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**OUTLINE OF A
UNIDO COUNTRY SUPPORT STRATEGY (CSS)
FOR
INDONESIA**

FOREWORD

This document attempts to provide a strategic approach whereby UNIDO's intervention to satisfy the industrial needs of Indonesia can be exerted in the most effective manner taking full account of the country's developmental objectives and UNIDO's own priorities. It is based on extensive consultations held with a number of Government authorities as well as with the representatives of industry, chambers of commerce & industry, investment planners, UN bodies and donor agencies.

Against the background of general economic and industrial trends, Indonesia's development objectives, UNIDO's priorities, and the activities of other UN agencies and international development bodies, this document proposes a set of ten clusters in which UNIDO's services could be optimally utilized. Admittedly, these proposals are subject to the concurrence of the Government of Indonesia.

In the same vein, the project ideas listed in Annex I of the document are to be treated as preliminary and indicative of the demand by Indonesian respondents for UNIDO's services. The inclusion of these project ideas in the document, at this stage, is without prejudice to their feasibility and availability of funds. These and other such ideas will be the subject of thorough examination during the Industrial Programme Review Mission to Indonesia which could take place in the latter part of this year. That examination, undertaken jointly with the Government authorities, will help to identify large scale, integrated and coherent projects/programmes which UNIDO could then try to promote among the donor community.

Hayat Mehdi (signed)
Director
Asia and the Pacific Programme
Country Strategy and Programme
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PREFACE

This document represents the conclusion of the first stage of an attempt to draw up a UNIDO country support strategy (CSS) for the Republic of Indonesia in line with the UNIDO programming framework established in Director-General's Bulletin No. UNIDO/DG/B.177 of 26 April 1994. It is intended to determine, within a comprehensive and coherent programmatic framework, the scope and scale of the support services that may be provided by UNIDO to the Republic of Indonesia over the coming years to help the country overcome its industrial development constraints and achieve its industrial development objectives. In doing so, it takes account of the overall development objectives set by the Government of Indonesia, the development assistance priorities of the United Nations system, and the capacity of UNIDO to provide the requested services in areas related to the industrial sector.

It should be stressed at the outset, however, that the proposed UNIDO responses to the industrial development constraints identified in this paper are still very tentative. While every effort has been made to vet the requests for UNIDO services included in this document with a view towards ensuring that they are consistent with the stated development objectives of the Republic of Indonesia and with the mandate, policies and development priorities of UNIDO, neither the limited time available nor the implicit terms of reference for the drafting of this document permitted a comprehensive analysis of the technical or economic viability of the requested services. To the extent that a decision is taken to respond to requests for particular services identified in this document, this verification process will have to be conducted by the respective service managers or service teams established under the terms of UNIDO/DG/B.177 for this purpose.

The development objectives of the Government of Indonesia have been specified in detail in the sixth five-year development plan (*Rencana Pembangunan Lima Tahun VI*, Repelita VI), which covers the period from April 1, 1994, to March 31, 1999. This contains precise quantitative and qualitative targets for all major fields of social and economic development, not only for Repelita VI but also for the second 25-year long-term development period (*Pembangunan Jangka Panjang II*, PJP II), which commenced simultaneously with Repelita VI on April 1, 1994. For the purpose of focusing the support activities of the United Nations system, these wide-ranging objectives have been further synthesized into a number of priority areas for assistance from the United Nations System in the Country Strategy Note (CSN) for Indonesia prepared by the Office of the Resident Coordinator of the System's Operational Activities for Development in the Republic of Indonesia. This document, of which a near-final draft is now available, has been submitted to the National Development Planning Board (Badan Perencanaan Pembangunan Nasional, BAPPENAS) of the Government of Indonesia for approval.

In the formulation of the present first draft of the UNIDO CSS, the priority areas outlined in Repelita VI and the CSN have been taken as the point of departure for identifying the future industrial development needs of the Republic of Indonesia, and the associated demand for UNIDO services. During an extended mission to Jakarta in September 1994, meetings were held with senior members of all relevant ministries and agencies of the Government of Indonesia to determine the potential constraints arising from shortcomings in the industrial sector that they were likely to face in meeting their development goals within the specified priority areas. Similar meetings were also held with representatives of a large number of industry associations to ascertain the demand of private-sector enterprises for UNIDO support services.

The results of this exercise are presented in this report in Chapter III, which identifies the following priority areas for UNIDO assistance to Indonesia:

- Capacity building in industrial support organizations;
- Entrepreneurship development, especially for SMEs;
- Education and training for industry;

- Investment promotion in industry;
- Science and technology for industry;
- Industrial support for health and nutrition;
- Environmentally sustainable industrial development;
- Branch-specific industrial master plans;
- Agro-industry; and
- Special assistance for selected manufacturing subsectors.

Each of these priority areas has been specifically selected to be consistent with the development objectives of the Government of Indonesia and the CSN, as well as the development goals and priorities of UNIDO itself. In addition, and most importantly, these priority areas reflect specific requests received from the government officials and private entrepreneurs consulted during the preparatory mission to Jakarta in September 1994. Wherever possible, an attempt has also been made to define these priority areas in such a way as to ensure that potential UNIDO activities in these areas will complement rather than duplicate the activities of other bilateral and multilateral development assistance organizations.

This draft was prepared by the Industrial Development Review Unit of UNIDO in October 1994-March 1995 within the framework of its terms of reference to provide methodological support to the Regional Programmes of the Country Strategy and Programme Development Division of UNIDO. The CSS is based on, and draws upon, research on Indonesia undertaken in the context of the Industrial Development Review of Indonesia published in 1993. The author would like to take this opportunity to express his deep gratitude for the generous hospitality, assistance and advice received from the UNIDO Country Director in Jakarta and his staff and from the Department of Industry of the Republic of Indonesia, during his mission to Jakarta. He also acknowledges with gratitude the insights gained through his wide-ranging discussions with officials of the Government of Indonesia, members of the Indonesian business community, and representatives of international development cooperation agencies in Jakarta.

EXECUTIVE SUMMARY

This document is divided into three chapters, of which the first two provide an overview of economic and industrial trends and objectives in Indonesia, and the third presents preliminary proposals for a UNIDO country support strategy for the country. In addition, the document contains two annexes, the first of which summarizes the requests for UNIDO assistance received from representatives of official bodies and private industry associations during a preparatory mission to Jakarta undertaken in September 1994, while the second lists the names and affiliations of these respondents. Additional documentation presented by many of these respondents in support of their project proposals has been made available to the Programme Officer for Indonesia in the Country Strategy and Programming Division for consultation by the relevant technical staff of UNIDO.

Chapter I begins with a brief survey of the macroeconomic policy and performance of Indonesia since the mid-1960s, and shows the country to have achieved rapid economic growth, a high degree of economic stability and increasing economic and social equity during this period. The achievement of these goals has been facilitated by the adoption of prudent and flexible macroeconomic policies within the context of a series of indicative five-year development plans known by their Indonesian acronym as Repelita, which set development priorities and specific sectoral growth targets. The process has been accelerated since the mid-1980s by a deliberate and far-reaching liberalization of trade and investment regulations, which has been aimed at promoting a market-based, private-sector driven and export-oriented economic development strategy.

The rapid growth of the economy, averaging almost 7 per cent per year in real terms during 1969-94, has been accompanied by wide-ranging structural changes, involving in particular a dramatic increase in the importance of the manufacturing sector. From about 8-9 per cent in 1969, the share of manufacturing value added in GDP has risen to more than 22 per cent at present, making manufacturing the single most important activity in the Indonesian economy. In addition, the past 25 years have also witnessed a remarkable degree of output diversification. While it consisted mainly of a small petroleum refining industry, some processing industries for local agricultural products and a number of predominantly handicraft-based industries producing essential consumer goods in the late 1960s, the manufacturing sector had expanded to include a wide range of capital, intermediate and consumer goods by the early 1990s. Although this has resulted in Indonesia's steady evolution from a largely traditional agriculture-based economy to a more balanced modern economy on the verge of joining the ranks of the newly industrializing economies, the manufacturing sector remains highly varied in scale, ranging from tiny cottage enterprises to vast industrial complexes.

Official employment data show that although manufacturing employment has increased steadily in line with the growth of manufacturing output during the past 25 years, the total share of the manufacturing sector in total employment still remains relatively small. The agricultural and largely informal trade sectors remain the principal sources of employment for the Indonesian labour force, although the jobs they provide are frequently characterized by low levels of productivity. With the agricultural sector's absorptive capacity rapidly approaching its limit, there is a growing awareness in Indonesia that the manufacturing sector must play a leading role in generating high-productivity jobs.

Although an almost universal system of primary education has been established in Indonesia and illiteracy rates are extremely low by developing-country standards, the annual labour force surveys conducted by the Central Bureau of Statistics suggest that the educational and skill levels of Indonesia's industrial labour force are still fairly rudimentary. Specifically, they show that a very high proportion of the industrial work force still has few, if any, formal educational qualifications, and that even though a rapid improvement in educational standards occurred between the mid-

1970s and late 1980s, a substantial majority of the high school graduates entering the industrial labour force during this period had attended general curriculum schools, with only about one-third having attended vocational schools. The share of industrial employees with a tertiary education remained very small at 1.6 per cent in 1992, even though this figure represented a more than fivefold increase over 1976.

The annual industrial surveys of the Central Bureau of Statistics show that the share of value added in the gross output of the manufacturing sector as a whole has remained approximately constant throughout the 1980s and early 1990s, fluctuating in a narrow band between approximately 29 per cent and 33 per cent. This relatively low ratio at the aggregated level conceals significant branch-specific variations, however, with the MVA/output ratios in the food processing, leather products and plastics industries having historically been substantially lower than the overall average, while those of the footwear, furniture, pottery and china, and non-metallic minerals industries have tended to be substantially higher.

Labour productivities in the manufacturing sector show a similar diversity across industries, and span the entire range from high value added industries on the one hand and the industries with relatively low levels of labour productivity on the other. The former category comprises industries with a high physical capital intensity, high skill requirements and/or a significant degree of product differentiation, and includes the basic metals, basic chemicals, cement, engineering and beverage industries. The latter category consists of essentially labour-intensive industries, and includes the textiles, garments, furniture, footwear, non-metallic minerals (building materials) and miscellaneous manufactures (such as jewellery, sporting goods and musical instruments) industries.

The ownership pattern of Indonesian industry is heavily weighted towards the domestic private sector, which has traditionally accounted for the lion's share of all non-oil/gas manufacturing enterprises, and a significant proportion of the employment and MVA that they have generated. At the same time, however, the government also plays a significant direct role in the manufacturing sector, and has historically been particularly dominant in the upstream reaches of the sector, where it has controlled many large-scale enterprises. Foreign investment has been encouraged to a greater or lesser degree since the mid-1960s, with the liberalization of foreign investment regulations over the past decade having resulted in a particularly significant growth in the number of foreign joint ventures.

Indonesia's manufacturing industry is concentrated mainly in Java, which offers not only the largest markets because of its high population densities and comparatively high levels of per capita income, but also the best opportunities for efficiency-enhancing inter-industry linkages. The annual surveys of medium- and large-scale manufacturing establishments (excluding oil refining and natural gas processing enterprises) conducted by the Central Bureau of Statistics show that Java accounted for almost 79 per cent of the number of such firms in 1989, and for more than 76 per cent of the labour employed by these firms. In addition, Java also has the most comprehensive industrial structure, with all of the island's five provinces possessing enterprises in more than 20 of the 28 three-digit ISIC categories of non-oil/gas manufacturing employed by the Indonesian statistical authorities, and three of the five provinces possessing the full complement of 28 branches.

Since the mid-1980s the Government of Indonesia has been actively promoting the industrial development of the Riau islands near Singapore, and the island of Batam in particular. In early 1991, it agreed with the Government of Singapore and Malaysia to link Batam, Singapore and the Malaysian State of Johore into a "triangle of growth", allowing each of these entities to benefit from the complementary resource endowments of the other two. More recently, the government has also focused its attention on the industrial development of the still relatively underdeveloped eastern islands of the archipelago, where the bulk of manufacturing activity still consists of small-scale and handicraft production for the small local markets, or involves the processing of local raw materials in enclave establishments using significant quantities of imported capital and, in many

cases, labour. Despite the provision of a number of investment incentives in pursuit of this goal, the development of these regions is likely to be restrained for some time to come by their remoteness and their lack of an adequate infrastructure and markets.

The surge of manufacturing activity during recent years has placed an increased burden on the environment. This has been exacerbated by the fact that many of the most rapidly expanding industries (such as the wood products industries, the pulp and paper industries, the chemical industries, and the engineering industries) have a particularly high potential for causing environmental damage, including land denudation and soil erosion, water and air pollution, and a loss of ecological habitats and biodiversity. To minimize this damage, such industries would need to employ a variety of complex environmentally-friendly production techniques and equipment, which have for the most part been developed relatively recently and tend, in the short term, to be more costly than their conventional counterparts.

With much greater attention now being paid to environmental issues, both by the government and by a growing number of local and national non-governmental organizations, pressures for the adoption of more environmentally friendly technologies are bound to increase. With similar pressures also being faced by Indonesia's foreign competitors, the employment of such technologies will not necessarily result in a serious loss of Indonesia's international competitiveness. On the contrary, it will ensure that Indonesia's programme of industrial development is sustainable over a longer period without unduly endangering the country's natural resource base and the health of its population.

As an essentially resource-based economy, Indonesia has long been dependent on imports to satisfy its demand for manufactures. Although this dependence has been reduced as a result of the industrial development achieved during the past two decades, manufactures continue to constitute the bulk of Indonesia's imports. This decline in the proportion of manufactured imports has been accompanied by a significant shift in their composition, with the share of capital goods imports increasing steadily as the development of Indonesia's own downstream processing and manufacturing has increased the demand for capital goods needed by these industries and reduced the need to import consumer goods.

The export performance of Indonesia's manufacturing industry has been determined in large part by the industrial policies pursued by the Government of Indonesia. Until the mid-1980s, these policies were aimed primarily at import substitution, but the collapse of international oil prices in 1985-86 resulted in a sharp re-orientation of industrial policy towards the promotion of manufactured exports. The impact of this policy shift has been dramatic. From less than 16 per cent in 1975, the contribution of manufactures to Indonesia's total export earnings increased only slowly and fitfully to about 27 per cent in 1985, but since then has increased sharply and continuously to more than 63 per cent in 1992.

The survey of Indonesia's economic and industrial development performance summarized above is followed, in Chapter II, by a discussion of the country's development objectives for the future. This reviews the goals and targets set for the country's second 25-year long-term development period, known by its Indonesian initials as PJP II, and Repelita VI, both of which began on April 1, 1994. In addition, it also provides an overview of the objectives and priorities of the Country Strategy Note (CSN) for Indonesia being prepared by the Office of the Resident Coordinator of the United Nations System's Operational Activities for Development in Jakarta in consultation with the Government of Indonesia, which is intended to establish a broad framework for the services provided by the various development agencies of the United Nations.

For PJP II the Government of Indonesia stipulates a broad-based development not only of the country's economy but also of its legal and social institutions and national culture, with the aim of leading Indonesia towards the take-off stage towards becoming a fully developed country by the end of the 25-year period. A particularly high priority is attached to raising the standard of living of the Indonesian people through the achievement of a sustained high rate of economic growth

averaging 7 per cent per year. This is intended to result in an almost fourfold increase in real per capita incomes, from about \$700 in 1994 to some \$2,600 by the end of PJP II in constant 1989/90 prices.

Recognizing further that the attainment of increased per capita incomes will be facilitated by a reduction in the rate of population growth, the Repelita VI document proposes a further intensification of the country's highly successful family-planning programme, which is expected to result in a gradual slowdown in the overall population growth rate from an estimated 1.9 per cent per year at the end of Repelita V (March 1994) to 0.9 per cent by the end of Repelita X (March 2019). At the same time, however, the plan document concedes that the Indonesia's large population base of some 189 million people at the end of Repelita V, and its comparatively young age distribution, will lead to a rapidly growing number of new entrants joining the work force each year and thus place severe pressures on the labour market. The Government therefore cites the resolution of the unemployment and underemployment problems as a major objective for PJP II, and also stresses the need for continued improvements in the quality of Indonesia's human resource base.

In view of the increasingly limited absorptive capacity of the agricultural sector, which in the past has been the principal source of additional employment opportunities in Indonesia, and the generally low productivity of the jobs generated in the largely informal service sector, the government of Indonesia has chosen to focus on the industrial sector as the main engine of the country's future economic development. In contrast to the annual average growth rate of 7 per cent for GDP as a whole, it has targeted the growth rate of the industrial sector at 9 per cent per year for the coming 25 years, with the non-oil/gas manufacturing industries scheduled to grow at an even faster rate. Consequently, the share of the manufacturing sector as a whole in GDP is forecast to increase from 20.8 per cent at the end of Repelita V to 32.5 per cent by the end of Repelita X, while the share of non-oil/gas manufacturing is expected to increase 17.6 per cent to 31.5 per cent during the same period.

Even though industry has been selected to play the lead role in generating economic growth, its development is to be more closely coordinated with the development of the other major sectors of the economy, and its existing inter-sectoral links with the agricultural, mining and service sectors are to be significantly expanded. In addition, increased priority is intended to be given to the enhanced application of science and technology in Indonesia's industrial products and processes in order to ensure the continued evolution of the comparative advantage of Indonesia's manufacturing sector from predominantly labour-intensive industries, in which it will face increasing competition from countries with lower labour costs, to more technologically sophisticated industries with a higher productivity and greater capacity for generating added value. The industrialization process is projected to be conducted in an environmentally sustainable manner, moreover, with increased attention being given to minimizing the risk of pollution and the wasteful use of natural resources.

While regarding the growth of the manufacturing sector as one of its principal priorities in PJP II, the Government of Indonesia proposes to limit its own role mainly to the provision of a suitable macro-economic policy environment. The actual investment decisions are to be left for the most part to the private sector, which is expected to account for an increasing share of total manufacturing output. The private sector is also expected to play a dominant role in research and development activities, with the government's share of total expenditure in this field being slated to fall from 80 per cent at the end of PJP I to 30-40 per cent by the end of PJP II.

Within the general framework established for PJP II, a number of specific goals have been set for the current five-year development period, Repelita VI. In the economic context they comprise human resource development, economic growth and structural change, increased distributional equity and poverty alleviation, and economic stability. More specifically, the Repelita VI document

provides for the industrial sector to act as the main engine of economic growth in the coming five years, and lists the following principal objectives for the industrial sector during the plan period:

- The achievement of a sufficiently high growth rate to enable the industrial sector to become the main vehicle for stimulating economic development.
- A diversification of the industrial structure.
- An enhancement of the industrial sector's technological capabilities and the optimal utilization of Indonesia's economic resources.
- An improvement of Indonesia's industrial competitiveness and its capacity to produce high-quality products capable of penetrating international markets.
- The promotion of small and medium scale industries, including rural industries.
- A widening of the regional distribution of industry, particularly in the eastern part of Indonesia, in order to develop regional centres of economic growth.

Against this general background, Repelita VI proposes the adoption of an industrial development strategy comprising four principal components. The first of these calls for the development of broad-spectrum industries oriented towards the international market, natural resource-intensive industries with a rising technological level, labour-intensive industries with rising skill levels over time, and technology-intensive industries. The second provides for the accelerating application of modern technologies in Indonesia's industrial processes in order to enhance the quality of locally produced manufactures. The third stipulates that the private sector will be the prime agent of industrial development, and that the market mechanism will be the main determinant of its structure and output. The last prong of this strategy provides for the government to give particular support to industries with a potential for promoting rapid economic growth and increased equity in income distribution. Within the framework of this overall strategy, a number of priority industries have been identified for promotion in Repelita VI, including agro-industries of various kinds, the machinery, capital goods and electronics industries, export-oriented industries, and small and medium-sized industries.

Based on the development objectives and priorities identified by the Government of Indonesia for PJP II and Repelita VI, the Office of the Resident Coordinator of the United Nations System's Operational Activities for Development in the Republic of Indonesia has drafted a comprehensive Country Strategy Note (CSN) to coordinate the development activities of the United Nations system in the country. Specifically, this document is intended to provide a framework for the UN development system to prepare a series of inter-sectoral and inter-disciplinary programmes bringing together the resources of its specialized agencies and those of other bilateral and multilateral development organizations. It is expected that the formulation, and coordinated implementation, of such mutually reinforcing and interactive programmes in selected areas of concentration will significantly enhance the impact of the assistance provided by the United Nations system. The priority areas selected by the CSN comprise:

- Poverty alleviation and employment creation
- Human Resources Development - Population, health and nutrition
- Human Resources Development - HIV/AIDS prevention and control
- Human Resources Development - Education and training
- Human Resources Development - Disadvantaged and vulnerable groups
- Growth - Maintenance of growth
- Growth - Science and technology
- Environmental Conservation and Management - Environment
- Environmental Conservation and Management - Disaster reduction and management
- Governance - Decentralization, regional development and institutional innovation.

By specifying sustainable human development as the unifying theme for the assistance provided by the UN development system to Indonesia, and identifying the major priorities for this assistance as listed above, the CSN is meant to sharpen the focus of UN system assistance. At the same

time, however, its authors stress that it is not intended to restrict the efforts of individual UN agencies. On the contrary, they express the hope that the CSN will give an increased coherence to the assistance programmes of these agencies rather than replacing them, and emphasize that they expect the individual UN agencies to execute their programmes in accordance with their own mandates.

Having analyzed the developmental objectives and priorities of the Government of Indonesia and the CSN for the coming years in Chapter II, preliminary proposals for an appropriate UNIDO Country Support Strategy (CSS) for Indonesia are presented in Chapter III. The chapter provides an overview of UNIDO's role and activities, pointing out that the organization is mandated to act as the central coordinating body for industrial activities within the United Nations system, and that over the almost three decades of its existence it has acquired a strong comparative advantage in the field of industry-related assistance and advice, which enables it to act as:

- A focal point for industrial technology;
- An honest broker for industrial cooperation;
- A centre of excellence on industrial development issues; and
- A global source of industrial information.

In addition, it is pointed out in Chapter III that the broad spectrum of UNIDO's expertise and experience allows it to provide these services at all significant levels of intervention, including the policy level, the institutional level and the enterprise level. Furthermore, it points out that whereas in the past UNIDO's status as an intergovernmental organization resulted in most of its activities being undertaken in response to government requests that were largely focused on public-sector, inward-looking and planning concerns, demand is now shifting towards development requirements in the private sector, with advisory services being sought in particular to help create "enabling environments" in developing countries conducive to private sector development and the mobilization of investment and other resources. Responding to these shifts in demand for UNIDO services, the Organization has taken firm steps to strengthen its ties with private-sector enterprises.

In order to meet the varied demands imposed upon it by its broad mandate and the changing requirements of developing countries, and at the same time optimize the use of its limited resources, UNIDO has identified five priority areas on which to focus its developmental activities. These are:

- Industrial and technological growth and competitiveness;
- Development of human resources for industry;
- Equitable development through industrial development;
- Environmentally sustainable industrial development; and
- International cooperation in industrial investment and technology.

In the context of these five objectives, UNIDO has chosen to concentrate its efforts and resources in the next biennium into the following seven priority programmes:

- Industrial strategies, policies and institution-building for global economic integration;
- Environment and energy;
- Small and medium enterprises: policies, networking and basic technical support;
- Innovation, productivity and quality for international competitiveness;
- Industrial information, investment and technology promotion;
- Rural industrial development; and
- Africa and least developed countries: linking industry with agriculture.

