materials.

While in general it would be wise not to rush into the creation of costly new institutions, the establishment of an ASEAN New Materials Research and Development Center warrants serious consideration. It needs to be borne in mind that most ASEAN countries have a significant natural resource base and large resource-processing industries. Such a Center could play a vital role in the continued utilization of these resources through developing new uses and facilitating a long-run transition to relevant advanced materials consistent with available domestic resources. On an ASEAN-wide basis, it could provide high-powered research teams; centralized instrumentation and laboratory facilities; training programmes; and important links with external research institutes and data banks.

Recent initiatives taken in the EEC and in Latin America in the field of technological co-operation are summarized in Annex I. It is largely based on information contained in an earlier UNIDO report, supplemented by some information on the latest initiative in Latin America, the Bolivar Programme.

Another important field for the pooling of expertise is in mastering the environmental impact of industrial development. A strong consciousness and awareness of existing and potential environmental threats has developed in the ASEAN countries and the need is widely perceived to take preventive action rather than react by ex-post damage control. There is now a widespread consensus that industrial growth needs to be environmentally sustainable in the long run unless it is to undermine its very foundations. The ASEAN Environment Programme (ASEP) III which was launched in 1987 focussing on the promotion of proper management of the ASEAN environment to achieve sustainable development, should be further strengthened to be more effective. Although the ASEP III fell short of promoting clean industrial technologies in the region it has contributed to a cleaner environment by supporting projects aimed at treating industrial effluents. There is also a need to ensure that national efforts are supplemented by regional support in the use of environmental impact assessments (EIA) when setting up ASEAN industrial projects. Furthermore, there are vast training requirements for staff of all national agencies involved in environmental policies, planning and operations. Given the similarity of issues and tasks faced by these agencies, a strong case for regional co-operation in this area can be made.

Finally, it has been suggested with reference to the pooling of resources and expertise, to set up an ASEAN Research and Training Institute on Foreign Investment. This proposal is strongly supported by the present report, particularly in view of the fact that the area of foreign investment was also singled out above as important field for policy harmonization efforts. The rationale behind establishing such an institute is well taken by its proponents: "Since all ASEAN countries are open, market-oriented economies in which foreign direct investment (FDI) has played a significant role in economic development, resource-pooling programs for FDI-related issues such as the collection and dissemination of information involving transnational investments would be beneficial. Studying the possible impact of such investments on matters relating to FDI, such as project evaluation and negotiation techniques, could also render substantial benefits to the governments involved in this co-operative scheme. Participation by the private sector would be welcomed in this proposed co-operative scheme, as business in the private sector would not only benefit from the information gathered by the proposed institute, but would also contribute by providing manpower and financial resources, and their experiences in dealing with TNCs could also be useful for the formulation and implementation of policy measures relating to FDI and TNCs."^{1/}

1/ Cf. Narongchai Akrasanee and Somsak Tambunlertchai, "Enhancing Co-operation between the Government and the Private Sector within the Framework of ASEAN Industrial Co-operation", in: Development & South-South Co-operation, Vol. 5, No. 9, Dec. 1989, p. 125.

V. CONCLUSIONS AND OUTLOOK

ASEAN countries have been credited as being among those having the most open and dynamic economies in the Asian and Pacific region. It is this characteristic which has greatly contributed to the increased interdependence of ASEAN with the global economy and has made these countries the fastest growing economies in the region.

In contrast, progress in increasing intra-ASEAN trade and investment flows has been slow and developments in ASEAN industrial co-operation have not fully met expectations. The underlying factors that have contributed to this include: (i) the consensus-building approach which hinders significant advances in ASEAN economic co-operation; (ii) the lack of political commitment to liberalize trade or to adopt a more definite form of economic integration; (iii) the low degree of complementarity of the industrial sectors of ASEAN; (iv) inadequate private sector involvement in planning and implementation; and (v) the cumbersome application and approval procedures for regional industrial co-operation projects.

This report has reviewed these issues in the light of recent economic trends in the global and regional economy. The challenges resulting from these trends are formidable indeed and have put great pressure on ASEAN which now finds itself at a crossroads of its development. A higher profile and new initiatives of economic co-operation are called for unless ASEAN wants to run the risk of losing its regional identity and giving way to increasingly diverging national interests.

ASEAN authorities are fully aware of the need to step up regional co-operation efforts and are now envisaging the formulation of an ASEAN Economic Treaty which is to define the long-term vision for the group's economic integration as well as the measures required to put this vision into effect. The formation of an ASEAN free trade area is being discussed in this context; in a 1991 report prepared by the ASEAN Institutes of Strategic and International Studies this is proposed to be implemented until the year 2007.

While the present report has not dealt with the issue of whether or not to establish a free trade area in the long run, it has put forward a number of suggestions for medium-term industrial co-operation in various fields. Apart from the creation of an overall enabling environment, these include the promotion of sub-regional growth centers as nuclei and potential model cases for industrial co-operation as well as the promotion of regional co-operation at the level of entire industrial sub-sectors. In addition, it is recommended to complement the past (over)emphasis on intra-ASEAN trade and investment expansion by efforts at strengthening the group's joint export competitiveness; and to pay more attention than hitherto to the potential benefits of a pooling of resources in specific industrial and industry-related fields.