While concluding that UNIDO is able to provide a wide range of services in support of the industrial development goals of developing countries, this survey of UNIDO's role and activities stresses that the organization acts in a demand-oriented manner, responding to specific requests

received from the "client" in the developing country concerned, which may be the government itself, or a governmental or non-governmental organization, or a private sector enterprise or institution. In each case, however, UNIDO's initial response to such a request is to analyze the objectives the client wishes to achieve and the need for UNIDO support, and to verify that the client's programme is consistent with the country's industrial development goals and UNIDO's own mandate and policies. In this context, the present Country Support Strategy represents an effort to establish a comprehensive and coherent programming framework, and to ensure the relevance and sustainability of the assistance provided by UNIDO.

Based on the situation analysis presented in Chapter I, the developmental objectives and priorities of the Government of Indonesia and the proposed areas of support for the United Nations system discussed in Chapter II, and the survey of the objectives and scope of UNIDO's industrial development assistance provided in the opening section of Chapter III, the remainder of this chapter attempts to draw up a coherent strategy for UNIDO's activities in support of the industrial development process in Indonesia. In doing so, it stresses the need to regard the provision of UNIDO services in a broader programmatic context, involving an analysis of the specific industrial components of Indonesia's development goals, in order to identify areas where the industrial sector could support the achievement of these overall goals or where the absence of an appropriate industrial support infrastructure hampers their achievement.

This approach is followed in the remainder of this chapter, which identifies a number of areas for UNIDO assistance on the basis of the various inter- and intra-sectoral development goals established by Indonesia's economic planners and entrepreneurs, and the role that industry can play in helping to achieve them. These proposals also take into account the blueprint for overall UN system assistance drawn up in the CSN, and suggest specific activities to be undertaken by UNIDO, usually on the basis of concrete requests put forward by representatives of the Government of Indonesia or private Indonesian entrepreneurs during extensive interviews conducted in Jakarta in September 1994. This exercise has resulted in the following ten priority areas being selected for UNIDO's technical assistance to Indonesia in the coming years:

- Capacity building in industrial support organizations;
- Entrepreneurship development, especially for SMEs;
- Education and training for industry;
- Investment promotion in industry;
- Science and technology for industry;
- Industrial support for health and nutrition;
- Environmentally sustainable industrial development;
- Industrial master plans;
- Agro-industry; and
- Special assistance for selected manufacturing subsectors.

This document concludes with two annexes listing the persons interviewed during the mission to Jakarta in September 1994 and discussing the proposals for UNIDO assistance presented by them. A summary list of these proposals is presented below:

Department of Industry:

- Capacity building at the Department of Industry;
- Capacity building at the regional level;
- Support for the development of an industrial information base;
- Promotion of industrial research and development;
- Training in negotiation techniques with suppliers of technology;
- The development of industrial maintenance systems;
- Enhanced implementation of environmental controls;
- Entrepreneurship development;
- Regional diversification of industry, especially to eastern Indonesia;
- Support for the engineering industry;

-
- Development of the ceramics industry;
 - Support for agro-processing industries;
 - Quality improvement in small-scale food processing enterprises;
 - Support for the leather processing and textile industries;
 - Support for the educational equipment industries;
 - Development of medical equipment industries;
 - Formulation of a master plan for coal-based chemicals; and
 - Human resources development for the pulp and paper industry.

Department of Cooperatives and Small Enterprise Development:

- Support for small enterprises and cooperatives;
- Strengthening of institutional support base for small enterprises and cooperatives;
- Support for the development of small-scale woodcraft industries;
- Education and training programme for small-scale entrepreneurs and officials of the Department of Cooperatives and Small Enterprise Development;
- The introduction of a cleaner production programme, with special reference to the soybean-based food products industries; and
- The dissemination of quality control technology to small entrepreneurs in the metal products industries.

Department of Agriculture:

- Integrated master plan for agricultural processing industries and agribusiness development, with special reference to export-oriented industries;
- Strengthening the institutional support base for the agricultural processing industries;
- Repair and maintenance of agricultural machinery;
- Handling and packaging of horticultural crops;
- Post-harvest rice processing technology;
- Development of the soybean-based food industries;
- Support for the natural rubber and rubber wood processing industries; and
- Development of the seaweed processing industries.

Department of Mines and Energy:

- Workshop on microbial enhancement of oil recovery (MEOR) and bio-remediation;
- Establishment of the ASEAN Regional Development Centre for Mineral Resources (ARDCMR) at the Mineral Technology Research and Development Centre in Bandung, West Java;
- Assessment of processing technology needs for ceramics inputs;
- Training in coal briquetting techniques for household purposes and small industries;
- Development of coal as a feedstock for urea fertilizers;
- Research on the utilization of oil produced from asphalt;
- Development of technology for the production of tin compounds;
- Training course on mineral beneficiation and extraction;
- Development of the small-scale mineral processing industry, with special reference to precious stones; and
- Development of iron-making processes using locally available iron sand

Department of Trade:

- Distribution of safe food additives for home industries.

Department of Health:

- Establishment of a food industry information and data base;
- Education and training in food safety;
- Establishment of a training and information centre for traditional drugs;

- Expansion of the domestic production capacity for pharmaceutical raw materials; and
- Measures to reduce the use of hazardous substances in industry.

Inter-Ministerial Session on Food and Nutrition:

- Support for the soybean-based food industries; and
- Production and marketing of iodized salt.

Office of the Minister of State for the Role of Women:

- Programme to support the development of women entrepreneurs in rural areas.

Office of the Minister of State for the Environment:

- Development of environmental standards and regulations for industry;
- Implementation of the Spatial Use Management Act of 1992;
- Development of an integrated information network on the environmental effects of industrial development;
- Sustainable industrial exploitation of Indonesia's biodiversity; and
- Phasing out of ozone depleting substances in industry.

Environmental Impact Management Agency:

- Promotion of cleaner production technologies for industry.

National Agency for the Assessment and Application of Technology:

- Assessment of manufacturing technology and safety;
- Development of an information technology policy;
- Production of solar panels to support the rural electrification programme;
- The use of solar energy for drying estate crop products;
- Development and standardization of *tempe* (fermented soybean) production;
- Evaluation of the use of natural gas as a potential substitute for CFCs;
- Development of laminated bamboo as a low-cost building material; and
- Development of n-Alkane as an alternative environmentally-friendly raw material for the production of household detergents.

National Investment Coordinating Board:

- Staff training for the National Investment Coordinating Board;
- Intensification of investment promotion activities;
- Upgrading of investment promotion equipment and facilities;
- Measures to increase the low implementation rate of approved private investment projects;
- Establishment of an integrated data base and information network in support of investment promotion activities;
- Greater selectivity in the choice of permitted technologies; and
- Encouraging partnerships between foreign investors and national small and medium scale industries

National Chamber of Commerce and Industry:

- Establishment of an information network and related publication programme.

Engineering Industry Associations:

- Development of a skilled workforce for the engineering industries;
- Support for the development of small- and medium-scale component suppliers and subcontractors; and
- Assistance for the establishment and development of support institutions.

Chemical Industry Associations:

- Formulation of an overall master plan for the chemical industries;

- Human resources development for the pulp and paper industry; and
- Development of the small-scale salt producing industry.

Food Processing Industry Associations:

- Master plan for the development of export-oriented prepared foods industries; and
- Support for the cocoa processing industry.

CHAPTER I:

ECONOMIC AND INDUSTRIAL DEVELOPMENT TRENDS IN INDONESIA^{1/}

A. MACROECONOMIC POLICY AND PERFORMANCE

Economic development, defined to encompass growth, stability and equity, has been the principal objective of the government of Indonesia since the mid-1960s. The vehicle chosen for the achievement of this objective has been a succession of five-year development plans, known by their Indonesian acronym as Repelita. These plans apply to both the public and private sectors, and set development priorities and specific sectoral growth targets, which are subject to annual review. The plans are indicative in nature, however, and do not provide detailed instructions for the execution of particular programmes and projects. In the case of the public sector, such details are contained in the government's annual budgets, while the private sector is permitted to formulate its own plans within the overall framework established by the individual Repelitas.

In pursuit of the objectives and priorities set by the Repelita plans, the government has for the most part adopted prudent but flexible macroeconomic policies, which have imposed a considerable degree of financial discipline on the government while at the same time enabling it to respond rapidly and effectively to changes in the external economic environment. Learning from the experience of the 1950s and early 1960s, when large budget deficits provoked severe inflationary pressures culminating in an annual inflation rate of more than 650 per cent in 1965, the government's fiscal policy has been based on the balanced-budget principle^{2/} since the mid-1960s. Close attention has also been paid to the pursuit of a conservative monetary policy to support non-inflationary growth. Relatively liberal private investment laws, covering both foreign and domestic direct investments, have been in place since the late 1960s, and have been liberalized further in subsequent years, especially since the mid-1980s. A virtually free foreign exchange system, based on a fully convertible rupiah and the unrestricted availability of foreign exchange for all current-account transactions, has also been in operation since 1970. After having been pegged at Rp415=US\$1 until November 1978, the exchange rate has been held, by means of a managed float and occasional devaluations, at levels appropriate to the maintenance of a balance-of-payments equilibrium.

^{1/} This Chapter is an abridged and updated version of Chapter II of the Industrial Development Review of Indonesia published in 1993.

^{2/} It should be noted in this context, however, that revenues are defined to include foreign development aid.

In contrast to the relatively liberal approach adopted in most fields of economic policy, the government has traditionally imposed a variety of controls on both external and internal trade. Foreign trade has thus been regulated by an extensive array of tariffs and non-tariff barriers, while internal trade has also been subject to a number of physical restrictions and price controls. Most of these regulations have been introduced in support of import-substituting industrial policies and in order to satisfy powerful domestic entrepreneurial interests, although the former reason has become progressively less important since the mid-1980s, when the onset of weakening oil prices forced the government to adopt a more export-oriented industrialization strategy in order to maintain its foreign exchange revenues. This has resulted in a gradual reduction of trade restrictions and price controls over the past decade, with a number of liberalizing reform packages having been introduced since May 1986.

The combined effect of these policies has been very impressive. During the period covered by the first five Repelitas, which ended on March 31, 1994, Indonesia recorded an annual average growth rate of 6.8 per cent in real terms. As a result, Indonesia has advanced from one of world's poorest countries in the 1960s, with a per capita income of \$70 at the start of Repelita I in 1969 to a middle-income country with a per capita income of almost \$700 by the end of Repelita V. This growth was accompanied by the maintenance of both internal and external economic stability, with the rate of inflation declining from an annual average of 17.2 per cent in the 1970s to about 9% in the 1980s and early 1990s, and no significant strains being placed on the balance of payments. The growth of the economy has also been accompanied by wide-ranging structural changes, resulting in Indonesia's steady evolution from a largely traditional agriculture-based economy to a more balanced modern economy on the verge of joining the ranks of the newly industrialized economies.

B. MANUFACTURING GROWTH AND STRUCTURAL CHANGE

At the beginning of Repelita I Indonesia had a comparatively small manufacturing sector. This accounted for only about 8-9 per cent of GDP, and consisted mainly of a small petroleum refining industry, some processing industries for local agricultural products such as sugar and rubber, and a number of predominantly handicraft-based industries producing essential consumer goods, including an embryonic textile industry. Indonesia's manufacturing industry therefore is very much a product of the past 25 years, having emerged and developed in response to government policy, which consciously promoted public and private investment in manufacturing activities, and a significant increase in the availability of resources in the form hydrocarbon revenues as well as foreign aid and investment flows. These favourable circumstances stimulated a rapid growth of the manufacturing sector, and especially its non-oil/gas component, over the following two decades. By 1991 the share of manufacturing in GDP had risen to just below 22 per cent, exceeding that of agriculture for the first time in Indonesia's history and making manufacturing the most important sector in the country's economy in terms of output. Preliminary data for the following years show that this share has continued to rise, and had reached 22.3 per cent by 1993.

As indicated in Table I.1, the past 25 years have also witnessed a remarkable degree of output diversification. Of the 66 items covered in the table, all of which are now produced in significant quantities in Indonesia, 33 were not produced at all during Repelita I, and 21 were not produced during Repelita II. This increasing diversity of output has been the result of a wide ranging structural change in the manufacturing sector, which is still gathering momentum.

Table 1.1. Manufacturing production, 1969/70-1993/94

Product	Unit	Annual average Repelita I	Annual average Repelita II	Annual average Repelita III	Annual average Repelita IV	1989/90	1990/91	1991/92	1992/93	1993/94 ^{a/}	Annual average Repelita V ^{a/}
Condensed milk	Million cases	0.8	3.4	14.8	94.8	100.6	113.5	118.3	144.1	161.4	127.6
Canned fish	Thousand tonnes	-	-	18.3	140.8	186.3	194.5	204.7	230.6	247.9	212.8
Coconut oil	Thousand tonnes	262.2	289.6	319.1	368.6	486.1	490.4	540.3	586.6	639.4	548.6
Palm oil	Thousand tonnes	27.5	32.3	307.9	615.0	846.5	968.9	980.5	1,162.4	1,249.6	1,041.6
Salt	Thousand tonnes	111.4	365.6	619.6	690.6	457.7	900.0	920.0	841.0	900.0	804.5
Animal feed	Million tonnes	-	-	0.3	1.8	2.5	2.7	2.5	3.0	3.4	2.8
Kretek cigarettes	Billion pieces	23.0	37.2	55.4	99.3	130.4	139.3	125.0	134.2	135.5	132.9
Other cigarettes	Billion pieces	15.3	24.8	29.1	22.3	30.3	34.8	52.8	39.9	44.7	40.4
Yarn	Thousand bales	243.3	597.6	1,323.6	2,158.9	3,405.0	3,572.7	4,140.2	4,101.4	4,933.7	4,030.6
Textiles	Million metres	711.8	1,229.3	2,017.5	2,818.1	4,493.6	5,028.2	5,341.7	6,710.0	7,878.5	5,890.4
Garments	Thousand dozens	-	-	4.5	30.9	48.9	58.6	66.0	77.2	92.9	68.7
Leather shoes	Million pairs	-	-	2.4	16.5	19.5	24.5	31.8	80.2	104.2	51.0
Sawn wood	Million cubic metres	-	0.8	7.4	9.7	10.9	11.1	10.5	10.6	10.8	10.8
Plywood	Million cubic metres	-	-	0.5	5.4	7.7	8.4	8.5	9.2	9.5	8.7
Decorative plywood	Million sheets	-	-	2.9	23.7	30.9	40.8	49.4	68.0	76.8	53.2
Processed rattan	Thousand tonnes	-	-	-	204.8	311.6	349.3	427.9	438.4	464.7	398.4
Pulp and paper	Thousand tonnes	31.2	76.6	271.8	749.8	1,360.3	1,776.4	2,088.0	3,563.1	3,691.3	2,495.8
Caustic soda	Thousand tonnes	1.8	8.0	19.1	33.3	104.1	206.6	224.1	329.2	307.0	234.2
Acetylene	Thousand cubic metres	19.8	258.8	679.4	1,745.8	2,283.0	2,625.0	3,020.0	6,015.0	6,344.0	4,055.4
Paraxylene	Thousand tonnes	-	-	-	-	-	19.9	187.9	254.4	261.9	144.8
Urea fertilizer	Thousand tonnes	106.5	685.9	2,013.6	3,818.2	4,891.6	5,131.1	4,881.2	5,026.4	5,253.6	5,036.8
Synthetic resin	Thousand tonnes	-	10.2	51.5	45.5	52.9	81.5	72.2	87.0	100.1	78.7
Laundry soap	Thousand tonnes	132.2	180.5	207.1	162.7	165.7	191.2	219.9	243.7	275.4	219.2
Detergent	Thousand tonnes	4.3	31.6	61.4	152.0	193.2	212.6	233.9	243.9	261.0	228.9
Matches	Million boxes	396.1	661.1	660.5	2,239.6	2,806.8	2,907.6	3,028.0	3,114.0	3,207.4	3,012.8
Motor car tyres	Thousand units	696.9	2,052.6	3,518.8	4,889.5	7,376.8	8,220.3	8,209.1	8,772.0	9,654.9	8,446.6
Motor cycle tyres	Thousand units	-	1,320.6	2,439.4	3,175.1	5,489.8	5,829.2	7,682.3	7,923.4	7,615.3	6,908.0
Crumb rubber	Thousand tonnes	152.1	478.6	640.2	808.3	1,026.8	1,037.5	1,078.7	1,084.2	1,100.5	1,065.5
Rubber shoes	Million pairs	-	-	5.7	37.0	156.7	142.7	185.2	259.4	350.1	218.8
Glass and bottles	Thousand tonnes	16.9	45.4	85.1	122.6	137.2	145.6	153.5	155.1	158.2	149.9
Plate glass	Thousand tonnes	4.5	35.4	102.2	218.3	319.7	353.9	297.9	441.8	486.8	400.0
Glass fibres	Tonnes	-	-	-	-	500.0	4,000.0	2,103.0	3,000.0	4,000.0	2,720.6
Ceramic wall tiles	Million square metres	-	-	1.3	7.1	7.8	8.9	9.5	9.7	10.0	9.2
Portland cement	Million tonnes	0.6	2.1	6.6	11.2	14.1	15.8	16.2	17.3	19.0	16.5
Sponge iron	Thousand tonnes	-	-	339.6	1,027.5	1,210.4	1,356.9	1,355.0	1,298.6	1,428.6	1,329.9
Concrete iron	Thousand tonnes	56.7	230.7	656.0	752.2	928.1	1,391.3	1,310.6	1,297.9	1,381.0	1,261.8
Steel ingots	Thousand tonnes	-	79.8	506.3	1,115.2	1,582.1	1,988.1	2,091.1	2,267.3	2,416.8	2,069.3
Galvanized steel sheet	Thousand tonnes	49.8	148.2	298.9	215.9	144.5	159.0	175.9	249.8	276.4	201.1

(continued)

Table I.1. (continued)

Product	Unit	Annual average Repelita I	Annual average Repelita II	Annual average Repelita III	Annual average Repelita IV	1989/90	1990/91	1991/92	1992/93	1993/94 ^{d/}	Annual average Repelita V ^{a/}
Steel pipe	Thousand tonnes	-	42.2	122.4	244.8	273.2	326.8	301.1	453.3	500.6	371.0
Aluminium extrusion	Thousand tonnes	-	2.0	9.7	22.0	17.4	40.0	29.9	35.1	37.6	32.0
Aluminium sheet	Thousand tonnes	-	6.2	11.6	27.5	28.4	47.2	40.7	42.9	44.1	40.7
Steel tanks	Thousand tonnes	-	-	2.0	9.9	18.0	15.0	18.0	20.0	21.0	18.4
Construction steel	Thousand tonnes	-	-	5.0	34.9	44.8	49.8	89.6	124.0	175.0	96.6
Automotive diesel engines	Thousand units	0.4	19.1	51.2	38.6	35.9	45.9	50.0	54.6	72.7	51.8
Rice hullers	Units	-	-	49.6	564.4	826.0	909.0	1,200.0	1,431.0	1,431.0	1,159.4
Hand tractors	Units	-	70.8	967.4	1,889.0	5,533.0	6,330.0	10,000.0	9,350.0	9,350.0	8,112.6
Steamrollers	Units	232.0	423.2	402.0	168.8	10.0	50.0	97.0	97.0	25.0	55.8
Pistons	Thousand units	-	84.5	150.2	423.0	570.0	627.8	609.5	429.0	871.7	621.6
Sewing machines	Thousand units	285.9	490.8	447.7	147.9	34.0	29.3	28.8	52.1	62.0	41.2
Circuit breakers	Thousand units	-	-	100.0	1,454.1	1,700.0	3,075.2	1,233.5	1,335.0	5,458.0	2,560.3
Generators	Thousand units	-	-	12.7	18.9	7.6	8.3	7.7	7.1	8.5	7.8
Telephone exchanges and PABX	Thousand lines	-	-	26.7	101.3	169.0	206.0	365.7	481.4	600.2	364.5
Telephone receivers	Thousand units	-	-	3.1	102.1	69.7	223.0	727.9	1,081.0	1,208.0	661.7
Integrated circuits	Million units	-	-	127.8	196.6	59.8	26.0	55.2	87.6	158.0	77.3
VHF/UHF single channel	Units	-	-	280.0	4,115.6	4,916.0	6,256.0	5,615.0	8,646.0	9,046.0	6,895.8
Radios/radio-cassettes	Thousand units	554.6	1,127.2	1,275.4	1,545.2	2,338.6	3,091.7	3,788.0	5,293.0	5,660.0	4,034.3
Television sets	Thousand units	40.8	262.8	702.6	677.0	796.6	1,082.0	1,581.1	1,856.0	1,476.0	1,358.3
Air conditioners	Thousand units	16.2	26.5	50.1	55.0	78.8	99.2	115.4	118.6	123.3	107.1
Car batteries	Million units	0.1	0.5	3.3	5.9	6.4	8.0	9.5	10.3	11.6	9.2
Dry batteries	Million units	77.0	333.2	550.5	948.2	1,076.7	1,158.4	1,224.1	1,380.6	1,463.4	1,260.6
Steel-hulled ships	Thousand grt	15.0	31.2	31.4	16.4	22.5	32.6	44.9	50.8	53.3	40.8
Motor car assembly	Thousand units	16.9	82.5	165.8	156.6	174.8	271.4	260.5	174.7	209.2	218.1
Motor car radiators	Thousand units	-	22.3	129.2	133.9	170.6	244.0	256.2	211.6	222.1	220.9
Motor cycle assembly	Thousand units	70.5	284.2	418.3	263.9	281.0	410.0	435.5	457.3	454.8	407.7
Aeroplanes	Units	-	5.6	14.4	6.8	12.0	6.0	2.0	7.0	9.0	7.2
Helicopters	Units	-	7.0	12.0	11.6	17.0	14.0	9.0	27.0	7.0	14.8

Sources: 1990-2018/88 - Government of Indonesia, Nota Keuangan 1991/92, Tables VI.42-VI.44
1988-89/1989/91 - Government of Indonesia, Supplement to President's Speech, 16 August 1994, Tables VIII.1-VIII.3

d. Provisional

Manufacturing activity in Indonesia is greatly varied in scope and scale, ranging from tiny cottage enterprises producing handicrafts and basic consumer goods to vast industrial complexes for the production of highly sophisticated capital and intermediate goods. In terms of size, the most commonly used Indonesian statistics, compiled and published by the Central Bureau of Statistics, distinguish between household (cottage), small, medium and large industrial enterprises, which are differentiated according to the number of workers employed. Under the currently prevailing system, household firms are defined as establishments employing fewer than five workers, small firms as companies employing 5-19 workers, medium-sized firms as companies employing 20-99 workers and large firms as companies employing 100 workers or more.

While cottage and small-scale firms account for the majority of industrial enterprises in numerical terms and in terms of the overall number of workers employed, they are by their very nature difficult to monitor on a continuous basis. Their operations have therefore only been surveyed periodically in conjunction with the three industrial censuses conducted by the Central Bureau of Statistics in 1964, 1974/75 and 1986. The activities of medium- and large-scale firms are monitored on a more regular basis, and most annual industrial statistics published in Indonesia refer to such firms only. The resulting distortions in the data are ameliorated by the fact that these medium- and large-scale firms account for more than 80 per cent of the value of gross output and manufacturing value added (MVA).

Although the oil and natural gas processing industries (comprising a number of petroleum refineries and the gas liquefaction facilities in the provinces of Aceh and East Kalimantan, and corresponding broadly to ISIC's 353 and 354) have traditionally played a major role in Indonesia's manufacturing sector, quantitative data on them are not recorded in Indonesia's industrial statistics because they come under the jurisdiction the Department of Mines and Energy rather than the Department of Industry. Separate MVA data for the oil and natural gas processing industries have been published in the national accounts statistics since 1978, however, and indicate that these industries recorded very rapid growth until the mid-1980s as a result of the investment stimulus provided by the relatively high energy prices prevailing at the time. From the second half of the 1980s onwards, the non-oil/gas branches of the manufacturing sector have assumed the dominant role in generating industrial growth, with their share of total GDP rising from 11.6 per cent in 1985 to 19.2 per cent by 1993.

The non-oil/gas component of the manufacturing sector has itself changed dramatically since the mid-1960s. The diversification of its branch structure is revealed particularly vividly by the data on the branch-specific composition of MVA collected by the three industrial censuses of 1964, 1976/75 and 1986 and reproduced in Table I.2. This Table, which excludes data on cottage industries, shows that whereas the food, beverage and tobacco processing industries (ISIC 311-314) accounted for 53 per cent of non-oil/gas MVA in 1963, their share had fallen to approximately 30 per cent by 1985.³ The share of rubber processing industries (ISIC 355) in total MVA suffered a similar decline from 17.1 per cent to 2.9 per cent during 1963-85. The wood products industry (ISIC 331) was the only segment of the agricultural processing industry to increase its contribution to non-oil/gas MVA, from 1.9 per cent in 1963 to 9.8 per cent in 1985.

The loss of output share by the agricultural processing industries was offset by a broadly based expansion of most other industrial branches, with particularly strong growth being recorded by a number of heavy industries. The share of the basic metals industry (ISIC 37) thus grew from negligible levels in 1963 to 7.8 per cent in 1985, while the share of the transport equipment industry (ISIC 384) increased from 1.1 per cent to 5.7 per cent during the same period. More generally, the data in Table I.2 show that the share of light industry in non-oil/gas MVA fell from

³ The 1986 industrial census in fact refers to 1985 for medium- and large-scale firms, and to 1986 for small scale firms. In order to assure comparability, the data for small-scale enterprises have also been adjusted back to 1985 in Table I.2. The column for the 1986 industrial census in the Table thus refers to 1985.

84.8 per cent to 62.2 per cent between 1963 and 1985, while the shares of heavy processing and heavy engineering industries rose from 9.4 per cent to 24.5 per cent and from 5.8 per cent to 13.3 per cent, respectively, during the same period.

Table 2.2 Composition of manufacturing output, 1963, 1975 and 1985^{a/}
(Percentage of total, excluding oil and gas)

ISIC	Industry	1963	1975	1985
311	Food products	34.1	17.4	9.3
312			6.2	4.0
313	Beverages	1.3	2.0	1.3
314	Tobacco	17.6	15.4	15.7
321	Textiles	8.3	11.2	11.0
322	Garments	0.8	0.3	2.2
323	Leather products	0.2	0.2	0.4
324	Footwear	-	1.0	0.6
331	Wood products	1.9	3.1	9.8
332	Furniture	0.3	0.5	0.8
341	Paper products	1.3	1.1	1.4
342	Printing and publishing	2.2	2.2	2.2
351	Basic chemicals }		4.0	4.9
352	Other chemicals }	3.6	4.4	4.9
355	Rubber products	17.1	11.7	2.9
356	Plastics ^{b/}	-	0.8	1.4
361	Pottery and china }		0.1	0.3
362	Glass products }		0.4	1.2
363	Cement }	4.5	2.9	3.2
364	Structural clay products }		0.4	0.5
369	Other non-metallic minerals }		0.1	0.3
37	Basic metals	-	0.3	7.8
381	Metal products	3.0	3.7	3.9
382	Non-electric machinery	1.1	1.1	0.8
383	Electrical equipment	0.6	3.6	2.8
384	Transport equipment	1.1	5.7	5.7
385	Professional equipment	-	0.1	0.1
39	Miscellaneous	0.9	0.4	0.6
Total		100.0	100.0	100.0
-	Light industry ^{c/}	84.8	72.1	62.2 ^{d/}
-	Heavy processing ^{c/}	9.4	13.7	24.5 ^{d/}
-	Heavy engineering ^{c/}	5.8	14.2	13.3 ^{d/}

Source: Hill, Hal, "Indonesia's Industrial Transformation, Part I", *Bulletin of Indonesian Economic Studies*, vol. 26, No. 2, August 1990, Table 2, p. 87.

a/ Include firms with a workforce of at least five persons in 1975 and 1986. Data for 1963 refer to firms with a workforce of at least five persons, except for firms with 5-9 workers but not using power.

b/ Data for 1963 included in "Basic and Other chemicals".

c/ Defined as follows: light industry - ISIC 31, 32, 33, 342, 355, 356, 39; heavy processing industry - ISIC 341, 351, 352, 36, 37; heavy engineering industry - ISIC 38.

d/ These shares alter dramatically if oil and gas are included, i.e. the share of light industry and heavy engineering are reduced to 46.2 per cent and 9.8 per cent respectively, while that of heavy processing rises to 44 per cent.

A fuller time series of branch-specific MVA data for the latter half of the 1980s yielded by the annual survey of medium- and large-scale manufacturing establishments is presented in Table I.3. This shows that the process of structural change has continued in recent years as the government has stepped up its efforts to stimulate the growth of new non-oil/gas industries in response to the decline in oil prices of the first half of the decade. This change has manifested itself particularly

Table I.3. Manufacturing value added, 1980-1990
(Percentage share)

ISIC	1980	1981	1982	1983	1984	1985 ^{a/}	1986	1987	1988	1989	1990	1991
311	9.5	11.0	10.3	10.2	8.6	10.7	8.6	8.1	9.5	7.4	12.2	12.3
312	1.5	1.6	1.5	1.7	2.1	2.7	3.6	3.1	3.0	4.3	2.8	2.6
313	1.5	1.4	1.8	2.3	1.8	1.2	1.2	1.1	1.1	0.7	0.8	0.7
314	19.1	17.4	16.8	16.7	15.9	11.4	12.9	13.1	11.0	10.4	10.0	9.6
321	12.4	10.6	11.4	10.3	12.7	10.6	12.5	10.9	9.8	12.5	10.2	9.9
322	0.4	0.6	1.1	1.3	1.6	1.6	1.9	1.7	2.1	2.5	3.6	2.8
323	0.2	0.2	0.3	0.3	0.4	0.2	0.4	0.1	0.2	0.1	0.3	0.6
324	0.8	0.4	0.4	0.7	0.5	0.5	0.5	0.4	0.6	0.9	1.5	1.6
331	7.0	7.4	8.2	8.6	7.0	9.4	10.9	12.7	13.3	12.8	10.9	10.8
332	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.9	1.3
341	1.5	0.7	1.0	0.7	0.9	1.7	1.3	2.0	3.0	2.4	3.6	4.5
342	1.5	1.3	1.6	1.4	1.3	1.4	2.1	1.7	1.7	1.4	1.2	1.2
351	4.3	7.0	7.0	6.1	5.6	6.6	5.5	5.5	5.8	4.6	5.3	6.2
352	7.1	6.2	6.3	5.7	6.1	6.0	5.3	5.1	5.0	4.1	4.1	5.1
355	4.8	3.3	3.1	3.7	3.0	5.1	3.2	3.2	4.5	4.6	3.8	3.3
356	0.7	0.7	0.8	1.1	1.5	2.7	1.4	1.6	1.5	1.3	1.7	1.7
361	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.4	0.6	0.8
362	1.1	1.6	1.3	1.3	1.1	1.5	1.4	0.7	0.6	0.5	0.5	0.8
363	5.7	5.4	4.3	4.5	3.7	3.5	3.1	3.3	2.5	1.8	2.3	2.5
364	0.1	0.2	0.1	0.2	0.1	0.3	0.3	0.2	0.2	0.2	0.1	0.1
369	0.1	0.1	0.1	0.2	0.1	0.3	0.3	0.3	0.3	0.2	0.4	0.5
371	3.1	2.9	2.3	5.9	11.0	7.2	8.5	10.0	8.3	8.3	8.9	5.8
381	3.5	3.1	4.6	4.6	3.9	4.3	4.0	4.1	5.5	6.6	3.1	3.1
382	1.6	1.6	1.8	1.4	1.4	1.2	0.8	1.0	1.0	1.0	1.3	1.9
383	5.3	4.6	5.4	4.0	3.4	3.8	3.0	2.6	2.3	2.7	2.7	3.1
384	6.4	10.2	7.6	6.3	5.5	5.1	6.1	6.3	6.0	6.9	6.6	6.8
385	0.1	-	-	-	-	0.1	-	0.1	0.1	0.1	0.1	0.1
390	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.6	0.5	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Light industry ^{b/}	60.0	56.2	57.7	58.7	56.8	58.2	59.9	58.5	59.2	60.2	60.6	58.9
Heavy processing ^{b/}	23.2	24.2	22.8	24.9	29.0	27.4	26.1	27.5	26.0	22.6	25.7	26.1
Heavy engineering ^{b/}	16.8	19.6	19.4	16.3	14.2	14.4	14.0	14.1	14.9	17.2	13.7	14.9

Source: Government of Indonesia, Central Bureau of Statistics, *Statistik Industri*, various issues.

a/ Census.

b/ Defined as follows: light industry - ISIC 31, 32, 33, 34, 35, 36, 39; heavy processing industry - ISIC 341, 351, 352, 36, 37; heavy engineering industry - ISIC 38.

clearly in a significant, albeit gradual, reduction in the share of heavy processing industries between 1984 and 1989, with the difference being made up in almost equal measure by light industries and heavy engineering industries, both of which received considerable government support during this period. The data for 1990 and 1991 suggest a reversal of this pattern, however, as increased investments in the paper, chemicals and basic metals industries prompted a renewed increase in the share of the heavy processing segment of the manufacturing sector.

C. INDUSTRIAL EMPLOYMENT

The total share of manufacturing employment still remains relatively small in Indonesia, reflecting the fact that the country embarked upon the industrialization process only comparatively recently. The agricultural sector remains the principal source of employment for the Indonesian labour force, and has accounted for almost one-third of the new employment opportunities created since 1970. The largely informal trade sector and public services also remain a major source of employment, although the jobs they provide are frequently characterized by low levels of productivity. With the agricultural sector's absorptive capacity rapidly approaching its limit, there is a growing awareness in Indonesia that the manufacturing sector must play a leading role in generating high-productivity jobs.

Employment data collected by the Central Bureau of Statistics in its periodic population censuses and labour force surveys reveal a steadily rising trend in manufacturing employment, indicating that this development is already taking place. As shown in Table I.4, which compares the results of the 1971, 1980 and 1990 censuses, the share of the active labour force engaged in manufacturing activities increased from 6.5 per cent in 1971 to 11.6 per cent in 1990. The annual average rate of increase in manufacturing employment during this period amounted to 6 per cent, as against an overall employment increase of approximately 2.8 per cent per year.

Table I.4. Employment^{a/} by main industry, 1971, 1980 and 1990

Main industry	1971		1980		1990	
	Million	Percentage	Million	Percentage	Million	Percentage
Agriculture, forestry, hunting and fishery	26.5	64.2	28.0	54.8	35.5	50.1
Mining and quarrying	0.1	0.2	0.4	0.7	0.7	1.0
Manufacturing	2.7	6.5	4.4	8.5	8.2	11.6
Electricity, gas and water	0.0	0.1	0.1	0.2	0.1	0.1
Construction	0.7	1.6	1.6	3.1	2.8	4.0
Wholesale and retail trade and restaurants	4.3	10.3	6.6	12.9	10.6	15.0
Transportation, storage and communications	1.6	2.3	1.5	2.9	2.7	3.8
Finance, insurance, real estate and business services	0.1	0.2	0.2	0.4	0.5	0.7
Public services	4.1	10.0	7.7	15.1	9.7	13.7
Others	1.9	4.6	0.7	1.4	0.0	0.0
Total	41.3	100.0	51.2	100.0	70.8	100.0

Source: Government of Indonesia, Central Bureau of Statistics, *Statistical Yearbook of Indonesia*, various issues.

a. Refer to population 10 years of age and above who worked during the week previous to the census.

Not surprisingly, the vast majority of the available employment opportunities within the manufacturing sector have been created by the cottage and small-scale enterprises that continue to dominate the sector numerically. The findings of the 1986 industrial census show that approximately 1.4 million cottage industries accounted for about 2.7 million of the 5.2 million persons engaged in the manufacturing sector, with the 94,500 small-scale enterprises enumerated by the census accounting for a further 770,000 workers. The medium- and large-scale enterprises, which together numbered less than 12,800, accounted for the remaining 1.7 million employees.

Table 1.5 provides a breakdown of employment patterns by industrial branch yielded by the industrial censuses of 1963, 1975 and 1986. These data, which do not take household or cottage enterprises into account, reveal that the largest contribution to labour absorption is made by the traditional labour intensive industries, such as food processing, tobacco products, textiles, garments and wood products. They show further that the share of labour employed in the tobacco processing and textile industries has declined dramatically since the 1960s as these industries have been subject to an increasing degree of mechanization. The share of employment accounted for by the rubber processing industry also declined sharply, reflecting the decline in the industry itself. By contrast, the share of workers employed in the garments, wood products and furniture industries increased between the mid-1970s and the mid-1980s in line with the rapid expansion of these industries during this period.

More recent employment data for medium- and large-scale enterprises derived from the annual industrial surveys are presented in Table 1.6. While indicating a steady and rapid growth in the overall number of workers employed in these enterprises, they also show branch-specific shifts in employment patterns that are, to a large extent, consistent with the longer term trends revealed by the comparison of the 1963, 1975 and 1986 industrial censuses discussed above. In particular, they confirm the continuing decline in the share of industrial employment accounted for by the tobacco processing and textile industries, and the growing importance of the garments and woodworking industries as sources of employment, even though the share of the latter has suffered a slight contraction in 1990-91. Similarly, the contribution of the rubber products industry to employment showed some signs of recovery in the latter half of the 1980s, largely as a result of a move into downstream activities, including the manufacture of a wide range of non-tyre finished goods, but suffered a setback in 1991.

The annual labour force surveys conducted by the Central Bureau of Statistics, which *inter alia* enquire into the educational achievements of their respondents, suggest that the educational and skill levels of Indonesia's industrial labour force are still fairly rudimentary. A summary of these surveys is presented in Table 1.7, which highlights three basic facts. The first is that a very high proportion of the industrial work force has few, if any, formal educational qualifications. The second is a rapid improvement in the educational standards of the industrial labour force between the mid-1970s and late 1980s, reflecting both the development of the educational infrastructure and the more exacting manpower needs of a more sophisticated manufacturing sector. The third is a worrying slowdown of this process in 1991-92, which has also been confirmed by declining enrolments in educational establishments, as the short term opportunity costs of pursuing educational qualifications, in terms of high school fees and foregone earnings, prompt an increasing number of young people to forego post-primary education.

Table I.5. Distribution of manufacturing employment, 1963, 1975 and 1986^{a/}
(Percentage of total, excluding oil and gas)

ISIC	Industry	1963	1975	1986
311}	Food products	25.3	21.1	13.5
312}			9.8	8.0
313	Beverages	0.8	0.6	0.7
314	Tobacco	18.0	11.2	12.1
321	Textiles	27.3	18.2	14.4
322	Garments	0.8	0.8	5.2
323	Leather products	0.5	0.2	0.4
324	Footwear	-	0.6	1.0
331	Wood products	2.3	4.4	9.2
332	Furniture	1.0	1.8	2.6
341	Paper products	0.8	0.7	1.1
342	Printing and publishing	2.8	2.1	2.3
351	Basic chemicals	2.9	0.9	1.6
352	Other chemicals }		2.9	3.0
355	Rubber products	7.3	8.0	3.9
356	Plastics ^{b/}	-	1.2	2.4
361	Pottery and china }		0.3	0.5
362	Glass products }		0.5	0.4
363	Cement }	3.7	2.4	2.8
364	Structural clay products }		3.0	3.5
369	Other non-metallic minerals }		0.2	0.4
37	Basic metals	-	0.2	0.7
381	Metal products	2.5	3.7	3.5
382	Non-electric machinery	0.7	0.8	0.8
383	Electric equipment	0.3	1.4	1.7
384	Transport equipment	2.1	2.3	2.9
385	Professional equipment	-	0.1	0.1
39	Miscellaneous	1.1	0.7	1.4
Total		100.0	100.0	100.0
(Thousand)		(900.3)	(1,468.5)	(2,685.3)
-	Light industry ^{c/}	87.0	80.6	77.0
-	Heavy processing ^{c/}	7.4	11.1	14.0
-	Heavy engineering ^{c/}	5.6	8.3	9.0

Source: Hill, Hal, "Indonesia's Industrial Transformation, Part I", *Bulletin of Indonesian Economic Studies*, vol. 26, No. 2, August 1990, Table 2, p. 87.

- a/ Include firms with a workforce of at least five persons in 1975 and 1986. Data for 1963 refer to firms with a workforce of at least five persons, except for firms with 5-9 workers but not using power.
- b/ Data for 1963 included in "Basic and Other chemicals".
- c/ Defined as follows: light industry - ISIC 31, 32, 33, 342, 355, 356, 39; heavy processing industry - ISIC 341, 351, 352, 36, 37; heavy engineering industry - ISIC 38.

Table I.6. Manufacturing employment, 1980-1990
(Percentage share)

ISIC	1980	1981	1982	1983	1984	1985 ^{a/}	1986	1987	1988	1989	1990	1991	
311	Food products	12.7	12.0	11.3	11.3	10.5	13.0	13.0	12.8	12.0	11.0	10.3	9.7
312	Food products	3.2	3.4	3.2	3.2	3.3	5.0	5.3	5.6	5.4	5.0	4.6	5.0
313	Beverages	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.6
314	Tobacco	16.4	15.6	15.1	15.0	14.0	12.2	11.8	11.3	9.9	9.5	7.7	6.2
321	Textiles	23.9	23.2	21.8	20.2	20.1	17.7	13.3	18.2	17.2	17.6	15.6	16.0
322	Garments	1.6	2.0	2.3	2.6	3.0	4.1	3.9	4.5	5.2	5.7	9.1	9.3
323	Leather products	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.5	0.7
324	Footwear	0.8	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.8	1.1	2.2	4.3
331	Wood products	6.1	6.5	8.6	10.1	13.9	10.0	10.0	11.0	13.4	14.0	12.3	11.4
332	Furniture	0.6	0.5	0.5	0.5	0.5	0.7	0.8	0.8	1.1	1.2	3.0	3.4
341	Paper products	1.2	1.3	1.4	1.3	1.1	1.3	1.5	1.5	1.5	1.5	1.6	2.0
342	Printing and publishing	2.1	2.1	2.1	2.0	1.8	2.1	2.2	2.0	1.8	1.7	1.6	1.4
351	Basic chemicals	1.4	1.6	1.9	1.9	1.9	2.2	2.1	2.0	1.9	1.8	1.9	1.7
352	Other chemicals	4.2	4.5	4.6	4.7	4.4	4.0	4.0	3.9	3.6	3.4	3.2	2.9
355	Rubber products	3.8	3.8	3.6	3.4	3.3	5.6	5.4	5.4	5.8	5.7	6.2	4.6
356	Plastics	1.8	2.0	2.3	2.6	2.6	2.9	3.0	3.0	3.0	3.1	3.1	3.5
361	Pottery and china	0.7	0.7	0.8	0.8	0.9	0.7	0.7	0.7	0.8	0.8	0.9	1.0
362	Glass products	0.9	0.9	1.0	0.9	0.8	0.6	0.6	0.6	0.6	0.5	0.5	0.6
363	Cement	2.1	2.2	2.1	2.2	2.0	2.1	1.7	1.8	1.6	1.5	1.3	1.3
364	Structural clay products	0.8	0.9	0.9	0.8	0.7	1.4	1.3	1.1	1.1	1.0	0.8	0.8
369	Other non-metallic minerals	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.4	0.6	1.0	0.7	0.6
371	Basic metals	0.9	0.9	0.9	1.1	1.2	0.9	1.0	0.9	1.0	0.9	1.2	1.3
381	Metal products	4.2	4.4	4.2	4.0	3.6	3.5	3.5	3.4	3.3	3.2	3.0	3.2
382	Non-electrical machinery	1.2	1.3	1.2	1.1	1.1	1.0	1.0	0.9	0.8	0.9	1.1	1.1
383	Electrical equipment	3.9	3.8	3.5	3.3	3.1	2.6	2.3	2.2	2.2	2.3	2.2	2.5
384	Transport equipment	3.1	3.6	4.2	4.1	3.6	3.4	3.8	3.7	3.3	3.4	3.3	3.3
385	Professional equipment	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1
390	Miscellaneous	0.6	0.6	0.1	0.7	0.7	0.7	0.8	0.8	1.0	1.0	1.1	1.5
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Light industry ^{b/}		74.8	73.5	73.1	73.3	75.3	75.6	75.8	76.7	77.5	77.6	78.0	77.7
Heavy processing industry ^{b/}		12.6	13.4	13.8	14.0	13.3	13.7	13.5	12.9	12.7	12.5	12.2	12.2
Heavy engineering industry ^{b/}		12.5	13.1	13.1	12.7	11.4	10.6	10.7	10.4	9.8	9.9	9.8	10.2

Source: Government of Indonesia, Central Bureau of Statistics, *Statistik Industri*, various issues.

a/ Census.

b/ Defined as follows: light industry - ISIC 31, 32, 33, 342, 355, 356, 39; heavy processing industry - ISIC 341, 351, 352, 36, 37; heavy engineering industry - ISIC 38.

Table 1.7. Industrial labour force by education, 1976-1992, selected years
(Percentage share)

Educational achievement	1976	1980	1982	1985	1988	1989	1990	1991	1992
No schooling	30.3	23.9	24.8	17.8	10.1	11.9	11.4	9.1	9.1
Not completed elementary school	37.6	37.6	33.3	32.3	22.4	23.6	21.4	19.0	19.0
Elementary school	23.6	25.3	29.1	31.5	38.6	39.1	38.3	39.0	38.8
Junior High School	5.2	7.0	6.7	9.0	13.1	12.7	13.8	15.4	16.0
General	4.1	5.3	5.0	7.3	11.2	11.2	12.0	13.5	14.0
Vocational	1.1	1.7	1.7	1.8	1.9	1.6	1.8	1.9	2.0
Senior High School	3.0	5.6	5.6	8.6	14.3	11.9	13.6	16.0	15.5
General	1.6	2.9	2.4	4.5	8.5	7.1	8.1	9.4	9.0
Vocational	1.4	2.8	3.2	4.1	5.8	4.8	5.6	6.6	6.5
Diploma and academy	0.2	0.3	0.2	0.5	1.0	0.6	0.8	0.9	0.9
University	0.1	0.2	0.2	0.3	0.4	0.2	0.6	0.7	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Primary or less	91.5	86.8	87.3	81.5	71.1	74.6	71.2	67.1	66.9
Secondary	8.2	12.6	12.3	17.7	27.4	24.7	27.5	31.4	31.5
Tertiary	0.3	0.5	0.4	0.8	1.5	0.8	1.4	1.6	1.6

Source: Government of Indonesia, Central Bureau of Statistics, *Statistical Pocketbook of Indonesia*, various issues.