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A N N E X I

Technological co-operation in the EEC and in Latin America

EEC experience

The member countries of the Community have given explicit attention to technological co-operation only in the last few years. While aggregate expenditure on R & D by member countries has been substantial, the lack of a Community-wide approach has led to a chronic dispersion of outlays. The implications for actual innovations are not difficult to discover. For example, from 1975 to 1984 in the telecommunications field, the U.S. developed three electronic switching systems, Japan one and European countries six. For all of the European innovations to be profitable, those countries would have to obtain an enormous share of the world market. Since this is almost certainly unattainable, the implication is that investment funds could have been saved an greater competitiveness achieved had there been a coordinated approach to innovation in this field. Similarly, 1984 data show that the EEC spent ECU 53 billion on R & D whereas Japan spent ECU 34 billion; however, the allocation of the latter was almost certainly much more efficient due to the use of those funds within a single coherent innovation strategy.

In the mid-eighties, the EEC began to launch joint programs aimed at a common approach to research and innovation. In 1984 the European Strategic Program for Research on Information Technology (ESPRIT) was approved and a budget was set at ECU 750 million over a five-year period. The money has in fact been fully spent in just half that time and the EEC must now find additional resources to carry through the research. In 1985 a scheme for Basic Research on Industrial Technologies in Europe (BRITE) was accepted with the aim of examining the use of new technologies in traditional industries. The budget was set at ECU 125 million and this research is ongoing. The third area in which the EEC has made a commitment is to a program on Research on Advanced Communications Technologies in Europe (RACE). This is potentially the most important program as its concern is with the realization of a digital, broad band communications network for the relay of voice, pictures, data and texts on the same line. In October 1986, the Commission of the EEC proposed spending ECU 800 million in a first stage from 1987 to 1991. Decisions on this proposal are to be taken shortly. What is of major significance here is not only the critical nature of the technology itself, but also the fact that an integrated network would require the harmonization on a continental basis of network planning and management. To accomplish that would mean the acceptance by participating countries of a supra-national regulating authority with power over existing national monopolies. The scientific attempts, therefore, cannot be separated from the extent to which member states are ready to forego degrees of national control.

These recent initiatives are at the level of research and do not tackle the question of innovation as such. In other words, it is still not clear to what extent companies from member states have access to the results. According to the existing time schedules, the real decisions on these matters are only likely to come up around the end of the decade. If this observation is seen in the overall time perspective of the EEC's life, then it is only as the Community enters its fourth decade that the crucial significance of technological research and innovation is being fully recognized at EEC level.

As noted earlier in the report, this is undoubtedly connected with the major shift in the nature of international competition which has taken place over the past decade. Unlike Japan, and to a different degree U.S.A., the EEC does not yet possess an adequate organizational structure in which to make the maximum use of innovation resources and results. That task has to be taken up as one of great urgency; the reasons for its tardy beginning are to be found both in the unwillingness of member countries to work together in a key area of competition, as well as in the slowness with which the shift in the nature of international competition was perceived.

Latin American experience

The Cartagena Agreement covers technological policy for the subregion and provides for the establishment of the Andean System of Technological Information (SAIT) and the Andean Programmes of Technological Development (PADT). SAIT functions as a clearing house in the subregion for the exchange of technological information whereas PADT aims at promoting assimilation and development of technology relevant to or appropriate for the subregion.

PADT has since developed a few significant technological programmes for the subregion. First, the Andean Project for Technological Development in Copper Hydrometallurgy was approved. This was designed to step up the transfer and adaptation of technologies for copper extraction by acid solution and by bacterian-acid process, and recuperation through ion exchange and electrode position. The project was also involved in the training of qualified personnel as well as in adapting and integrating the advanced equipment and technology from the transnational corporations for regional application. The main beneficiaries of this project are the copper-producing members, Bolivia and Peru.

Secondly, the Andean Forest Project was set up with a view to conducting research and disseminating knowledge in regard to the timber and other forest resources in the subregion. Work on testing various forest species has been carried out and new technology for timber exploitation has been developed. Specifically the Andean Laboratory of Wood Engineering was founded in Lima and the Andean System of Classification of Structural Wood was developed.

Thirdly, the Andean Project of Food Technology was approved by Decision 126 of the Agreement. The project has five programmes designed to carry out with a view to developing food of high nutritional value and low cost for groups such as children and pregnant women.

Finally, a programme for promoting social and economic development of the rural environment has been set up by PADT. The programme is charged with the generation and transfer of technology related to the development of a sound rural environment.

Apart from activities within the two formal organizations, SAIT and PADT, regional technological co-operation as provided by the Cartagena Agreement also includes appropriate legislation for marketing technology, patent rights and the legal aspects of technology transfer from outside the subregion.

More recently the bilateral agreement between Argentina and Brazil has paid some attention to the technology question. First, the strong emphasis on capital goods, manifested in the creation of a customs union between the two countries in this sector, along with an investment fund to stimulate production

in one or the other country in the event of major imbalances in bilateral trade, is itself tied up with technological advance since the capital goods area is one where innovation is currently rapid. Second, the agreement contains protocols for the promotion of biotechnology, co-operation in the aerospace industry with a view to developing joint export potential, and co-operation in energy development. Third, although agreement has not been reached as of now, the two countries have also been examining the possibilities of joint work in such areas as chemicals, plastics, petrochemicals and electronics. Consequently the technology orientation of this new initiative is quite market and it seems probable that this component will become stronger as the implementation of the accord develops.

Finally, the so-called Bolivar Programme is in the process of being implemented. It involves at least 10 Latin American countries and is supported by the Interamerican Development Bank. The Programme is aimed at stimulating technological co-operation between industrial companies and research centres of excellences of the countries involved. It enjoys strong political support as well as support from national chambers of industry and science and technology councils.