As late as 1976 more than 90 per cent of the workers in industrial enterprises had at best a primary education, with 30 per cent having had no schooling at all. By 1991, however, the share of wholly uneducated workers had fallen to approximately 9 per cent, although more than 50 per cent of the work force had still only had a primary education, which in many cases had not even been completed. Meanwhile, the share of the workforce with a secondary education rose from 8 per cent in 1976 to 31.5 per cent by 1992. A closer analysis of the data reveals, however, that a substantial majority of the high school graduates employed in manufacturing activities in 1990 had attended general curriculum schools, with only about one-third having attended vocational schools. Finally, the share of industrial employees with a tertiary education remained very small at 1.6 per cent in 1992, even though this figure represented a more than fivefold increase over 1976.

There are no legal and few cultural restrictions on the active participation of women in the economic and industrial development process in Indonesia. The available quantitative information on the role of women in manufacturing industry, derived from population censuses and labour force surveys, indicates that women play a significant part in manufacturing activities. As shown in Table 1.8, the share of female employment in all manufacturing activities has consistently ranged between about 45 per cent and 50 per cent since the early 1970s. However, women play a particularly prominent role as unpaid family labour in cottage and household enterprises, and account for some 70-80 per cent of all such labour. They also play a significant role as employers and own-account workers, accounting for approximately half of the total labour force in this category. Even so, the share of women in paid employment has not exceeded one-third of the total since the early 1970s.

One explanation for the data presented in Table 1.8 is the fact that female employment has traditionally been concentrated in the informal sector. This is reflected particularly obviously in the high share of females in the "unpaid family workers" category, which by definition refers to the predominantly informal cottage and household segments of the industrial sector. In addition,

however, it is also an important determinant of the relatively large proportion of women in the "own-account workers" category, which includes the large number of women involved in small-scale food processing and handicrafts activities.

Table I.8. Industrial labour force by status and sex, 1971-1992, selected years
(Percentage share)

	1971	1976	1978	1980	1982	1985	1986	1988	1989	1992
Employers and own account workers	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Male	53.5	52.2	39.9	52.1	37.5	50.5	45.7	47.2	46.6	46.9
Female	56.5	47.8	55.1	47.9	62.4	49.5	54.3	52.8	53.4	53.1
Paid employees and wage earners	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Male	66.5	67.5	64.5	64.6	63.0	65.4	68.0	66.8	65.3	62.3
Female	33.5	32.5	35.5	35.4	37.0	34.6	32.0	33.2	34.7	37.7
Family workers	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Male	19.8	25.0	24.5	27.2	25.2	25.2	26.1	25.6	26.4	24.5
Female	80.2	75.0	75.5	72.8	74.8	74.8	73.9	74.4	73.6	75.5
Others	-	100.0	-	100.0	-	100.0	100.0	-	-	-
Male	-	19.5	-	53.8	-	70.8	78.9	-	-	-
Female	-	80.5	-	46.2	-	29.2	21.1	-	-	-
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Male	51.8	52.9	50.2	55.2	52.1	54.7	55.2	55.1	53.5	53.0
Female	48.2	47.1	49.8	44.8	47.9	45.3	44.8	44.9	46.5	47.0

Sources: ILO, *Yearbook of Labour Statistics*, various issues, Table 2A.

While employment in formal sector industrial enterprises remains largely male dominated, a number of recent developments suggest that the involvement of women in the formal sector may increase significantly in the foreseeable future. The structural transformation currently in progress in Indonesia's industrial sector is opening new opportunities for women to participate in a variety of rapidly growing light industries such as those involved in the manufacture of textiles, electronics and high-quality handicrafts, and in the processing of food, beverages and tobacco, which traditionally tend to absorb more female than male labour. In addition, many factories are relocating from urban centres to rural areas and special export processing zones, where they can draw on the female population of surrounding villages to meet their labour requirements.

The data on the numerical breakdown of industrial employment by male and female workers presents only a partial picture of the role of women in Indonesian industry. A recently prepared UNIDO country memorandum on Indonesia notes that:

"More than half of the working women work part-time in Indonesia, and most women are in low-status, low-paying jobs since they lack the skills and educational qualifications for better jobs. Women at managerial and decision-making levels are very few. Even when educational qualifications are the same, however, women are paid far less, on average, than males. The sex differential

is greatest among women workers with the least formal education, but even among academy and university graduates males earn 40 per cent more than their female co-workers. The same pattern holds when male and female workers are matched for hours of work, type of occupation and field of work.^{4/}

D. PRODUCTIVITY AND PERFORMANCE

Data collected by the annual industrial surveys of the Central Bureau of Statistics, and reproduced here in Table I.9, show that the share of value added in the gross output of the manufacturing sector as a whole has remained approximately constant throughout the 1980s and early 1990s, fluctuating in a narrow band between approximately 29 per cent and 33 per cent. While this relatively low ratio at the aggregated level suggests that the Indonesian manufacturing industry has a comparatively high physical input cost structure, it conceals significant branch-specific variations. In particular, the MVA/output ratios in the food processing (ISIC 311), leather products and plastics industries have historically been substantially lower than the overall average, while those of the footwear, furniture, pottery and china, and non-metallic minerals industries tend to be substantially higher. At least in the case of food processing, however, this pattern has begun to shift since 1990.

As argued by Hill, "Indonesia's industrial diversity is nowhere better illustrated than in the range of labour productivities across industries".^{5/} This is highlighted by the data in Table I.10, which show a wide dispersion of inter-industry productivity even within the non-oil/gas components of manufacturing industry. Year-to-year fluctuations notwithstanding, the range of these labour productivities stretches from approximately one-fifth of the average for all non-oil/gas manufacturing activities to 9-10 times that average.

The data presented in Table I.10 allow two categories of manufacturing industry to be distinguished, with high value added industries on the one hand and industries with relatively low levels of labour productivity on the other. The former category comprises industries with a high physical capital intensity, high skill requirements and/or a significant degree of product differentiation, and includes the basic metals, basic chemicals, cement, engineering and beverage industries. The latter category consists of essentially labour-intensive industries, and includes the textiles, garments, furniture, footwear, non-metallic minerals (building materials) and miscellaneous manufactures (such as jewellery, sporting goods and musical instruments) industries.

^{4/} UNIDO, *Women in Industry - Country Information: Indonesia*, Update September 1992, p. 4.

^{5/} Hill, H., "Indonesia's Industrial Transformation - Part I", *Bulletin of Indonesian Economic Studies*, Vol. 26, No. 2, p. 88.

Table I.9. Share of manufacturing value added in gross output by ISIC, 1984-1991
(Percentage)

ISIC	Products	1984	1985 ^{a/}	1986	1987	1988	1989	1990	1991
311	Food products	22.3	25.5	22.1	19.6	22.2	19.7	33.7	36.8
312	Food products	22.4	26.2	31.3	26.0	24.3	33.2	30.7	27.5
313	Beverages	44.8	36.0	37.6	37.0	34.7	27.0	42.5	36.1
314	Tobacco	29.7	25.0	35.4	37.3	37.8	30.6	39.3	46.8
321	Textiles	34.1	31.9	34.6	28.6	25.0	29.6	29.5	26.7
322	Garments	41.9	33.9	37.7	29.6	30.9	33.9	35.0	28.1
323	Leather products	37.5	31.4	47.9	20.1	20.1	17.8	31.4	37.1
324	Footwear	42.7	45.7	50.9	47.0	41.5	47.6	48.8	34.5
331	Wood products	28.5	35.4	38.2	35.1	31.6	33.8	33.9	32.7
332	Furniture	39.4	39.3	41.1	36.3	38.7	38.4	36.1	37.1
341	Paper products	22.4	29.7	22.7	23.4	29.2	24.4	33.1	37.1
342	Printing and publishing	40.2	38.5	42.0	38.3	37.6	33.1	29.1	31.1
351	Basic chemicals	34.0	32.3	31.0	28.8	32.9	30.2	28.6	34.2
352	Other chemicals	38.1	35.4	31.6	32.2	31.3	29.2	30.2	33.9
355	Rubber products	16.0	27.6	21.3	17.4	20.9	28.1	27.6	27.4
356	Plastics	28.3	39.0	21.7	20.2	16.8	16.7	27.5	25.1
361	Pottery and china	37.2	39.1	43.1	37.6	36.4	39.3	38.1	44.2
362	Glass products	39.4	49.8	50.2	25.9	25.2	25.4	29.6	39.5
363	Cement	36.8	32.0	31.3	35.0	31.4	26.2	35.0	37.0
364	Structural clay products	48.1	45.5	45.5	38.8	39.4	37.0	39.8	37.4
369	Other non-metallic minerals	37.0	46.4	54.2	55.1	46.1	48.8	41.4	42.6
371	Basic metals	50.3	45.2	50.0	54.7	59.6	38.0	36.0	28.8
381	Metal products	27.8	29.5	27.7	27.8	28.7	36.0	27.8	30.5
382	Non-electric machinery	42.2	35.8	33.7	34.5	30.7	32.2	31.1	36.8
383	Electrical equipment	21.2	29.5	27.5	23.7	18.4	22.2	23.5	27.2
384	Transport equipment	29.6	33.4	30.6	36.4	32.8	32.4	31.2	29.6
385	Professional equipment	40.1	31.4	28.2	24.2	21.2	21.1	31.8	25.3
390	Miscellaneous	25.6	29.7	31.0	29.5	33.1	34.3	33.5	35.8
Total		30.6	31.3	32.3	30.5	28.9	29.7	32.4	32.6
	Light industry ^{b/}	28.1	29.3	31.5	28.4	27.5	28.8	33.2	32.8
	Heavy processing industry ^{b/}	39.9	36.5	36.2	36.1	33.7	31.4	32.7	33.9
	Heavy engineering industry ^{b/}	27.4	31.3	29.2	30.4	27.8	31.3	28.6	29.9

Source: Government of Indonesia, Central Bureau of Statistics, *Statistik Industri*, various issues.

a/ Census.

b/ Defined as follows: light industry - ISIC 31, 32, 33, 342, 355, 356, 39; heavy processing industry - ISIC 341, 351, 352, 36, 37; heavy engineering industry - ISIC 38.

Table I.10. Labour productivity (manufacturing value added per employee) by ISIC, 1984-1991
(Index, average = 100)

ISIC	Products	1984	1985 ^{a/}	1986	1987	1988	1989	1990	1991
311	Food products	81.1	82.3	66.5	63.4	78.8	67.6	118.9	126.5
312	Food products	64.6	54.1	67.1	54.7	55.2	86.7	61.6	52.2
313	Beverages	247.2	173.3	167.8	170.3	174.9	131.3	178.1	129.1
314	Tobacco	113.6	93.9	109.6	115.4	110.9	109.9	129.5	155.6
321	Textiles	63.0	59.7	68.4	59.6	57.0	71.1	65.1	62.0
322	Garments	52.8	39.4	49.8	38.9	41.0	44.1	39.7	30.4
323	Leather products	144.1	79.9	148.6	57.8	68.0	45.1	68.5	87.0
324	Footwear	95.3	89.1	97.1	88.3	75.1	76.4	66.8	36.3
331	Wood products	50.4	94.0	109.7	116.0	99.4	91.1	88.7	94.3
332	Furniture	35.2	37.1	42.1	37.8	39.8	38.3	30.5	36.8
341	Paper products	78.0	132.7	88.4	138.0	201.3	160.7	221.2	225.7
342	Printing and publishing	72.2	68.2	93.9	85.7	91.6	81.1	71.0	80.0
351	Basic chemicals	288.9	300.7	255.0	270.5	301.7	250.1	278.9	365.1
352	Other chemicals	139.6	147.9	131.2	131.8	137.6	121.1	128.1	176.4
355	Rubber products	88.7	90.5	58.9	60.2	78.4	81.9	61.3	71.5
356	Plastics	57.8	92.0	47.6	52.9	48.6	42.6	56.1	49.5
361	Pottery and china	35.8	50.5	53.9	46.4	49.0	56.6	63.1	75.6
362	Glass products	132.3	242.0	235.9	117.8	105.6	94.9	97.6	117.1
363	Cement	186.9	171.5	179.3	185.5	150.8	121.0	176.0	196.7
364	Structural clay products	17.0	18.2	20.1	17.4	18.2	16.4	15.0	16.9
369	Other non-metallic minerals	50.6	56.3	73.2	68.9	41.3	23.7	54.3	74.1
371	Basic metals	944.9	778.3	851.9	1,066.6	872.6	880.9	721.9	461.2
381	Metal products	108.4	121.5	115.2	120.2	167.8	204.7	101.2	97.7
382	Non-electrical machinery	127.3	118.4	84.8	112.2	122.5	113.7	110.1	168.0
383	Electrical equipment	109.6	146.3	131.9	118.7	103.2	113.5	118.8	125.4
384	Transport equipment	155.0	149.2	158.4	169.4	179.3	206.1	202.8	205.7
385	Professional equipment	28.7	46.5	33.8	36.7	49.3	43.4	55.4	55.7
390	Miscellaneous	51.3	51.9	51.7	49.9	47.1	59.6	42.4	38.0
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
	Light industry ^{b/}	75.5	76.9	79.0	76.2	76.3	77.6	77.7	75.9
	Heavy processing industry ^{b/}	218.0	199.8	193.8	212.2	204.8	180.8	210.8	215.0
	Heavy engineering industry ^{b/}	124.2	135.2	130.5	135.6	151.8	173.2	139.4	146.5

Source: Government of Indonesia, Central Bureau of Statistics, *Statistik Industri*, various issues.

a/ Census.

b/ Defined as follows: light industry - ISIC 31, 32, 33, 342, 355, 356, 39; heavy processing industry - ISIC 341, 351, 352, 36, 37; heavy engineering industry - ISIC 38.

The inter-temporal growth of labour productivity in the non-oil/gas manufacturing industries is more difficult to ascertain, not least because of difficulties associated with the choice of deflator. An approximation of this growth is presented in Table I.11, however, which shows that the 1983-based index rose to almost 285 in nominal terms by 1990, and to about 155-165 in real terms, depending upon whether the implicit deflator for non-oil/gas manufacturing yielded by the national accounts data or whether the implicit deflator for GDP as a whole was employed. These data reveal a particularly rapid growth of labour productivity in the paper products, food products, textiles, pottery and china, basic metals, transport equipment and professional equipment industries, as new investments raised their capital intensity and the sophistication of the production processes employed in them.

Table I.11. Growth of labour productivity by ISIC, 1990
(Index, 1983 = 100)

ISIC	Products	Nominal 1990	Deflated by implicit deflator for non-oil/ gas manufacturing from national accounts data 1990	Deflated by GDP deflator 1990
311	Food products	373.8	202.7	218.1
312	Food products	324.7	176.1	189.5
313	Beverages	162.3	88.0	94.7
314	Tobacco	330.5	179.3	192.9
321	Textiles	361.9	196.3	211.2
322	Garments	227.7	123.5	132.9
323	Leather products	182.5	99.0	106.5
324	Footwear	161.9	87.8	94.5
331	Wood products	296.4	160.7	173.0
332	Furniture	251.3	136.3	146.6
341	Paper products	1,077.3	584.3	628.7
342	Printing and publishing	289.4	157.0	168.9
351	Basic chemicals	242.3	131.4	141.4
352	Other chemicals	295.9	160.5	172.7
355	Rubber products	163.6	88.8	95.5
356	Plastics	377.7	204.8	220.4
361	Pottery and china	441.5	239.5	257.7
362	Glass products	187.6	101.8	109.5
363	Cement	244.9	132.8	142.9
364	Structural clay products	227.2	123.2	132.6
369	Other non-metallic minerals	275.5	149.4	160.8
371	Basic metals	397.0	215.3	231.7
381	Metal products	254.4	138.0	148.4
382	Non-electrical machinery	247.4	134.2	144.4
383	Electrical equipment	283.4	153.7	165.4
384	Transport equipment	375.7	203.8	219.3
385	Professional equipment	453.1	245.8	264.4
390	Miscellaneous	315.0	170.9	183.8
Total		284.1	154.1	165.8
Light industry ^{a/}		275.6	149.5	160.8
Heavy processing industry ^{a/}		335.1	181.8	195.6
Heavy engineering industry ^{a/}		308.6	167.4	180.1

Source: Computed from industrial and national accounts data published by the Government of Indonesia, Central Bureau of Statistics.

a/ Defined as follows: light industry - ISIC 31, 32, 33, 342, 355, 356, 39; heavy processing industry - ISIC 341, 351, 352, 36, 37; heavy engineering industry - ISIC 38.

At the same time, several branches suffered declining labour productivity in real terms. In the case of the beverages and leather products industries this reflected a long-term secular trend, apparently related to structural shifts in demand. In the case of cement and non-metallic minerals the reasons are more likely to have been cyclical, as a temporary weakening of demand in the construction industry resulted in a reduction of output in the building materials industry without a corresponding reduction in the number of workers employed.

Reliable estimates of corporate profitability are extremely difficult to obtain in Indonesia, mainly because most firms are privately owned and structured as highly complex groups of enterprises. Financial statistics are therefore frequently not released at all or, if published, are lacking in transparency. Even the large wave of corporate equity flotations following the liberalization of the domestic capital market regulations since the late 1980s has done little to improve this situation.

An impression of the overall profitability of Indonesian industry can, however, be gleaned from the data collected by the surveys of medium- and large-scale non-oil/gas manufacturing enterprises conducted by the Central Bureau of Statistics and presented here in Table I.12. These data show that the share of gross profits in MVA increased gradually but steadily from 73 per cent in 1983 to almost 80 per cent in 1990, before falling back to about 78 per cent in 1991. A more detailed examination of gross profits generated in various branches of manufacturing industry shows this relatively high average figure to be fairly representative of most forms of manufacturing activity. With the exception of garments, footwear, publishing and structural clay products, the share of gross profit in MVA exceeded 60 per cent in all branches in 1991, and in most cases ranged between 70 per cent and 90 per cent.

Table I.12. Share of gross profits in manufacturing value added by ISIC, 1984-1991
(Percentage)

ISIC	Products	1984	1985 ^{a/}	1986	1987	1988	1989	1990	1991
311	Food products	68.2	72.7	68.4	66.9	73.5	67.0	83.5	84.5
312	Food products	69.8	69.3	75.9	72.8	71.9	84.0	76.4	75.4
313	Beverages	82.5	78.3	79.0	81.0	80.8	74.8	82.8	77.1
314	Tobacco	87.9	87.3	89.8	93.1	89.7	90.0	91.3	91.6
321	Textiles	74.4	72.9	77.4	76.3	73.0	80.4	78.7	72.5
322	Garments	64.9	56.5	68.6	60.3	63.2	67.7	65.2	54.8
323	Leather products	85.1	77.3	89.4	72.1	75.6	67.8	80.8	84.1
324	Footwear	63.9	68.7	74.4	71.7	65.5	75.0	37.7	56.3
331	Wood products	62.5	75.0	78.1	80.2	77.3	77.1	77.3	79.0
332	Furniture	46.1	48.7	57.2	55.8	59.3	61.5	57.7	60.0
341	Paper products	62.5	77.8	72.2	81.9	86.9	83.0	87.7	87.9
342	Printing and publishing	53.6	49.9	60.2	58.1	60.7	60.8	58.2	58.2
351	Basic chemicals	79.9	75.6	76.0	78.6	80.7	77.0	80.0	83.6
352	Other chemicals	68.8	67.8	67.5	67.4	66.7	69.4	71.1	77.3
355	Rubber products	66.4	74.2	67.3	58.0	68.4	74.9	69.4	70.9
356	Plastics	70.1	81.6	62.4	66.2	67.3	66.9	75.3	70.2
361	Pottery and china	47.7	58.2	65.9	60.0	61.1	70.2	72.2	77.3
362	Glass products	69.5	83.9	84.4	71.5	68.8	68.9	70.5	75.4
363	Cement	77.0	80.5	80.9	82.7	78.4	78.0	84.5	84.6
364	Structural clay products	46.7	50.3	55.8	52.8	55.1	51.7	50.2	53.2
369	Other non-metallic minerals	60.9	66.5	73.5	74.4	65.6	68.2	73.9	78.2
371	Basic metals	94.5	94.5	93.1	95.7	92.8	93.5	93.6	89.6
381	Metal products	74.9	73.7	74.8	78.5	81.5	88.0	77.4	28.3
382	Non-electrical machinery	75.1	75.2	65.9	72.3	70.9	72.5	73.0	79.3
383	Electrical equipment	68.9	77.2	77.0	75.1	69.1	76.4	75.5	75.3
384	Transport equipment	70.6	71.4	72.6	79.5	79.1	83.0	82.7	82.2
385	Professional equipment	52.7	58.7	45.0	40.8	56.9	62.3	64.6	65.8
390	Miscellaneous	62.4	67.3	65.3	63.8	68.4	71.5	67.0	63.3
Total		76.0	76.3	77.4	78.7	77.6	79.7	79.8	77.9
	Light industry ^{b/}	74.4	75.3	77.0	77.0	75.8	77.8	78.1	77.6
	Heavy processing industry ^{b/}	81.3	79.6	80.3	82.9	81.4	81.8	84.2	83.8
	Heavy engineering industry ^{b/}	71.8	73.8	73.7	77.7	77.8	83.2	79.1	69.1

Source: Government of Indonesia, Central Bureau of Statistics, *Statistik Industri*, various issues.

a: Census

b: Defined as follows: light industry - ISIC 31, 32, 33, 342, 355, 356, 39; heavy processing industry - ISIC 341, 351, 352, 36, 37; heavy engineering industry - ISIC 38

E. OWNERSHIP AND INVESTMENT PATTERNS

Official Indonesian statistics distinguish between seven categories of industrial ownership. Three of these comprise wholly owned enterprises belonging to the government, domestic private businessmen or foreign investors, while a further three refer to joint ventures between any two of these three individual ownership groups. The last category refers to joint ventures involving all three of these groups. The latest comprehensive data on the distribution of ownership among these categories were collected as part of the 1986 industrial census. A comparison of these data, which cover medium- and large-scale enterprises outside the oil/gas sector only, with corresponding data from the earlier industrial censuses is presented in Table I.13. These figures show that the domestic private sector has traditionally accounted for the lion's share of all non-oil/gas manufacturing enterprises, and a significant proportion of the employment and MVA that they have generated. At the same time, however, these data also show that the government does play a significant direct role in the manufacturing sector, with firms owned wholly or partially by the government accounting for 25.5 per cent of the total MVA at the time of the 1986 census. According to Hill, this figure would have been even higher, at about 44 per cent, if the oil and natural gas processing industries had been included in the census data.^{6/}

The role of wholly or partially State-owned enterprises has traditionally been particularly important in the heavier branches of manufacturing industry. This is indicated in Table I.14, which shows that such firms accounted for more than 50 per cent of Indonesia's total output of basic chemicals, oil and natural gas products, basic metals, and non-electrical machinery. This concentration of State ownership in the upstream reaches of the manufacturing sector has prompted one team of analysts to describe its structure as being one of "upstream socialism, downstream capitalism".^{7/}

Within the private sector a dominant role has historically been played by businessmen of ethnic Chinese origin. Most of Indonesia's large conglomerates, which tend to have highly diversified interests in a variety of fields including manufacturing, were founded by such businessmen, who have for the most part retained full or majority ownership over these enterprises. For political reasons, these businessmen have often had to collaborate with influential indigenous Indonesian interests. Until the mid-1980s the most important of these were connected with the military, and included either serving or retired senior officers as well as a number of foundations established by the armed forces. More recently, the focus of this collaboration has shifted to well-connected private entrepreneurs, many of whom have become leading members of Indonesia's business community during the mid-1980s and early-1990s.

Foreign ownership mostly takes the form of limited joint-venture partnerships with Indonesian firms. Overseas investments retaining full foreign ownership were permitted between 1967 and 1974, when several large-scale wholly foreign owned projects were licensed in resource-based industries, such as the mining of copper in Irian Jaya and nickel in South Sulawesi. Growing public disquiet about the threat of excessive foreign control over the Indonesian economy prompted a revision of the foreign investment regulations in 1974, however, as a result of which all new foreign investments had to take the form of joint ventures with private or official Indonesian entities. Since 1990, these regulations have been steadily relaxed and full foreign ownership has again been permitted since June 1994.

^{6/} Hill, H., "Manufacturing Industry", in Booth, A. (ed.), *The Oil Boom and After - Indonesian Economic Policy and Performance in the Soeharto Era*, Oxford University Press, Singapore, 1992, p. 231.

^{7/} Thee Kian Wie and Yoshihara, K., "Foreign and Domestic Capital in Indonesian Industrialization", *Southeast Asian Studies*, Vol. 24, No. 4, 1987, p.343.

Table I.13. Summary of indicators for major ownership groups, 1963, 1974 and 1985^{a/}

	Government	Domestic Private	Foreign	Government/ Domestic Private	Government/ Foreign	Domestic Private/ Foreign	Government/ Domestic Private/ Foreign	Total
Shares (Per cent of all firms)								
1985	Firms	0.9	92.2	0.4	0.6	0.1	2.7	12,909
	Employment	1.0	74.9	1.3	0.4	0.2	7.4	1,684,726
	Value added	0.4	55.8	1.3	0.4	0.5	17.1	Rp 7,153,837
1974	Firms	6.8	87.9	1.4	1.2	0.2	25.0	7,091
	Employment	19.3	68.9	2.6	1.3	0.7	7.3	655,821
	Value added	25.9	47.2	10.8	1.5	2.2	13.3	Rp 478,446
1963	Firms	4.7	95.3					10,586
	Employment	31.1	68.9					527,717
	Power	39.7	60.3					HP ^{b/} 715,520
Indices of relative size (average = 100)								
1985	Value added/firm	40	60	328	64	833	641	794
	Value added/employee	40	75	97	105	244	230	165
	Employees/firm	101	81	339	61	342	279	480
1974	Value added/firm	398	54	756	88	1,091	534	-
	Value added/employee	129	68	418	123	315	183	-
	Employees/firm	285	78	181	106	346	292	-
1963	Power/firm	851	63					
	Power/employee	127	88					
	Employees/firm	668	72					

Source: Hill, Hal. "Indonesia's Industrial Transformation - Part II", *Bulletin of Indonesian Economic Studies*, vol. 26, No. 3, December 1990, Table 13, p. 76.

a/ The data for 1974 and 1985 refer to firms employing at least 20 workers, and exclude oil and gas processing. There is no separate identification of government/private/foreign firms in 1974; presumably they were included in the government group. The 1963 data refer to firms employing at least five workers and using power. No reliable value added data by ownership are provided, so installed power capacity is used.

b/ Horsepower

Table I.14. Ownership by major industry group, 1985^{a/}
(Percentage of each industry's output)

ISIC	Industry	Domestic Private	Government	Foreign	Government (Joint ventures)
311	Food products	61.3	2.2	7.0	29.5
312	Food products	69.4	1.2	18.0	11.4
313	Beverages	35.1	0.1	36.3	28.5
314	Tobacco	94.3	-	5.4	0.3
321	Textiles	61.0	0.8	28.6	10.4
322	Garments	97.7	0.1	1.1	1.1
323	Leather products	76.2	0.6	20.1	3.1
324	Footwear	59.3	-	40.7	-
331	Wood products	73.7	0.5	12.1	13.7
332	Furniture	98.4	-	1.5	0.1
341	Paper products	57.4	-	11.4	31.0
342	Printing and publishing	89.1	4.7	0.4	5.8
351	Basic chemicals	14.4	0.4	8.9	76.3
352	Other chemicals	58.5	0.1	29.4	12.0
353/4	Oil and gas processing	-	43.5	-	56.5
355	Rubber products	83.0	2.1	7.1	7.8
356	Plastics	43.4	-	56.5	0.1
361	Pottery and china	96.0	1.2	2.8	-
362	Glass products	14.7	-	81.0	4.4
363	Cement	42.5	0.6	21.3	35.6
364	Structural clay products	93.1	0.8	4.1	2.0
369	Other non-metallic minerals	94.1	3.5	-	2.4
37	Basic metals	9.1	-	1.4	89.6
381	Metal products	66.8	0.2	21.0	12.0
382	Non-electrical machinery	29.4	0.2	18.9	51.5
383	Electrical equipment	45.2	-	39.8	15.0
384	Transport equipment	68.7	-	16.6	14.6
385	Professional equipment	77.3	-	22.7	-
39	Miscellaneous	77.5	-	20.6	1.9
	Total				
	Excluding oil and gas	58.4	0.8	17.2	23.6
	Including oil and gas	38.8	15.8	10.8	34.7

Source: Hill, Hal. "Indonesia's Industrial Transformation - Part II". *Bulletin of Indonesian Economic Studies*, vol. 26, No. 3, December 1990, Table 14, p. 79.

a/ Includes all firms with a work force of at least five persons. All small firms (5-19 persons) are assumed to be privately owned.

Investment in manufacturing industry has customarily been the preserve of the private sector in Indonesia, with the government having concentrated its capital expenditure in the fields of agriculture, mining, transportation, regional development and education. As indicated in Table I.15, moreover, the chemical and rubber industries have attracted particularly strong investment interest, from both domestic and foreign entrepreneurs. The textiles and garments industries have also traditionally been major beneficiaries of domestic and, to a lesser extent, foreign investment. A significant share of foreign investment has also been channelled into the metalworking industries and, more recently, into the pulp and paper industries.

Table I.15. Approved investment by sector, 1985-1993^{a/}, selected years

Sector	1985	1988	1989	1990	1991	1992	1993
Foreign investment (Million \$)							
Agriculture	9	8	122	170	14	66	173
Forestry	-	34	4	2	1	138	21
Fisheries	11	65	47	20	11	28	-
Mining and quarrying	-	-	-	116	-	2,313	-
Manufacturing	687	3,785	4,246	5,648	3,970	5,639	3,363
Food	6	212	223	99	382	213	107
Textiles and leather	7	224	581	1,094	532	597	419
Wood and wood products	-	77	106	218	62	33	50
Paper and paper products	25	1,506	211	729	822	686	202
Chemicals and rubber	338	1,533	2,512	1,991	923	2,331	1,172
Non-metallic minerals	3	30	184	125	133	837	98
Basic metals	65	61	106	825	197	43	186
Metals products	244	127	292	460	856	857	1,087
Others	-	15	30	107	62	51	42
Construction	122	2	16	77	26	41	2,791
Hotels and trade	-	395	98	874	4,019	919	1,087
Transport and communications	-	3	5	803	167	14	86
Real estate and other services	29	191	181	1,042	570	1,134	598
Total	859	4,482	4,719	8,751	8,778	10,292	8,117
Domestic investment (Billion Rp)							
Agriculture, fisheries and livestock	899	2,721	3,418	6,435	3,468	1,952	2,836
Forestry	37	487	252	593	1,472	534	258
Mining	38	111	94	147	182	236	69
Manufacturing	1,632	9,663	12,776	39,122	26,465	19,079	24,032
Textiles	97	2,299	3,563	12,609	3,648	2,539	3,539
Chemicals	928	3,022	4,058	8,539	8,429	3,322	7,689
Other	607	4,342	5,155	17,974	14,388	13,219	11,343
Construction	270	31	146	87	275	215	187
Hotels	312	561	1,265	4,562	3,897	3,115	3,051
Real estate	267	236	936	1,820	3,504	1,746	4,393
Others ^{b/}	296	428	552	2,512	1,822	2,465	4,626
Total	3,750	14,238	19,439	55,278	41,085	29,342	39,451

Source: Government of Indonesia, National Investment Coordinating Board (BKPM). *Statistics on Investment*, various issues.

a/ Figures refer to intended capital investments, and represent original approvals plus approved expansions minus cancellations.

b/ Includes transportation sector.

F. INDUSTRIAL LOCATION

Indonesia's manufacturing industry is concentrated mainly in Java, which offers not only the largest markets because of its high population densities and comparatively high levels of per capita income, but also the best opportunities for efficiency-enhancing inter-industry linkages. Abstracting from the large oil and natural gas processing facilities in East Kalimantan and various parts of Sumatra, Java was shown by the 1986 industrial census to account for some three quarters

of total manufacturing output. With much of the new industrial investment of subsequent years also having been located in Java, this share is bound to have increased further in the meantime.

This *a priori* expectation is supported by the annual surveys of medium- and large-scale manufacturing establishments (excluding oil refining and natural gas processing enterprises) conducted by the Central Bureau of Statistics. The latest available data from these surveys show that Java accounted for almost 79 per cent of the number of such firms in 1989, and for more than 76 per cent of the labour employed by these firms. In addition, Java also has the most comprehensive industrial structure, with all of the island's five provinces possessing enterprises in more than 20 of the 28 three-digit ISIC categories of non-oil/gas manufacturing employed by the Indonesian statistical authorities, and three of the five provinces possessing the full complement of 28 branches.

Within Java, the strongest industrial concentrations are found in Jakarta and the surrounding province of West Java, where the three towns of Tangerang, Bogor and Bekasi on the western, southern and eastern fringes of Jakarta have become little more than industrial suburbs of the national capital. In addition, a heavy concentration of industry has also emerged to the west of Jakarta towards the Sunda Straits, where the towns of Serang and Cilegon have emerged as important centres of heavy engineering. The satellite town of Gresik outside Surabaya in the province of East Java is another major industrial centre, accommodating a wide range of heavy, intermediate and light industries.

Elsewhere in Indonesia the degree of industrialization is much less advanced. The island of Sumatra takes a distant second place to Java in terms of industrial development, accounting for some 12.6 per cent of the country's total number of medium- and large-scale establishments involved in non-oil/gas manufacturing in 1989, and 13.6 per cent of the labour employed by these establishments. All principal branches of manufacturing are represented on the island, although only the province of North Sumatra has a well diversified industrial base with firms in 27 different ISIC categories. As the main centre of Indonesia's plantation agriculture, this province has a strong raw material base for the agricultural and wood processing industries, which in 1989 accounted for 519 of the 962 medium- and large-scale manufacturing enterprises in the province.

Since the mid-1980s the Government of Indonesia has been actively promoting the industrial development of the Riau islands near Singapore, and the island of Batam in particular. In order to attract increased foreign investment into the region, the government has permitted full foreign ownership of enterprises established by foreign investors in Batam since late 1989. In early 1991, it agreed with the Government of Singapore and Malaysia to link Batam, Singapore and the Malaysian State of Johore into a "triangle of growth", allowing each of these entities to benefit from the complementary resource endowments of the other two. As a result of these developments, Batam and its neighbouring islands are rapidly developing into important industrial locations.

The other regions of Indonesia are still in their industrial infancy. The bulk of the manufacturing activity in these regions consists of small-scale and handicraft production for the small local markets, or involves the processing of local raw materials in enclave establishments using significant quantities of imported capital and, in many cases, labour. Although the government has sought to stimulate a more broadly based industrial development of the eastern parts of Indonesia in recent years, and offered a variety of investment incentives in pursuit of this goal, the remoteness of these regions and their lack of adequate infrastructure and markets will inevitably restrain their industrial development for some time to come.

Table 1.16. Regional distribution of medium- and large-scale manufacturing establishments, 1989

	Number of establishments	Number of branches (ISIC 3-digits)	Number of workers ^{a/}
Sumatra	1,853	28	107,956
Aceh	84	16	13,369
North Sumatra	962	27	148,533
West Sumatra	108	15	15,146
Riau	195	18	33,532
Jambi	101	10	19,232
South Sumatra	229	20	45,359
Bengkulu	14	0	970
Lampung	160	20	31,815
Java	11,534	28	1,723,322
Jakarta	2,100	25	289,343
West Java	3,505	28	571,114
Central Java	2,457	28	328,001
Yogyakarta	163	21	20,751
East Java	3,309	28	514,113
Bali	328	19	29,311
Nusa Tenggara/Timor	118	15	15,017
West Nusa Tenggara	97	13	13,648
East Nusa Tenggara	21	8	1,369
Kalimantan	433	19	132,630
West Kalimantan	110	11	35,088
Central Kalimantan	64	2	18,178
South Kalimantan	140	13	35,668
East Kalimantan	119	15	43,696
Sulawesi	320	22	30,988
North Sulawesi	79	14	5,485
Central Sulawesi	50	8	5,852
South Sulawesi	157	19	16,083
Southeast Sulawesi	34	7	1,568
Maluku	48	10	14,898
Irian Jaya	34	7	4,757
Indonesia ^{b/}	14,668	28	2,258,579

Source: Government of Indonesia, Central Bureau of Statistics, unpublished data.

a/ Includes non-paid family labour.

b/ These totals exclude figures for East Timor in line with unresolved status of the territory.

G. ENVIRONMENTAL ISSUES

The surge of manufacturing activity during recent years has inevitably placed an increased burden on the environment. This has been exacerbated by the fact that many of the most rapidly expanding industries (such as the wood products industries, the pulp and paper industries, the chemical industries and the engineering industries) have a particularly high potential for causing wide-ranging environmental damage, including land denudation and soil erosion, water and air pollution, and a loss of ecological habitats and biodiversity. To minimize this environmental damage, such industries must employ a variety of complex environmentally-friendly production

techniques and equipment, which have for the most part been developed relatively recently and tend to be more costly than their conventional counterparts.

Although the environmental risks of economic and industrial development began to be publicly acknowledged in Indonesia in the late 1970s, it was not until almost a decade later that serious attempts began to be made to limit the potential environmental damage arising from this economic development. The first major step in this direction was only taken in 1987, when the government began to require environmental impact assessments for all major investment projects. A formal government agency to monitor and regulate the environmental effects of the development process was not established until 1990.

The relatively late introduction of these mechanisms to control the environmental degradation caused by economic development has resulted in a severe paucity of relevant empirical data. While it is thus not possible to determine the precise impact of economic and industrial development on the environment because of a lack of appropriate quantitative studies, there is much qualitative evidence to indicate that this impact has been considerable in some cases. Jakarta, one of the most intensively industrialized regions in Indonesia, suffers from particularly serious air and water pollution.

With much greater attention now being paid to environmental issues, both by the government and by a growing number of local and national non-governmental organizations, pressures for the adoption of more environmentally friendly technologies are bound to increase. With similar pressures also being faced by Indonesia's foreign competitors, the employment of such technologies will not necessarily result in a serious loss of Indonesia's international competitiveness. On the contrary, it will ensure that Indonesia's programme of industrial development is sustainable over a longer period without unduly endangering the country's natural resource base and the health of its population.

H. TRADE IN MANUFACTURES

As an essentially resource-based economy, Indonesia has long been dependent on imports to satisfy its demand for manufactures. Although this dependence has been reduced as a result of the industrial development achieved during the past two decades, manufactures continue to constitute the bulk of Indonesia's imports. As indicated in Table I.17, the share of manufactured products in the country's total imports declined, with some modest year-to-year fluctuations, from almost 96 per cent in 1975 to approximately 85 per cent in 1992.

Table I.17. Share of manufactures in total imports, 1975-1992, selected years
(Percentage)

	1975	1980	1985	1986	1987	1988	1989	1990	1991	1992
All manufactures	95.8	87.8	81.6	83.9	85.4	86.5	84.9	84.8	85.5	84.6
Capital goods	34.0	32.5	33.2	36.5	37.0	36.8	34.6	39.3	42.4	40.6
Processed food	11.1	9.5	3.7	3.1	3.4	4.2	4.1	2.2	2.6	3.3

Source: UNIDO, Industrial Development Reviews Information Base

This decline in the proportion of manufactured imports has been accompanied by a significant shift in their composition. Particularly noticeable in this context has been a steady, if gradual, rise in the share of capital goods imports as the development of Indonesia's own downstream processing and manufacturing has increased the demand for capital goods needed by these industries and reduced the need to import consumer goods. Processed foods, for example, accounted for 10.8 per cent of the value of all imports in 1975 but less than 4 per cent in 1992.

These trends are confirmed by the data in Table I.18, which provide a more detailed breakdown of the composition of manufactured imports by major product groups. While the share of processed foods declined, the share of textiles and garments rose, largely as a result of the increased import of cotton yarns and other intermediate textile products by Indonesia's own burgeoning textile and garments industries. Meanwhile, a decline in the share of iron and steel products, representing a variety of finished goods increasingly being manufactured within Indonesia, was more than offset by a sharp rise in the share of machinery and equipment imports from some 44 per cent in 1975 to more than 56 per cent in 1992.

Table I.18. Composition of manufactured imports by major product category, 1975-1992, selected years
(Percentage share)

	1975	1980	1985	1986	1987	1988	1989	1990	1991	1992
Processed foods, beverages, tobacco	11.5	10.8	3.8	3.7	4.0	4.9	4.9	2.6	3.0	3.8
Textiles and garments	2.7	2.1	1.8	2.1	2.6	3.5	4.9	5.4	4.6	5.5
Wood products, furniture	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.2
Paper, printing, publishing	1.3	1.9	2.1	1.8	1.7	1.4	1.3	1.1	1.1	1.0
Chemicals	24.8	26.5	28.2	29.4	28.8	28.0	28.1	24.2	22.5	22.4
Non-metallic minerals	2.2	1.3	2.4	1.7	1.3	1.0	1.3	1.1	1.1	1.0
Basic metals, iron and steel	12.1	12.0	11.1	9.4	8.7	10.1	9.8	9.4	9.2	8.9
Machinery and equipment	44.9	45.1	50.2	51.2	52.5	50.6	48.9	55.4	57.9	56.5
Miscellaneous products	0.3	0.6	0.3	0.5	0.4	0.5	0.6	0.5	0.5	0.5

Source: UNIDO, Industrial Development Reviews Information Base

The export performance of Indonesia's manufacturing industry has been determined in large part by the industrial policies pursued by the Government of Indonesia. Until the mid-1980s, these policies were aimed primarily at import substitution, as a result of which the share of industrial products in the country's exports increased only very slowly. The collapse of international oil prices in 1985-86 resulted in a sharp re-orientation of industrial policy towards the promotion of manufactured exports. As shown in Table I.19, the impact of this policy shift has been dramatic. From less than 16 per cent in 1975, the contribution of manufactures to Indonesia's total export earnings increased only slowly and fitfully to about 27 per cent in 1985. Since then it has increased sharply and continuously to more than 63 per cent in 1992.

Table I.19. Share of manufactures in total exports, 1975-1992, selected years
(Percentage)

	1975	1980	1985	1986	1987	1988	1989	1990	1991	1992
All manufactures	16.0	18.3	27.0	39.3	42.3	48.6	52.4	53.7	58.8	63.3
Capital goods	0.5	0.2	0.2	0.4	0.3	0.5	0.8	1.5	2.6	2.9
Processed food	7.6	7.5	9.7	13.4	11.7	13.4	11.8	10.9	11.3	10.2

Source: UNIDO, Industrial Development Reviews Information Base.

Table I.20. Composition of manufactured exports by major product category, 1975-1992, selected years
(Percentage share)

	1975	1980	1985	1986	1987	1988	1989	1990	1991	1992
Processed foods, beverages, tobacco	47.6	40.7	35.8	34.1	27.6	27.7	22.5	20.3	19.3	16.0
Textiles and garments	0.6	4.4	12.1	14.7	15.7	17.4	19.5	25.0	30.1	34.9
Wood products, furniture	0.2	1.9	18.3	18.6	26.2	24.3	23.5	24.0	21.2	19.5
Paper, printing, publishing	0.8	0.2	0.5	0.6	1.4	1.6	1.6	1.4	1.8	1.7
Chemicals	37.2	32.6	14.1	17.5	15.5	12.5	14.0	14.9	13.1	11.7
Non-metallic minerals	0.1	0.8	0.6	1.0	1.4	2.2	2.4	1.7	1.4	1.6
Basic metals, iron and steel	9.6	15.5	14.4	9.7	9.7	10.4	11.5	6.4	4.4	4.0
Machinery and equipment	3.7	3.8	3.9	3.1	1.9	2.8	3.8	5.1	7.4	8.8
Miscellaneous products	0.2	0.1	0.3	0.8	0.3	1.2	1.4	1.2	1.4	1.9

Source: UNIDO, Industrial Development Reviews Information Base.

The product composition of Indonesia's manufactured exports has likewise experienced a number of significant changes in recent years as a result of the expansion and diversification of the country's export-based manufacturing industry. In particular, the share of processed foods and chemical fertilizers, which constituted the mainstay of Indonesia's manufactured exports in the 1970s and early 1980s, has declined sharply as the range of manufactured exports has increased. The most significant gains have been made by the textiles and garments industry and the wood processing and furniture industry, which together accounted for almost half of the value of all manufactured exports in 1990. Their dominance is likely to experience a degree of erosion in the coming years, however, as the diversification of manufactured exports continues and such industries as consumer electronics, which are only now being established on a significant scale, gain ground.

CHAPTER II:

ECONOMIC AND INDUSTRIAL DEVELOPMENT OBJECTIVES^{1/}

A. INTRODUCTION:

Indonesia's development planning process reached a significant watershed on April 1, 1994, which marked the beginning of the country's sixth five-year development plan, Repelita VI, following the conclusion of a quarter-century of steady economic growth averaging 6.8 per cent per year. In addition, it also represented the start of the second long-term development period, known by its Indonesian initials as PJP II, which is intended to span the next five Repelitas. Apart from establishing specific targets for the next five years, therefore, the Repelita VI document also sets longer term goals for PJP II.

B. OBJECTIVES OF PJP II

The Government of Indonesia regards national development as an integrated process encompassing progress in all fields of human endeavour, and recognizes the need for it to proceed in an inter-sectorally balanced manner in order to ensure its sustainability and avoid the emergence of disruptive bottlenecks. PJP II consequently calls for the broad-based development not only of the Indonesian economy but also of its legal and social institutions and national culture. In doing so, it provides an overall policy framework for the development process, and establishes a set of qualitative guidelines and quantitative targets for the next 25 years, during which Indonesia is expected to enter the take-off stage towards becoming a fully developed country.

A particularly high priority is attached to raising the standard of living of the Indonesian people. While noting that significant gains have already been achieved in this regard during the first 25-year development period, in which per capita incomes rose from \$70 to \$700, the Repelita VI document also acknowledges that Indonesia has not succeeded in rising beyond the rank of a low middle-income country. The achievement of a sustained period of high rates of economic growth is therefore seen as the primary objective of economic policy during the PJP II period, for which an annual average growth rate target of 7 per cent has been set. This is intended to result in an almost fourfold increase in real per capita incomes, to about \$2,600 in constant 1989/90 prices, by the end of PJP II.

^{1/} The first half of this Chapter, containing the review of the second long term development strategy and the sixth five-year development plan, draws heavily on Government of Indonesia, National Development Planning Agency (BAPPENAS), *Repelita VI, Indonesia's Sixth Five-Year Development Plan (1994/95-1998/99) - A Summary*, Jakarta, n.d.

Recognizing further that the attainment of increased per capita incomes will be facilitated by a reduction in the rate of population growth, the Repelita VI document proposes a further intensification of the highly successful family-planning programme implemented in Indonesia since the late 1970s. This is expected to result in a gradual slowdown in the overall population growth rate from an estimated 1.9 per cent per year at the end of Repelita V (March 1994) to 0.9 per cent by the end of Repelita X (March 2019). At the same time, however, the plan document concedes that the achievement of this objective will represent an important challenge for Indonesia's policy-makers in view of the country's large population base of some 189 million people at the end of Repelita V, and its comparatively young age distribution.

The prevailing demographic patterns will also place severe pressures on the labour market, since they will inevitably lead to a rapidly growing number of new entrants joining the work force each year. Official projections suggest that the total labour force will almost double from 78.8 million persons at the end of Repelita V to 147.9 million persons by the end of Repelita X. The level of total employment, meanwhile, is projected to rise to 147.5 million during the same period, indicating an implicit commitment by the economic planners to ensure the creation of a sufficient number of appropriate jobs for almost all of the new members of the work force. Underlining this commitment, the Repelita VI document specifically lists the resolution of the unemployment and underemployment problems as a major objective for PJP II. In this context, it also stresses the need for continued improvements in the quality of Indonesia's human resource base, and for the development process to be accompanied by an increased degree of distributional equity and social justice.

In view of the increasingly limited absorptive capacity of the agricultural sector, which in the past has been the principal source of additional employment opportunities in Indonesia, and the generally low productivity of the jobs generated in the largely informal service sector, the government of Indonesia has chosen to focus on the industrial sector as the main engine of the country's future economic development. In contrast to the annual average growth rate of 7 per cent for GDP as a whole, it has targeted the growth rate of the industrial sector at 9 per cent per year for the coming 25 years, with the non-oil/gas manufacturing industries scheduled to grow at an even faster rate. Consequently, the share of the manufacturing sector as a whole in GDP is forecast to increase from 20.8 per cent at the end of Repelita V to 32.5 per cent by the end of Repelita X, while the share of non-oil/gas manufacturing is expected to increase 17.6 per cent to 31.5 per cent during the same period.

Even though the industrial sector has been selected by the government to play the lead role in generating economic growth, its development is to be more closely coordinated with the development of the other major sectors of the economy, and its existing inter-sectoral links with the agricultural, mining and service sectors are to be significantly expanded. Special efforts are to be made to promote the growth of agricultural and mineral processing industries, and of industrial support services, with the latter projected to grow at an annual average rate of 7 per cent during PJP II. The increased integration of the various sectors is intended to enhance the efficiency and productivity of the economy by preventing the emergence of bottlenecks in some areas, which could retard development in others. The agricultural sector, though increasingly unable to attract new labour, is also expected to retain its historical role as the main source of employment in the Indonesian economy.

Another major industrial priority identified by the government of Indonesia for the country's industrial development in PJP II is the enhanced application of science and technology in its industrial products and processes. This policy is intended to ensure the continued evolution of the comparative advantage of Indonesia's manufacturing sector from predominantly labour-intensive industries, in which it will face increasing competition from countries with lower labour costs, to more technologically sophisticated industries with a higher productivity and greater capacity for generating added value. In addition, the emphasis on science and technology is also regarded as having important strategic implications, enabling Indonesia to enhance its national self-reliance.

Table II.1 Basic data and main targets in PJP II^a

Category	Unit	Estimate end of Repelita V	Targets of PJP II (End of Repelita)				
			VI	VII	VIII	IX	X
A. Population							
1. Total	Million	189.1	204.4	219.4	233.6	246.5	258.2
a. Male	Million	94.3	101.9	109.4	116.5	122.9	128.7
b. Female	Million	94.8	102.5	110.0	117.1	123.6	129.5
2. Growth rate	Percentage	1.66	1.51	1.37	1.20	1.01	0.88
3. Crude birth rate	Per thousand	24.5	22.6	20.9	19.0	17.2	16.1
4. Crude death rate	Per thousand	7.9	7.5	7.2	7.1	7.1	7.4
B. Work force and employment^{b/}							
1. Total work force	Million	78.8	91.4	105.2	119.7	133.9	147.9
2. Total employment	Million	78.8	90.7	103.8	117.8	132.6	147.5
C. Social indicators^{b/}							
1. Infant mortality rate	Per thousand births	58	50	43	37	31	26
2. Life expectancy	Year	62.7	64.6	66.3	67.8	69.3	70.6
3. Maternal mortality rate	Per hundred thousand live births	435	225	189	143	108	80
4. Education: Participation rates							
a. Primary education	Percentage	109.9	114.9	117.0	118.0	118.0	117.0
b. Junior secondary education	Percentage	52.7	66.2	87.0	108.0	114.0	118.0
c. Senior secondary education	Percentage	33.2	40.5	51.0	60.0	71.0	80.0
d. Higher education	Percentage	10.5	12.8	15.0	19.0	21.0	25.0
D. National product^{c/}							
1. Average GDP growth rate	Percentage per annum	6.6	6.2	6.6	7.1	7.8	8.7
a. Agriculture	Percentage per annum	2.4	3.4	3.5	3.5	3.5	3.5
b. Manufacturing	Percentage per annum	10.0	9.4	9.4	9.4	9.1	8.7
- Non-oil/gas manufacturing	Percentage per annum	11.0	10.3	10.2	10.0	9.5	9.0
c. Other	Percentage per annum	7.2	6.0	6.3	6.8	8.0	9.5
2. GDP per capita at the end of Repelita	Thousand Rp US\$	1,188 676	1,487 775	1,908 995	2,525 1,317	3,483 1,816	5,046 2,631
3. GDP composition at the end of Repelita							
a. Agriculture	Percentage	20.2	17.6	15.2	12.8	10.5	8.2
b. Manufacturing	Percentage	20.8	24.1	27.4	30.5	32.4	32.5
- Non-oil/gas manufacturing	Percentage	17.6	21.3	25.1	28.7	31.0	31.5
c. Other	Percentage	59.0	58.3	57.4	56.7	57.1	59.4

Source: Government of Indonesia, National Development Planning Agency, *Repelita VI Indonesia's Sixth Five-Year Development Plan (1994/95-1998/99) - A Summary*, Jakarta, n.d., Table 1, pp. 101-102.

a PJP II = Second Twenty-Five Year Development Plan.

b Calendar year.

c/ Based on constant 1989/90 prices.

While regarding the growth of the manufacturing sector as one of its principal priorities in PJP II, the Government of Indonesia proposes to limit its own role mainly to the provision of a suitable macro-economic policy environment. The actual investment decisions are to be left for the most part to the private sector, which is expected to account for an increasing share of total manufacturing output. The private sector is also expected to play a dominant role in research and development activities, with the government's share of total expenditure in this field being slated to fall from 80 per cent at the end of PJP I to 30-40 per cent by the end of PJP II.

The goal of transforming Indonesia into an industrialized country strong in trade and commerce by the end of PJP II is projected to be accomplished, moreover, without imposing an undue burden on its natural resources and environment. The Government of Indonesia has become increasingly aware of the need to protect the country's environment and conserve its natural resources during the past decade or so, and has clearly based its policy proposals for PJP II on these insights. Increased attention is therefore intended to be given to the task of ensuring the environmental sustainability of Indonesia's economic and industrial development programme, and minimizing the risk of pollution and the wasteful use of natural resources.

C. GENERAL OBJECTIVES OF REPELITA VI

Within the general framework established for PJP II, a number of specific goals have been set for the current five-year development period, Repelita VI. The underlying objective of Repelita VI is to increase the efficiency and productivity of the Indonesian economy as well as the level of employment. In this context, the Repelita VI document identifies four major goals for the plan period:

- Enhancing human resource quality;
- Economic growth and structural change of the Indonesian economy;
- Enhancement of equity and poverty alleviation; and
- Economic stability.

The achievement of the first of these goals will require a continued increase in social investment, especially in such fields as education, health and social welfare. In addition, it will require the integrated implementation of a variety of associated programmes, including birth control, manpower planning, and vocational training and skill development. This investment in human resource development is projected to result in an average annual increase of 3.3 per cent in overall labour productivity. On a sectorally disaggregated level, the targets for annual average labour productivity growth have been set at 2.4 per cent for the agricultural sector, 3.7 per cent for the industrial sector, and 1.7 per cent for all other sectors.

This increase in labour productivity, which is expected to be accompanied by corresponding increases in the productivity of other factors of production as the application of science and technology increases, will help to support a steady acceleration of economic growth. The rate of real GDP growth is thus projected to increase from 6 per cent in the first year of Repelita VI to 6.6 per cent in the last, averaging 6.2 per cent per year during the plan period as a whole. This is expected to result in an increase in per capita income by 4.7 per cent per year, to more than \$1,000.00 by the end of the five-year period. A particularly rapid expansion is projected for the non-oil/gas manufacturing sector, which is expected to grow by 10.3 per cent per year in real terms. The agricultural and service sectors, meanwhile, are targeted to grow by 3.4 per cent per year and 6 per cent per year respectively.

These differential rates of sectoral growth will inevitably lead to significant shifts in the structure of the Indonesian economy. The share of the manufacturing sector in GDP is thus projected to increase from 20.8 per cent at the end of Repelita V to 24.1 per cent by the end of Repelita VI, while the share of agriculture is forecast to decline from 20.2 per cent to 17.6 per cent during the

same period. Since much of the growth of the manufacturing sector is intended to be directed towards the production of export products, the value of manufactured exports is expected to increase by an average of 17.8 per cent per year. The share of manufactured exports of total exports is thus intended to rise from 65.1 per cent at the end of Repelita V to 77.6 per cent at the end of Repelita VI, while their share of non-oil/gas exports is targeted to rise from 85.8 per cent to 89.5 per cent.

While emphasizing the continued expansion and structural transformation of the Indonesian economy, the Repelita VI document also lays great stress on the need for the process of economic growth and development to be accompanied by a more equitable distribution of income and wealth. In particular, it calls for the alleviation of poverty and the enhancement of the welfare of the lowest income groups. To achieve this goal, it calls for improved equity in access to employment, education and business opportunities, and proposes that steps should be taken to develop the entrepreneurial abilities of low-income groups, encourage the establishment of cooperatives, create an enabling environment for the emergence of small and medium scale enterprises, and promote the adoption of labour-intensive economic activities and production processes. Attention is also to be given to a more balanced regional pattern of development, with particular efforts being made to promote the development of eastern Indonesia, and to a strengthening of inter-sectoral links in order to enable growth impulses in particular sectors to have the widest possible impact on the economy as a whole.

Finally, the Repelita VI document acknowledges that economic growth cannot be achieved at the expense of economic stability. It therefore stresses that the prudent macroeconomic policies of the past decades will be maintained, with the aim of keeping the annual average rate of inflation below 5 per cent and the current account deficit at less than 2 per cent of GDP. The country's foreign exchange reserves, meanwhile, are to be maintained at a level equivalent to five months of imports.

D. OBJECTIVES OF REPELITA VI FOR INDUSTRIAL DEVELOPMENT

Having identified the industrial sector as the main source of economic growth in the coming five years, Repelita VI sets a number of conditions and guidelines for the industrial development process. These are summarized in the plan document as follows:

"The objectives of industrial development are to strengthen the national economy by creating forward and backward linkages between sectors, improving the resilience of the national economy, expanding employment and business opportunities, and promoting the growth of all sectors of the economy. Industrial development in Repelita VI will be geared towards self-reliance and improved competitiveness, both in domestic markets and in foreign markets, while preserving the environment."^{2/}

More specifically, the Repelita VI document lists the following principal objectives for the industrial sector during the plan period:

- The achievement of a sufficiently high growth rate to enable the industrial sector to become the main vehicle for stimulating economic development;
- A diversification of the industrial structure;

^{2/} Government of Indonesia, National Development Planning Agency (BAPPENAS). *Repelita VI, Indonesia's Sixth Five-Year Development Plan (1994/95-1998/99) - A Summary*. Jakarta, n.d., p. 25.

- An enhancement of the industrial sector's technological capabilities and the optimal utilization of Indonesia's economic resources;
- An improvement of Indonesia's industrial competitiveness and its capacity to produce high-quality products capable of penetrating international markets;
- The promotion of small and medium scale industries, including rural industries; and
- A widening of the regional distribution of industry, particularly in the eastern part of Indonesia, in order to develop regional centres of economic growth.

As indicated above, Repelita VI calls for total manufacturing output to grow by 9.4 per cent per year, and for non-oil/gas manufacturing to grow by 10.3 per cent per year. With overall GDP growing at a substantially slower rate, the share of manufacturing in GDP is projected to grow from 20.8 per cent at the end of Repelita V to 24.1 per cent by the end of Repelita VI, while the share of non-oil/gas manufacturing is targeted to grow from 17.6 per cent to 21.3 per cent during the same period. This growth of industrial activity is expected to create additional employment opportunities for about three million people, and to make an important contribution to Indonesia's external trade, with exports of manufactured goods scheduled to increase at an annual average rate of 17.8 per cent and reach \$54.8 billion by the end of Repelita VI.

In order to achieve these goals, Repelita VI proposes the adoption of an industrial development strategy comprising four principal components. The first of these calls for the development of broad-spectrum industries oriented towards the international market, natural resource-intensive industries with a rising technological level, labour-intensive industries with rising skill levels over time, and technology-intensive industries. The second provides for the accelerating application of modern technologies in Indonesia's industrial processes in order to enhance the quality of locally produced manufactures. The third stipulates that the private sector will be the prime agent of industrial development, and that the market mechanism will be the main determinant of its structure and output. The last prong of this strategy provides for the government to give particular support to industries with a potential for promoting rapid economic growth and increased equity in income distribution.

Within the framework of this overall strategy, a number of priority industries have been identified for promotion in Repelita VI. These include agro industries of various kinds, which are intended, *inter alia*, to increase domestic value added, strengthen the industrial structure of rural areas and enhance the income and purchasing power of the rural communities, thereby expanding the domestic market. Priority is also intended to be given to the development of the mineral processing industries in order to add value to Indonesia's extensive exports of unrefined mineral products. Beyond these processing industries, Repelita VI also singles out the machinery, capital goods and electronics industries, including industries producing components and engaging in sub-assembly activities, as being particularly worthy of encouragement. In addition, priority is also assigned to two other categories of industries: export-oriented industries, including textiles and textile products, which are to become increasingly skill-intensive and diversified; and small and medium-sized industries, which are to be developed through the establishment of regulatory support institutions, industrial centres and linkages with larger industries in mutually profitable business partnerships.

E. THE UNITED NATIONS COUNTRY STRATEGY

Based on the development objectives and priorities identified by the Government of Indonesia for PJP II and Repelita VI, the Office of the Resident Coordinator of the United Nations System's Operational Activities for Development in the Republic of Indonesia has drafted a comprehensive Country Strategy Note (CSN) to coordinate the development activities of the United Nations

system in Indonesia.³ Specifically, this document is intended to provide a framework for the UN development system to prepare a series of inter-sectoral and inter-disciplinary programmes bringing together the resources of its specialized agencies and those of other bilateral and multilateral development organizations. It is expected that the formulation, and coordinated implementation, of such mutually reinforcing and interactive programmes in selected areas of concentration will significantly enhance the impact of the assistance provided by the UN system.

The draft CSN, which is currently passing through the formal approval process, has been prepared in close consultation with the National Development Planning Agency of the Government of Indonesia (Badan Perencanaan Pembangunan Nasional, BAPPENAS), and other relevant organizations and institutions. It has adopted the promotion of sustainable human development as the unifying theme for UN system assistance to Indonesia, but recognizes that "this unifying theme, being so broad and encompassing, must be translated into priority areas which give clear expression to the concept's substantive focus and orientation".⁴ These priority areas, and the substantive programme proposals offered for them, may be summarized as follows:

Poverty alleviation and employment creation

Although Indonesia has achieved considerable success in reducing the incidence of absolute poverty during the past three decades, from about 60 per cent of the population in the mid-1960s to less than 15 per cent in the mid-1990s, substantial pockets of poverty remain. Some 25 million people are thus believed still to be living in absolute poverty, with several millions more living just above the official poverty line. The implementation of programmes dedicated to income generation and job creation is seen as the cornerstone of the poverty alleviation strategy of the Government of Indonesia. In marginal rural areas the emphasis will have to be placed on the formulation of improved strategies for addressing "hard core" poverty through the creation of off-farm employment, while in urban slums the emphasis is likely to be on small-scale and informal production as well as self-employment. In addition, more specific approaches will also be required to target households headed by women effectively.

Human Resources Development - Population, health and nutrition

In conjunction with its underlying objective of promoting sustainable human development, the CSN pays particular attention to the issue of human resource development, and within this broad field selects a number of specific target areas for the provision of assistance by the UN system. The control of population growth and the availability of adequate health care and nutrition is regarded as being one of the most important of these target areas. In this context, particular emphasis is paid to the need to set specific goals for calory and protein intake and to reduce the incidence of iodine and iron deficiency. The substantive focus of this objective is therefore intended to be on the improvement of delivery systems providing access to basic services in the fields of family planning, health care, nutrition, water supply and sanitation.

³ Office of the Resident Coordinator of the United Nations System's Operational Activities for Development in Indonesia, *Draft Country Strategy Note - A Strategy for the United Nations Development System in Indonesia*, mimeo, n.d. (given to author on 28 March 1995 as the latest available draft).

⁴ Office of the Resident Coordinator of the United Nations System's Operational Activities for Development in Indonesia, *Draft Country Strategy Note - A Strategy for the United Nations Development System in Indonesia*, mimeo, n.d., p. 8.

Human Resources Development - HIV/AIDS prevention and control

A special health issue requiring particular attention is the prevention and control of HIV/AIDS. Noting that the spread of HIV/AIDS represents one of the most urgent and alarming health challenges confronting Indonesia, the CSN attaches high priority to combating the disease. It therefore stresses the importance of designing appropriate AIDS awareness campaigns and formulating and implementing improved prevention and control strategies in Indonesia. The CSN regards the UN development system to be especially well-qualified to support these activities in view of the considerable experience and expertise it has acquired in this field.

Human Resources Development - Education and training

Another important area within the broad field of human resources development singled out by the CSN for special attention is education and training. In this connection, the CSN calls for the provision of assistance to improve public access to all levels of education, especially for girls and women and in marginal and geographically isolated areas, *inter alia* through the spread of distance learning systems. In addition, it also calls for the UN development system to support improvements in the quality of the education provided, and to encourage the development of vocational training and the upgrading of skills, not only within the framework of poverty alleviation but also to ensure that Indonesia is equipped with the human resources required for its planned industrial transformation.

Human Resources Development - Disadvantaged and vulnerable groups

The CSN assigns high priority to measures aimed at safeguarding the interests of disadvantaged and vulnerable groups, including women, children, the disabled and elderly, traditional people, and alcohol and drug abusers. It consequently seeks to promote the involvement of the system's member agencies in the formulation and implementation of improved strategies and programmes to enable these groups to participate more effectively in the process of social and economic development. In particular, it calls for these agencies to support efforts to enhance the interests and contribution of women, not through narrowly defined programmes and projects but through the "mainstreaming" of women in development policies and programmes, and also to support similar efforts aimed at ensuring that children are not deprived of their basic right to education or exposed to unacceptable health risks because of their need to contribute to household incomes.

Growth - Maintenance of growth

The CSN recognizes that the high rates of economic growth achieved by Indonesia during the past 2-3 decades have been one of the keys to the success of the country's development strategy. It also points out that the maintenance of this robust growth performance remains a requirement for the future, and that this growth will have to be achieved in a stable macroeconomic environment in which inflation and external borrowing are held within acceptable limits. In addition, the CSN stresses that this growth will have to be associated with economic policies designed to increase the efficiency and effectiveness of markets, enhance the role of the private sector, and place increased emphasis on improvements in efficiency and productivity as a source of growth. These developments, the CSN argues further, will result in fundamental qualitative shifts in the structure of the Indonesian economy, involving in particular an increased degree of domestic processing and manufacturing, and a progressive shift from quantity to quality in the production of goods and services.

Against this background, the CSN points out that the UN development system regards supporting Indonesia's efforts to maintain its growth momentum, develop new sources of growth and ensure an equitable distribution of the benefits of growth as one of its main objectives in the country. While acknowledging that the Government of Indonesia accepts full responsibility for the continued maintenance of the country's future growth and prudent economic management, the CSN concludes that the UN system is particularly well placed to provide advice and assistance in support of the Government's efforts in areas related to economic diversification, trade policy and export promotion, foreign investment policy and external debt management. In this connection it notes specifically that several specialized agencies of the UN may have distinctive contributions to make in such fields as, for example, agricultural diversification, industrial development policy and trade policy.

Growth - Science and technology

Recognizing the high priority given to the development of and application of science and technology by the Government of Indonesia, and the fact that this is emerging as an increasingly important determinant of economic growth in Indonesia, the CSN notes that many UN agencies have a mandate that is rooted in the application, transfer and dissemination of science and technology for development. It therefore argues that the UN development system can make an important contribution to the development of indigenous capacities for scientific research and technological innovation with the aim of ensuring that technology serves as a development asset able to fuel and sustain the process of economic growth, industrial development and social progress. In particular, it identifies an important role for UN assistance in such fields as science policy, science education, and the transfer, adaptation and application of new technologies, as well as measures to minimize the negative environmental impact of these technologies. In addition, it also points out that the UN system represents an important source of expertise on intellectual property rights.

Environmental Conservation and Management - Environment

While Indonesia has taken important steps in recent years to improve environmental management, *inter alia* through the establishment of an environmental protection agency, the formulation of national forestry and biodiversity action plans, and the introduction of a clean rivers programme, the CSN stresses that "much more needs to be done".⁵ Among the many environmental challenges facing Indonesia, it cites the management of water resources on Java and the management of forestry resources outside Java as particularly crucial. Against this background, it regards the promotion of environmentally sustainable development as one of the main objectives of the UN development system in Indonesia, and emphasizes the scope for UN system assistance in the formulation and implementation of strategies which, while recognizing the environment as a resource, provide for its protection and conservation in the interests of future generations.

Turning to the substantive focus of the UN system's potential role in this field, the CSN argues that the UN system can provide valuable assistance in two specific areas. One involves the framing of appropriate policy responses to environmental issues with a regional or global impact, such as the emission of greenhouse gases, the protection of rainforests and endangered species, and the maintenance of biological diversity. The other involves the formulation of similar policies for other high priority areas with an important national impact, such as air and water pollution, urban environmental

⁵ Office of the Resident Coordinator of the United Nations System's Operational Activities for Development in Indonesia, *Draft Country Strategy Note - A Strategy for the United Nations Development System in Indonesia*, mimeo, n.d., p. 15.

management, the protection of the marine environment, and the creation of public awareness regarding environmental issues.

- **Environmental Conservation and Management - Disaster reduction and management**

Within the overall framework of environmental conservation and management, the CSN also perceives an important supporting role for the UN development system in the field of disaster reduction and management. Noting that the Indonesian population is exposed to the constant threat of earthquakes, volcanic eruptions and tidal waves, the CSN regards disaster preparedness and management as an imperative necessity. In particular, it recommends the development of national capacities at different levels, and especially at the provincial and local levels in high-risk areas, for the management and mitigation of natural disasters, as well as the formulation of improved strategies for disaster preparedness. In view of the distinguished record established by the UN development system in this field, the CSN regards it as the most important source of technical assistance available to Indonesia in support of this objective.

- **Governance - Decentralization, regional development and institutional innovation.**

The CSN acknowledges and supports the very important efforts being made by the Government of Indonesia to disperse many of the functions of central authority to provincial, district and local levels in order to accelerate the process of development and distribute the benefits of development more equitably. It also supports the efforts currently being made to correct the spatial imbalances in economic development, especially through the provision of various incentives and infrastructural facilities to encourage the diffusion of the development process to geographically disadvantaged regions. At the same time, however, it notes that the achievement of this goal will require determined efforts at administrative reform and institutional innovation to facilitate the transition to an industrialized economy and a more complex society.

Recognizing that this priority area is very broad, the CSN identifies three main areas as the focus for future UN development system assistance. The first involves capacity building at the national, provincial and district levels in support of decentralization initiatives and the transfer of new responsibilities to the sub-national level. The second consists of activities designed to increase participation at the local level and help the empowerment of local groups and communities. The third involves the democratization of institutions, the promotion of citizens' rights, and the strengthening of workers' organizations and cooperatives.

In conclusion, it needs to be stressed that the Country Strategy Note for Indonesia is being prepared in close collaboration with the Government of Indonesia, and in particular with the National Development Planning Agency BAPPENAS. Apart from meeting the criteria of the sustainable human development concept advocated by the UN, the CSN also represents a synthesis of the main areas in which the technical assistance provided by the UN development system can help Indonesia to meet the economic development targets set for Repelita VI. The aim of the CSN is thus to assist Indonesia in meeting its own development objectives as set out in PJP II and Repelita VI by focusing the UN system's support on the goals and priorities established in these documents, and to provide a coherent framework for the formulation and implementation of integrated and coordinated development assistance programmes by the UN system as a whole. As such, it calls for the various specialized agencies of the UN system to pool their expertise and resources to ensure that their activities are consistent with Indonesia's development aspirations and are conducted in an efficient and mutually reinforcing manner.

By specifying sustainable human development as the unifying theme for the assistance provided by the UN development system to Indonesia, and identifying the major priorities for this assistance as listed above, the CSN is meant to sharpen the focus of UN system assistance. At the same time, however, its authors stress that it is not intended to restrict the efforts of individual UN agencies. On the contrary, they express the hope that the CSN will give an increased coherence to the assistance programmes of these agencies rather than replacing them, and emphasize that they expect the individual UN agencies to execute their programmes in accordance with their own mandates.

CHAPTER III:

PRELIMINARY PROPOSALS FOR A UNIDO COUNTRY SUPPORT STRATEGY FOR INDONESIA

A. UNIDO'S ROLE AND ACTIVITIES^{1/}

The United Nations Industrial Development Organization (UNIDO) is the specialized agency of the United Nations development system responsible for supporting industrial development. It was established on 1 January 1967, and became a specialized agency on 1 January 1986 with the mandate to act as the central coordinating body for industrial activities within the UN system, and to promote industrial development and cooperation at global, regional, national and sectoral levels. The Organization's constitution provides for it to assist and cooperate with the public, cooperative and private sectors in all matters related to the process of industrial development. This gives the Organization a unique advantage, allowing it to draw on a broad spectrum of industrial cooperation.

Over the almost three decades of its existence, UNIDO has acquired an extensive experience and profound understanding of the industrialization process, as well as a wealth of information on all aspects industrial development. These unique assets provide it with a strong comparative advantage in the field of industry-related assistance and advice, and enable it to act as:

- A focal point for industrial technology;
- An honest broker for industrial cooperation;
- A centre of excellence on industrial development issues; and
- A global source of industrial information.

In addition, the broad spectrum of UNIDO's expertise and experience allows it to provide these services at all significant levels of intervention, including the policy level, the institutional level and the enterprise level.

Whereas in the past UNIDO's status as an intergovernmental organization resulted in most of its activities being undertaken in response to government requests that were largely focused on public-sector, inward-looking and planning concerns, demand is now shifting towards development

^{1/} This section draws heavily on a paper entitled *Industry in a Global Partnership - The Role of UNIDO* presented by the Director-General of UNIDO to the Substantive Session of 1994 of the Economic and Social Council of the United Nations at New York on 27 June - 29 July 1994.

requirements in the private sector. Advisory services are being sought in particular to help create "enabling environments" in developing countries conducive to private sector development and the mobilization of investment and other resources. This demand is reflected by increasing requests from developing countries for technical cooperation in matters related to the enhancement of the international competitiveness of their industrial sectors.

Responding to these shifts in demand for UNIDO services, the Organization has taken firm steps to strengthen its ties and improve communications with private-sector enterprises, and to foster new partnerships with these entities. In this context, efforts are being made to ensure that the programmes and projects formulated and implemented by UNIDO duly reflect the need to support the development of the private sector, and that they will promote international cooperation between private-sector corporations. This policy is being pursued in a manner consistent with UNIDO's role and mandate as an intergovernmental organization, and in keeping with the priorities of Member States.

In order to meet the varied demands imposed upon it by its broad mandate and the changing requirements of developing countries, and at the same time optimize the use of its limited resources, UNIDO has identified five priority areas on which to focus its developmental activities. These are:

- Industrial and technological growth and competitiveness;
- Development of human resources for industry;
- Equitable development through industrial development;
- Environmentally sustainable industrial development; and
- International cooperation in industrial investment and technology.

These five objectives provide a rationale and conceptual framework for the services of the Organization and set its developmental activities in relation to those of other United Nations organizations and aid agencies, and also establish a close link with the developmental endeavours of the developing countries.

UNIDO regards the first of these objectives, industrial and technological growth and competitiveness, as key prerequisites for the attainment of overall socio-economic development by the developing countries. Through its impact on employment, income, consumption, export earnings and skill enhancement as well as its linkages to the primary and tertiary sectors, industrial growth remains the principal engine of development for most countries. In the face of changing patterns of international competition, however, the achievement of industrial growth on a sustainable basis by developing countries can no longer be based on traditional concepts of comparative advantage arising from the availability of cheap labour and locally produced raw materials alone. The concept of international competitiveness in industry has become increasingly complex, and must now take account not only of cost and price issues, but also of improved quality, product design, marketing channels, after-sales service and information systems. This new concept of competitiveness thus reflects the systemic interplay of enterprises in production networks within a conducive national macroeconomic environment.

The services UNIDO can provide to help secure the achievement of this objective include support for the enhancement of domestic technological capabilities in various industrial subsectors, and awareness creation of the industrial implications of new cross-sectoral technologies such as informatics, new materials, biotechnology, and environment- and energy-related technologies. In addition, they include the provision of policy advice on strategies for industrial and technological development, with special emphasis on measures aimed at creating an enabling environment for the accelerated achievement of industrial growth and international competitiveness through increased private-sector participation in the industrialization process. In this connection, UNIDO can assist in the strengthening of specific promotional institutions at both the national and subnational level, including government agencies and private-sector institutions such as industry

associations and chambers of commerce. Other specific areas of UNIDO support in this area include assistance with the development of small and medium enterprises, industrial restructuring, and the improvement of local quality control, standardization and metrology systems.

The development of human resources for industry, adopted by UNIDO as the second of its five main objectives, is based on the recognition that the enhancement of human knowledge, skills and know-how is an important precondition for industrial development, and that one of the major challenges facing developing countries at present is the need to increase their human capacities to be able to respond effectively to new industrial challenges. The services provided by UNIDO under this objective fall into three distinct but closely related sets of activities, namely supporting the formulation and review of strategies, policies and plans for industrial human resource development; strengthening capacities and capabilities for industrial human resource development at the institutional level; and directly carrying out a wide range of training activities, *inter alia* at the enterprise level. The specific activities undertaken by UNIDO in this context include research and analysis on the main determinants of changing skill requirements in industry as the basis for the framing of policy advice, the review and revision of existing curricula of public and private sector training institutions, and facilitating the networking and/or twinning of training institutions in developing and developed countries. In addition, UNIDO can also provide assistance with the preparation of training manuals and courses, seminars and workshops, with particular emphasis being given to the training of trainers.

The need to encourage equitable development through industrial development, adopted by UNIDO as the third of its five principal priorities, is regarded as a particularly important objective in view of the continuing uneven distribution of the benefits of economic growth between and within countries. With the eradication of poverty having been accorded the highest priority in the International Development Strategy of the fourth United Nations Development Decade, UNIDO will seek to ensure that human development is made a cornerstone of its efforts to promote socially sustainable patterns of industrialization. This will require particular attention to be paid to the creation of economic opportunities for the disadvantaged and poor segments of the population through the expansion of both employment and entrepreneurial opportunities so as to enable them to enter the mainstream of economic development.

In seeking to achieve this aim, UNIDO will focus its activities on economically disadvantaged regions within countries and will concentrate on measures aimed at developing the full productive potential of rural areas and addressing the issue of urban poverty. Priority will be given to the promotion of entrepreneurship development programmes for industry through training in basic managerial and technical skills, with special emphasis on women; the promotion of small-scale industrial development through the provision of a variety of support services including common service facilities and business incubator schemes; the encouragement of subcontracting relationships between small industrial enterprises and larger manufacturers; the provision of information and advice on technology upgrading options; the stimulation of self-organization for small industrial enterprises; and the elaboration of programmes to enhance the effectiveness of official development agencies for small enterprises. In terms of sectoral priorities, the equitable development objective calls for priority attention to be given by UNIDO to agro-related industries and the strengthening of the linkages between small-scale agriculture and manufacturing with a view to raising rural productivity, employment and incomes. Particular emphasis will be given in this connection to the food processing industries, including the extension of quality controls throughout the processing chain, the introduction of health and environmental standards for food products, and the development of improved packaging systems for preserving quality and facilitating transport and storage.

UNIDO's fourth principal objective, environmentally sustainable industrial development, reflects the growing importance being assigned to environmental issues, and the need to integrate environmental considerations into industrial development activities at both the policy and enterprise levels. In line with the Rio Declaration on Environment and Development and Agenda 21 adopted at the United Nations Conference on Environment and Development in June 1992,

UNIDO supports the principle of integrating environmental and developmental criteria in decision-making, and places particular emphasis on the concept of cleaner production, involving the promotion of eco-efficient, energy-efficient and waste-minimizing production processes. In addition, UNIDO's activities in the field of environmentally sustainable industrial development will be geared towards protecting the atmosphere, promoting environmentally sound management of biotechnology, supporting the transfer of environmentally sound technology, and ensuring chemical safety. Along with the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP) and the World Bank, UNIDO is one of the four implementing agencies of the Multilateral Fund for the Implementation of the Montreal Protocol to protect the ozone layer.

UNIDO's last major objective calls for the encouragement of international cooperation in industrial investment and technology, with the organization laying the foundations for enhanced international cooperation in a wide range of activities including cross-border investment flows, technology transfer, international sub-contracting, licensing, and the formation of research consortia and strategic company alliances. In this context the role of UNIDO will increasingly be focused on the creation of global partnerships aimed at supporting collaborative efforts between countries with complementary interests and/or resources, and on supporting the emergence of industrial and industry-related institutions, increasingly also from the private sector, as efficient vehicles to foster such partnerships. In addition, emphasis will also be given to the promotion of increased economic and technical cooperation between developing countries in order to enable these countries to benefit from each others' experience and avail themselves of the resulting economies of scale and complementarities of production.

Recognizing the increasing importance of foreign direct investment (FDI) in particular as a mechanism for the transfer of capital and technology, UNIDO provides an integrated investment promotion programme, the individual components of which include the monitoring and assessment of investment trends, the preparation of country-specific investment guides, the identification, appraisal and promotion of industrial investment projects, the strengthening of national investment promotion strategies and agencies, and the convening of international investment forums and "invesmarts". UNIDO's global system of World Investment Network Services (WINS) will serve as an increasingly important institutional mechanism for investment promotion in this context, and will be further expanded through the establishment of additional Investment Promotion Service (IPS) offices. In the field of international cooperation in technology transfer, meanwhile, UNIDO provides technological information through the Industrial and Technological Information Bank (INTIB) and the Technological Information Exchange System (TIES), and helps to establish or upgrade national technology information mechanisms and link them with UNIDO's international networks. In addition, UNIDO is able to support the strengthening of local institutional capacities in the areas of technology choice, evaluation, acquisition and negotiation, and to facilitate technology flows through specific programmes and the holding of "techmarts".

In the context of its five development objectives, UNIDO has also established priority programmes for the next biennium. This decision has been based on the need to concentrate the organization's efforts and resources in order to maximize the potential benefits of its activities. These priority programmes comprise:

- Industrial strategies, policies and institution-building for global economic integration;
- Environment and energy;
- Small and medium enterprises: policies, networking and basic technical support;
- Innovation, productivity and quality for international competitiveness;
- Industrial information, investment and technology promotion;
- Rural industrial development; and
- Africa and least developed countries: linking industry with agriculture.

In conclusion, it may be noted that UNIDO is able to provide a wide range of services in support of the industrial development goals of developing countries. In supplying these services, however, UNIDO acts in a demand-oriented manner, responding to specific requests received from the "client" in the developing country concerned. This client may be the government itself, or a governmental or non-governmental organization, or a private sector enterprise or institution. In each case, however, UNIDO's initial response to such a request is to analyze the objectives the client wishes to achieve and the need for UNIDO support, and to verify that the client's programme is consistent with the country's industrial development goals and UNIDO's own mandate and policies. In this context, the present Country Support Strategy represents an effort to establish a comprehensive and coherent programming framework, and to ensure the relevance and sustainability of the assistance provided by UNIDO.

In this connection it also needs to be stressed that UNIDO is a technical cooperation agency and not a funding agency. Its relatively small regular budget provides only limited scope for programmes and projects funded directly by UNIDO itself. The funding modalities available for financing UNIDO services include the Industrial Development Fund (IDF), consisting of voluntary contributions from UNIDO Member States either for general or special purposes, Special Industrial Services (SIS) for solving specific urgent and unforeseen industrial problems (to be discontinued at the end of 1996), and trust funds made available for a specific purpose either by the beneficiary or by a third party. Other sources of funds available for projects executed or implemented by UNIDO include the Multilateral Fund of the Montreal Protocol for projects related to the protection of the ozone layer, and the Common Fund for Commodities for projects promoting the industrial processing of selected commodities. In addition, UNIDO also acts as an implementing agency for projects funded by the United Nations Development Programme (UNDP).

B. PRINCIPAL ELEMENTS OF A UNIDO COUNTRY SUPPORT STRATEGY FOR INDONESIA

Based on the situation analysis presented in Chapter I, the developmental objectives and priorities of the Government of Indonesia and the proposed areas of support for the United Nations system discussed in Chapter II, and the survey of the objectives and scope of UNIDO's industrial development assistance provided above, it is now possible to draw up a coherent strategy for UNIDO's activities in support of the industrial development process in Indonesia. In overall terms, these activities would have to fulfil several different criteria, including relevance in terms of the country's development goals, sustainability in terms of the existing infrastructural and resource base, and economic efficiency. In order to be able to achieve these criteria, UNIDO's contributions to the industrial development of Indonesia would have to be clearly integrated within the development-oriented activities conducted by the Government of Indonesia, other bilateral and multilateral development assistance agencies, and the private sector.

To ensure this integration, it is necessary to regard the provision of UNIDO services in a broader programmatic context. In doing so, an effective approach would be to analyze the specific industrial components of Indonesia's development goals, and thus to identify areas where the industrial sector could support the achievement of these overall goals or indeed where the absence of an appropriate industrial support infrastructure hampers their achievement. This approach is followed in the remainder of this chapter, which identifies a number of areas for UNIDO assistance on the basis of the various inter- and intra-sectoral development goals established by Indonesia's economic planners and entrepreneurs, and the role that industry can play in helping to achieve them. Wherever possible, these proposals take into account the blueprint for overall UN system assistance drawn up in the Country Strategy Note (CSN), and suggest specific activities to be undertaken by UNIDO, usually on the basis of concrete requests put forward by

representatives of the Government of Indonesia or private Indonesian entrepreneurs during extensive interviews conducted in Jakarta in September 1994.

In drawing up such a strategy for UNIDO assistance, it is important to note at the outset that industrial development is clearly regarded by the Government of Indonesia as the cornerstone of its overall development strategy for Repelita VI and PJP II, and that industry plays an often indispensable direct or indirect role in achieving almost all of the objectives set for the UN development system by the CSN. The achievement of the poverty alleviation and employment creation objective specified in the Note depends explicitly on the creation of industrial employment opportunities, while the achievement of the various human resources development objectives will be unthinkable without the availability of such basic industrial products as family planning aids, pharmaceuticals and medical equipment, and textbooks and other educational materials. The maintenance of growth and development of science of technology objectives are similarly dependent on the industrial sector, which will remain the most dynamic component of the economy for the foreseeable future, as well as the principal conduit for the acquisition and adaptation of external technology and domestic innovation. The environmental objectives of the CSN also bear a direct relation to industry, which has in the past been one of the most significant sources of environmental degradation, and needs to develop and adopt more environmentally-friendly production processes to minimize this damage. Finally, industry also has a significant contribution to make to the achievement of the governance objective stipulated in the CSN, which refers specifically to Indonesia's impending transition to an industrial economy and also calls for the strengthening of workers' organizations, many of which will inevitably represent industrial workers as the process of industrial growth and diversification continues.

As the United Nations agency specializing in promoting and accelerating the industrialization process of developing countries, UNIDO therefore clearly has a considerable potential contribution to make in Indonesia in the coming years, in partnership with both the public and private sectors. The task of identifying major areas for UNIDO assistance is both eased and complicated by the predominant role assigned to industrial development as the engine of overall economic development by the Government, however, and by the important contribution the industrial sector can make to the achievement of the objectives specified in the CSN. On the one hand, this opens the way for a wide range of activities that may be undertaken by UNIDO within the relevance, sustainability and efficiency criteria established above. On the other, however, it significantly increases the need for a prioritization of UNIDO's activities to ensure that they yield the highest possible developmental benefits.

This prioritization process needs to be conducted on two levels. At the macro level it is important to select particular areas within which to concentrate UNIDO's services, with this selection being determined on the basis of priorities set by the Government of Indonesia, the CSN and UNIDO itself. Such a prioritization exercise, at this macro level, is attempted in the following pages, where ten major areas for the concentration of UNIDO activities are proposed. Within each of these broad areas, however, the provision of UNIDO's services will inevitably be undertaken at a more micro, or programme/project, level. In keeping with its position as a demand-driven organization, the choice of these specific programmes and projects would have to be made from among proposals and requests received from potential clients in the country concerned. In the case of Indonesia, a large number of such requests were received from numerous official and private sector bodies, which are noted under the broad headings presented below and summarized in somewhat greater detail in Annex 1. The prioritization process at this micro level will have to be conducted at the next stage of the country support strategy development procedure, and will require each of these requests for UNIDO services to be evaluated individually for its economic and technical feasibility and sustainability, with many possibly having to be modified, or even rejected, as a result of these investigations.

C. PRIORITY AREAS FOR INDUSTRIAL DEVELOPMENT AND UNIDO SUPPORT IN INDONESIA

Priority Area 1: Capacity Building in Industrial Support Organizations.

a. *The Development Objective:*

As the level of industrial development rises, the maintenance of the pace of the development process becomes increasingly dependent on the availability of variety of support services. These include, *inter alia*, facilities for the collection and dissemination of data and information on such matters as appropriate production technologies and output markets, trained manpower to interpret and this information, mechanisms for the establishment and enforcement of quality standards, facilities for the conduct of research and development activities, improvements in such areas as product design and packaging, and mechanisms for the steady and continuous development of vocational and managerial skills. These facilities, and others of a similar nature, can either be established within individual firms, or as separate institutions operated either by the public or private sector. Access to such services plays an important role in ensuring the maintenance of the industrial sector's dynamism and competitiveness by allowing it to acquire appropriate production technologies and wider markets, and to improve its production efficiency and product quality.

b. *The Indonesian Context:*

Already by the late 1980s a UNIDO study had concluded that "the Indonesian industrial development process has now attained a stage at which considerable attention needs to be given to the quality of products and to various supporting services".^{2/} Although considerable progress has been achieved in expanding and developing the capacities of Indonesia's industrial support infrastructure in the meantime, much still needs to be done. This became evident from the discussions held by the author with representatives of the Government of Indonesia and the Indonesian business community in September 1994, which revealed a continuing need for better qualified and more responsive staff in ministries and industry associations to provide more rapid and appropriate assistance and advice to entrepreneurs; for more and better-equipped laboratories and testing facilities to enhance and standardize product quality; for improved facilities for the storage and retrieval of information on industrial raw materials, processes, designs, standards, specifications, investment opportunities and markets to increase industrial efficiency, and for the spread of the support institutions' reach into the more remote provinces to enable them to act as a catalyst in stimulating regionally balanced economic and industrial growth.

c. *Official Priority:*

The promotion of economic growth and development, particularly through industrial development, is stipulated as a major priority of both the Government of Indonesia's development plans and the Country Strategy Note prepared for the United Nations development system. The strengthening of the industrial support institutions along the lines suggested above could greatly enhance the efficiency, and hence the international competitiveness, of Indonesia's industrial sector and the economy as a whole. As such, it would have strongly beneficial implications for economic growth, and make an important contribution to the achievement of

^{2/} United Nations Industrial Development Organization, *Indonesia's Industrial Development - Key Issues and Scope for Multilateral Co-operation*, Report prepared by a UNIDO mission to Indonesia 5-15 December 1988, Document PPD/R.33, 1 February 1990, p. 60.

the economic and industrial growth objectives set in Repelita VI, PJP II and the CSN.

d. *Requests for UNIDO Services:*

Almost all of the discussions held with representatives of public and private sector in Indonesia revealed an urgent need for capacity building in the industrial support institutions. Assistance was requested in such diverse fields as staff training and the setting up of in-house advice services for staff of various public and private-sector institutions; the establishment or expansion of industrial laboratories for a wide variety of products; the creation and maintenance of industrial data and information bases in various ministries and private-sector associations, and the establishment of networks linking them; and support for the geographical expansion of these institutions into the often remote but resource-rich outer provinces of Indonesia. Specific requests of this kind include, *inter alia*, support for capacity building at the central and regional level in the Department of Industry and the National Investment Coordinating Board; and assistance for the establishment or improvement of sectoral and sub-sectoral information bases at the Department of Industry, Department of Health, National Investment Coordinating Board, and the National Chamber of Commerce and Industry. More general requests for the strengthening of the institutional support base of particular industries have also been received from the Departments of Industry, Cooperatives and Small Enterprise Development, and Agriculture, as well as the Federation of Indonesian Metalwork and Machinery Industries Associations.

e. *Scope for UNIDO Response:*

As indicated in the introductory discussion above, UNIDO is well-equipped to support the establishment and development of the required institutional infrastructure. The services provided by UNIDO could encompass the provision of manpower training, information technology and technical support facilities (including industrial planning and policy formulation, research and development, quality control, advisory services, marketing support, etc). The possibility of establishing focal points for industry-related issues in various government agencies and appropriate private-sector associations/organizations, such as the Chamber of Commerce and Industry, could also be assessed.

Priority Area 2: Entrepreneurship Development, Especially for SMEs.

a. *The Development Objective:*

Small and medium-scale enterprises (SMEs) comprise a vital and dynamic component of most market economies, developed and developing, and with their comparatively high absorptive capacity for labour and their ability to produce high-value niche products for the domestic and external markets play an important role in supporting the achievement of economic growth and equity. A recently commissioned study by UNIDO notes that they typically employ 40 per cent or more of a country's industrial workforce, generate as much as half of the industrial sector's output, are represented in all major branches of the sector, are widely dispersed and less likely to be concentrated in urban areas than large-scale enterprises, and tend to be owned by privately owned by local entrepreneurs.³⁷ They therefore constitute an ideal vehicle for the promotion

³⁷ Hill, Hal, *Small-Medium Enterprise and Rapid Industrial Growth: Concepts, Trends and Policy Issues, with Special Reference to Southeast Asia*, unpublished paper prepared for the Regional and Country Studies Branch, UNIDO, August 1993.

of economic and industrial development, especially in labour-surplus and geographically disparate economies, and the need to encourage and nurture them has long been seen as an important element of economic development policy. At the same time, however, there has been an increasing recognition in recent years that the support provided to SMEs should not involve any measures that would distort market signals or give rise to the emergence of uncompetitive protected industries, but should instead be geared towards ensuring that SMEs become active participants in the dynamic development process rather than being confined to a closed enclave with a static outlook.

b. *The Indonesian Context:*

As elsewhere, SMEs play an important role in the Indonesian economy as a whole and its industrial sector in particular, and have made an important contribution to output growth, labour absorption, and regional development. As indicated in Chapter I, for example, the latest available industrial census data collected in 1985-86 show that SMEs (defined in Indonesia to include enterprises with up to 99 workers) accounted for the majority of industrial enterprises in numerical terms and in terms of the total number of workers employed. The growth and development of SMEs has been hampered by a variety of institutional constraints, however, despite the introduction of a number of support schemes by the Government of Indonesia, including the provision of subsidized credits and an attempt to persuade larger firms to support their smaller counterparts in a scheme known as *bapak-angkat* (foster parent). The principal reasons for the only relatively modest success of these schemes include their paternalistic nature and the limited emphasis placed by them on enhancing the efficiency and competitiveness of SMEs.⁴ Future programmes to support the development of SMEs in Indonesia should therefore focus much more closely on enhancing their entrepreneurial capacities and providing them with improved access to skills, technology, markets, and other support services of the kind listed above under Priority Area 1, which would enable them to make much more considered judgements of the resources and opportunities available to them, and to respond accordingly.

c. *Official Priority:*

The development of private entrepreneurship, especially in the manufacturing sector, is a stated objective of the Government of Indonesia, which projects the establishment of 230,000 new enterprises in Repelita VI. Within the overall context of entrepreneurship development, moreover, the main emphasis is to be placed on the encouragement of SMEs, which have been singled out in PJP II and Repelita VI as an important vehicle for employment and income creation. The CSN similarly views SMEs as an important instrument for achieving its primary objective of poverty alleviation and employment creation.

d. *Requests for UNIDO Services:*

Specific requests for UNIDO assistance with the formulation and implementation of entrepreneurship development programmes have been received from a wide range of organizations in Indonesia. These include the Department of Industry and the Department of Cooperatives and Small Enterprise Development, both of which are especially active in this area and have provided a number of proposals for specific UNIDO services. In addition, the Office of the Minister

⁴ This point has already been made very forcefully in a previous UNIDO study. See United Nations Industrial Development Organization, *Indonesia's Industrial Development - Key Issues and Scope for Multilateral Co-operation*, Report prepared by a UNIDO mission to Indonesia 5-15 December 1988, Document PPD/R.33, 1 February 1990, p. 73.

of State for Women has also requested UNIDO assistance for a programme to support the development of women entrepreneurs in rural areas, and the National Investment Coordination Board has requested similar assistance for the establishment of partnerships between foreign investors and Indonesian SMEs. From the private sector, requests have been received from the Association of Indonesian Automotive Industries and the Federation of Indonesian Metalwork and Machinery Industries Associations for UNIDO's help in the development of SMEs as component suppliers and subcontractors.

e. *Scope for UNIDO Response:*

As noted above, UNIDO views the promotion of entrepreneurship development programmes for industry as one of the most important components of its third development objective, equitable development through industrial development, which also places special emphasis on supporting the growth of SMEs. Although the precise services that may be provided in this context will have to be determined in consultation with the client organizations in Indonesia, the range of such services that UNIDO has the capacity to offer is extensive, and includes training in basic managerial and technical skills, the provision of information and advice on technology upgrading options, and the stimulation of self-organization for small industrial enterprises. Since this priority area is closely related to Priority Area 1 in as much as entrepreneurship development of the kind envisaged here will not be possible without a strong institutional support base to provide assistance in the fields of technical and management training, development and dissemination of appropriate technology for SMEs, institution-building, and the promotion of subcontracting and other input-supply arrangements, UNIDO's activities in these two priority areas could, and indeed should, be coordinated into an integrated and mutually reinforcing package of industrial development services.

Priority Area 3: Education and Training for Industry.

a. *The Development Objective:*

This priority area forms part of a continuum with Priority Areas 1 and 2 in so far as it is also related to the enhancement of the underlying institutional support base and human resource endowments for sustained industrial development. At a time when the maintenance of industrial competitiveness and output quality is becoming increasingly dependent on the adoption of more and more sophisticated production processes, and the degree of embodied technology in industrial equipment is rapidly growing, the need for a skilled labour force capable of adapting to these new processes and operating the new equipment is becoming increasingly pressing. Under these circumstances, an ongoing steady improvement in the quality of the labour force represents an essential precondition for ensuring the continuity of the industrial development process. This investment needs to be undertaken at both a general level, to provide the labour force with as high a basic level of education as possible, and at more industry-specific levels, to enable the dissemination of the particular vocational and technical skills required by individual industries. At the very least, the achievement of this objective would require the establishment and/or improvement of the necessary training institutions, either by the government or by the private sector. For maximum effectiveness such a programme would have to be accompanied by a suitable policy framework, providing incentives to workers to acquire new skills and to private enterprises or industry associations to offer access to the relevant training.

b. *The Indonesian Context:*

The Government of Indonesia has long regarded the development of the country's human resources as an intrinsic part of the overall development process, and has placed high priority on the establishment of a widely accessible and affordable education system. The education sector has consequently been one of the principal beneficiaries of public capital spending during the past two decades, with the share of this expenditure rising from an annual average of 7.9 per cent in Repelita II (1974/75-1978/79) to almost 14 per cent in Repelita V (1989/90-1993/94). The results have been impressive, with the country enjoying an almost universal enrolment at primary level, and the overall illiteracy rate having fallen from an already comparatively low level of 39 per cent in 1971 to 23 per cent by 1990. As indicated in Chapter I, however, the educational and skill levels of the industrial labour force in Indonesia leave considerable scope for improvement, with more than 50 per cent of the work force only having a primary education in 1992 and only 1.6 per cent having a tertiary education. This has given rise to fears that the momentum of Indonesia's industrialization process may eventually be stalled by a shortage of suitably skilled and trained workers, and to a widening recognition that a continued investment in vocational training and skills acquisition will not only stimulate a short-term increase in labour productivity but also help to accelerate the process of technological sophistication in Indonesia's industrial sector, thereby paving the way for its continued growth and development and maintaining Indonesia's attractiveness as an industrial location into the future.

c. *Official Priority:*

Education and training is given high priority by both the Government of Indonesia and the CSN. The Repelita VI document, for example, specifies the enhancement of the quality of Indonesia's human resource base as one of the four main objectives for the Plan period (see Chapter I), with special emphasis being placed on vocational training and skill development, particularly in industrial activities. The industrial development strategy for the Repelita VI period also proposes the promotion of labour-intensive industries with rising skill levels over time as one of its principal components. The CSN, meanwhile, also regards support in the field of education and training as one of the most important priorities for the United Nations development system in Indonesia, and states specifically that "emphasis should also be placed ... on vocational training and skills upgrading, not only within the framework of poverty alleviation but also with the aim of ensuring that Indonesia is equipped with the human resources required for its planned industrial transformation".^{5/}

d. *Requests for UNIDO Services:*

The discussions in Jakarta with representatives of both government organizations and private-sector industry associations revealed a strong demand for UNIDO assistance in the field of industrial training and education. Requests for UNIDO services in this field have thus been received from the Departments of Industry, Cooperatives and Small Enterprise Development, and Health, as well as the National Investment Coordinating Board and representatives of the engineering and chemical industry organizations. These requests cover a wide range of activities, including the provision of policy advice on industry-related training and education, the drawing up of staff training programmes for some of the requesting organizations, and various other forms of assistance in support of

^{5/} Office of the Resident Coordinator of the United Nations System's Operational Activities for Development in Indonesia, *Draft Country Strategy Note - A Strategy for the United Nations System in Indonesia*, mimeo, n.d., p. 12.

industrial education and training activities on both a general level and a branch or industry-specific level.

c. *Scope for UNIDO Response:*

The promotion of human resource development for industry has been identified by UNIDO as one of its five main objectives, and the Organization has extensive experience in the provision of technical assistance in this field at the policy, institutional and enterprise level. It will therefore be well able to make a valuable contribution to the increasingly urgent need for the enhancement of industrial and vocational skills in Indonesia. Depending upon the results of follow-up negotiations with the Indonesian partners, this assistance could take a variety of forms, including cooperation in the determination of industrial human resources development policy, support for particular training institutions or the development of training programmes in specific enterprises, and direct activities such as courses and workshops. These activities should be conceived and implemented as a comprehensive and coherent package.

Priority Area 4: Investment Promotion in Industry.

a. *The Development Objective:*

At a time of tightening fiscal resource constraints in developed as well as developing countries, and in response to a growing shift towards market oriented mechanisms of industrial development, the private sector is being called upon to play a progressively larger role in the process of economic development in general and industrial development in particular. Private investment is thus being called upon to provide an increasingly large share of total investment, and to the extent that it involves cross-border flows is emerging as an increasingly important vehicle for the transfer not only of capital but also of technology, and as a means of gaining access to external markets. The development of the private sector, and the stimulation of private investment interest is contingent upon the existence of a conducive macroeconomic environment that ensures a fair play of market forces within an appropriate regulatory framework.

b. *The Indonesian Context:*

As indicated in both Repelita VI and PJP II, the Government of Indonesia expects the private sector to account for a substantial proportion of the overall investment undertaken in the foreseeable future, and for the bulk of the investment in the industrial sector. In Repelita VI no less than Rp484.2 trillion of the overall planned investment of Rp660.1 trillion are expected to originate from the private sector, representing a share of 73.4 per cent. The role of private investment is expected to be even more substantial in the manufacturing sector, which is projected to receive only about Rp3 trillion of the total public development spending of Rp175.9 trillion. While domestic entrepreneurs are expected to account for the vast bulk of the anticipated private investment, foreign investment is also projected to make a significant contribution of Rp36.6 trillion in net terms (i.e. adjusted for external investment by Indonesian firms). While Indonesia has succeeded in attracting substantial volumes of both domestic and foreign private investment during the past decade, and has recorded a particularly impressive increase in investment interest since the second half of 1994, it cannot afford to rest on its laurels. The investments needed to achieve the Repelita VI targets are immense, and the increasing competition for investment funds from elsewhere in Asia and beyond is threatening to render the achievement of these targets increasingly difficult.

- c. *Official Priority:*
The extremely uneven distribution of planned investment expenditure between the private and public sector gives a strong indication of the high priority assigned to private investment as a source of funding for economic growth during Repelita VI. The strong emphasis given by the Government of Indonesia to the promotion of private investment, both domestic and foreign, is also evident from the succession of investment policy reform packages that have been introduced since the mid-1980, resulting in a comprehensive shift in the investment environment from one geared to the regulation of private investment flows to one aimed at stimulating such flows. The most recent of these reform packages was announced in June 1994, which resulted in a dramatic opening of the Indonesian economy to foreign investors in particular, and helped to trigger a sharp rise in the value of approved foreign investment projects to an unprecedented level of almost \$24 billion in 1994, which compares with \$8.1 billion in 1993 and a previous record of \$10.3 billion in 1992. The CSN, meanwhile, also regards an enhanced role of the private sector, and hence implicitly of private investment, as one of the principal determinants of economic growth in the coming years, the maintenance of which it regards as one of its principal priorities.
- d. *Requests for UNIDO Services:*
Against this background of high investment needs and a potential dispersal of investment funds over a much broader range of countries, Indonesia needs to ensure that its attractiveness as a destination for private investment is maintained. Many of the required measures have already been identified by the National Investment Coordinating Board (Badan Koordinasi Penanaman Modal, BKPM), and were presented to UNIDO during a meeting with senior officials in September 1994. These include an intensification of the Board's investment promotion activities, an upgrading of its investment promotion equipment and facilities, and measures to increase the implementation rate of approved investment projects.
- e. *Scope for UNIDO Response:*
All of the areas for improvement identified by BKPM could benefit from external technical assistance. Important assistance in some of these areas is already being provided by the United Nations system, and especially by the UNDP under a long-term project scheduled to expire in 1996 (INS/ECO/0032). This could be complemented or followed up in the industrial field by appropriate assistance from UNIDO, which has considerable experience and expertise in industrial investment promotion, and regards international cooperation in investment and technology as one of its five main development objectives. It could therefore provide a wide range of support services from assistance with policy formulation to the preparation of pre-feasibility studies, the convening of investment promotion meetings, and the designing of publicity material, as well as responding to the specific requests from BKPM listed in Annex I.

Priority Area 5: Science and Technology for Industry

- a. *The Development Objective:*
The increasing internationalization of trade in manufactures is resulting in a sharp growth of international competition in manufactured product markets. This, in turn, is forcing manufacturers throughout the world to focus their attention on maintaining their international competitiveness not only in terms of costs, but also in terms of quality, design and continuous development and innovation. The achievement of this objective is becoming increasingly dependent on the adoption and adaptation of new scientific and technological

methods and processes, including new information, materials, production and packaging technologies. Similarly, science and technology are playing an increasingly important role in the development of environmentally friendly production methods, which minimize the use, and waste, of natural resources and energy.

b. *The Indonesian Context:*

The growing dependence of manufacturing industry on science and technology has been recognized by both the government and the private sector in Indonesia, who have become keenly aware of the need for Indonesian manufacturers to acquire and master the new technologies on a continuous basis if they are to retain their international competitiveness. Private entrepreneurs are responding to this challenge, which is being heightened by the growing export orientation of Indonesian industry and the progressive liberalization of the country's domestic markets, by increasingly entering into joint ventures and other arrangements with foreign partners in order to obtain the necessary technologies from abroad. At the same time, however, they have been relatively slow in establishing a domestic infrastructure for technical and research support, comprising such facilities as research and development centres and laboratories, at either the institutional or enterprise level. The government, by contrast, has taken a strong initiative in this field through the establishment of an official Agency for the Assessment and Application of Technology, which is intended to act as a focal point for the identification, acquisition and adaptation of new technologies and operates a large research complex at Serpong near Jakarta. In addition, it also supports the dissemination of technological skills through the granting of numerous scholarships and bursaries to promising students for technical studies at domestic and foreign universities. A significant proportion of the government's effort in the field of science and technology is devoted to such activities as aircraft manufacture, however, in which Indonesia does not have any apparent comparative advantage at present or in the foreseeable future, and which therefore result in a suboptimal allocation of Indonesia's scarce financial and technical resources.

c. *Official Priority:*

As noted in Chapter II, the enhancement of Indonesia's scientific and technological capabilities for industrial development is a major priority of the Government of Indonesia. The increased application of science and technology in the country's industrial products and processes is explicitly stipulated as a leading objective of PJP II, both in order to increase domestic manufacturing value added and for strategic reasons linked to improving Indonesia's defence capacity and self-reliance. This goal is reiterated in the Repelita VI document, which calls for the increasing development of technology-intensive industries during the Plan period. The CSN, meanwhile, also regards the increased infusion of science and technology into all fields of economic activity as one of its ten principal objectives, specifically pointing out that the UN development system can make an important contribution to the development of indigenous capacities for scientific research and technological innovation in support of, *inter alia*, industrial development.

d. *Requests for UNIDO Services:*

UNIDO assistance for the acquisition and development of technology has been requested from various sources in both the public and private sector in Indonesia. The Department of Industry, for instance, has requested assistance in the promotion of industrial research and development as well as training in negotiation techniques with suppliers of technology. Several more specific

requests for the development of particular technologies have been received from other sources, including the Department of Mines and Energy and the National Agency for the Assessment and Application of Technology. Similarly, many of the requests received from the private industry associations, and from the engineering industry associations in particular, have a strong science and technology component.

c. *Scope for UNIDO Response:*

The promotion of technological development in industry has been designated by UNIDO as one of its principal objectives, and the Organization has accumulated a considerable degree of expertise in this field. At one level, it has established itself as a leading repository of information on available industrial technologies through its extensive Industrial and Technological Information Bank (INTIB), and is able to help with the identification and transfer of suitable foreign technologies, *inter alia* through a specialized International Referral System, the holding of specialized business forums between prematched technology seekers and suppliers (TECHMART), and training in the field of negotiations for technology acquisition. At another level, UNIDO has the capacity to support the development and upgrading of domestic technological capabilities in a wide range of industrial subsectors, including agro-based, chemical, engineering and metallurgical industries. In addition, UNIDO also has a well-developed capacity to assess the economic viability and sustainability of alternative technologies, and can provide assistance in selecting technologies consistent with Indonesia's resource endowments to minimize the risk of a misallocation of scarce resources, which would impede rather than support the industrial development process.

Priority Area 6: Industrial Support for Health and Nutrition

a. *The Development Objective:*

It is increasingly being recognized that economic development does not represent an end in itself but needs to be seen within a more broadly defined human development context, which includes a strong social component. The improvement of health and nutritional standards for the population at large, which are typically suboptimal in developing countries, constitutes a particularly important element of this broader social development goal. The industrial development process can have a significant impact, both negative and positive, on human health and nutrition. On the negative side, industrial pollution represents an important health hazard, for example, and the conversion of agricultural land to industrial and ancillary uses can significantly erode a country's capacity for food production. On the positive side, however, manufacturing industry makes a major contribution to improved health and nutrition through the production of pharmaceutical drugs and other medical supplies on the one hand, and agricultural inputs and processed foods on the other. As ever, the objective of a successful development strategy must be to minimize the negative impacts and maximize the positive ones.

b. *The Indonesian Context:*

Indonesia has achieved considerable success in enhancing public health and raising the nutritional standards of the population during the past three decades. An indication of the extent of this success is provided in a recently published study, which shows that the rate of infant mortality declined by 47 per cent between 1965 and 1988, and that the daily per capita availability of calories

increased by 54 per cent between 1965 and 1989.¹ These impressive achievements notwithstanding, much still needs to be done. The latest available data indicate, for example, that the ratio of health centres, mobile health clinics and hospital beds to per capita of the population amounted to approximately 1:30,000, 1:35,000 and 1:1,500 in the 1992-93 fiscal year.² The expansion of these facilities will inevitably imply an increased demand for pharmaceuticals and medical equipment, which could potentially be covered by domestic manufacturers. Similarly, interviews conducted with representatives of various agencies of the Government of Indonesia in September 1994 revealed deep concern about the hygienic standards of many locally marketed prepared foods and about the inadequate intake of specific nutrients, such as vegetable proteins and iodine, by large sections of the Indonesian population. The further development of the food processing industries, many of which operate on a small scale in the informal sector, could make a significant contribution to the resolution of these problems. Meanwhile, concern has also been expressed about the potential health hazards arising from the industrial development process itself, and the need to employ safe production technologies.

Official Priority

The Government of Indonesia gives high priority to social development, and, as suggested by the data in Table II.1, has committed itself to work towards a significant improvement in the major health and nutrition-related social indicators over the next 25 years. More detailed targets for the Repelita VI period include an improved access to good and affordable community health services; sharp reductions in morbidity, disability and mortality; and efforts to reduce the incidence of such nutritional problems as anaemia, iodine deficiency and vitamin A deficiency for children under five. The CSN, meanwhile, also includes improvements in health and nutrition among its principal objectives, and places special emphasis on the prevention and control of HIV/AIDS, the achievement of which will be heavily dependent on the ready availability of such manufactured goods as condoms and disposable hypodermic needles.

Requests for UNIDO Services

UNIDO has received a particularly large number of requests in this priority area, spanning a wide range of activities. The Department of Health has expressed particular concern about the growing use of hazardous chemicals in Indonesian industry, and is keen to obtain UNIDO assistance in seeking alternative production technologies for industries using such substances. Together with the Department of Industry, it has also expressed a request for UNIDO assistance with the development of medical equipment and with an examination of the scope for the further development of a pharmaceutical raw material industry. In the field of nutrition, meanwhile, assistance has been sought from a wide range of official and private organizations for measures to improve the quality of foods produced by small-scale processing industries, training in food safety, the development and distribution of safe food additives for cottage industries, and the introduction of economically viable industrial techniques for the manufacture of iodized salt and such traditional soybean-based foods as *tempe* (beancurd) and *tempe* (fermented soybean cake).

1 Hill, Hal, 'The Economy', Table 2.2, pp. 58-59, in Hal Hill (ed.), *Indonesia's New Order: The Dynamics of Socio-Economic Transformation*, Allen & Unwin, 1994.

2 Calculated from data contained in the Supplement to the President's Address to the House of People's Representatives on 15 August 1994.

- c. *Scope for UNIDO Response:*
With both the Government of Indonesia and the CSN placing substantial emphasis on the need for economic development to be accompanied by social development, the issue of health and nutrition must be assigned a high priority in any country support strategy prepared for Indonesia by an international technical assistance agency. This is particularly true in the case of UNIDO because of the significant impact, both harmful and beneficial, that industry can have on human health and welfare. In this context UNIDO can play an important role in helping to ensure the highest possible degree of consistency between Indonesia's objectives of industrial and social development objectives. The specific services provided by UNIDO in response to the requests received could include assistance in the selection of medically benign production techniques and the adoption of whatever protective measures may be required in cases where such safe techniques do not exist, as well as support for the proposed development of the pharmaceuticals and medical equipment industries, and for the proposed measures to improve the hygiene and safety of prepared foods.

Priority Area 7: Environmentally Sustainable Industrial Development

- a. *The Development Objective:*
The past few decades have witnessed a growing recognition of the fact that the process of economic growth and development, as hitherto pursued, has imposed severe strains on the environment. Industry has played a particularly significant role in this context, both directly through the emission of air and water pollutants, and indirectly through the manufacture of polluting and environmentally hazardous products, such as motor vehicles, fertilizers and pesticides, and non-biodegradable packaging materials. The accelerating pace of resource depletion and environmental degradation, which have given rise, *inter alia*, to the ozone hole and the increasing threat of global warming, have prompted a growing acceptance of the need to take steps to ensure the environmental sustainability of economic development in general and industrial development in particular.
- b. *The Indonesian Context:*
As elsewhere in the world, environmental consciousness is also spreading rapidly in Indonesia, where two important government agencies, the Office of the Minister of State for the Environment and the Environmental Impact Assessment Agency, as well as a number of private institutions and non-governmental organizations are attempting to ensure that the development process is maintained within an environmentally sustainable framework. While accepting that not all environmental problems are of industrial origin, these organizations are nevertheless turning increasingly to the industrial sector for solutions to these problems through the use of cleaner production technologies, the imposition of increased controls on the emission of industrial pollutants and the production of more environmentally-friendly products. In view of their own resource constraints, these organizations are increasingly seeking foreign assistance in this process, and receiving a favourable response from a wide variety of multilateral and bilateral development assistance agencies, including the United Nations Environment Programme, the United Nations Development Programme, UNIDO, the US Agency for International Development and the Canadian International Development Agency.

- c. *Official Priority:*
Environmental issues are addressed explicitly in the Repelita VI document, which stipulates the adoption of policies aimed, *inter alia*, at reducing industrial and hazardous waste, controlling pollution, conserving and rehabilitating natural resources and the environment, and establishing a system for selecting development sites in areas that are not environmentally sensitive. The environment is also given considerable importance in the CSN, which lists environmental protection and conservation as one of its principal priority areas. While providing a general framework for the coordination of UN assistance as a whole, the CSN also proposes a number of specific environment-related activities of particular relevance to industrial development, including measures to control pollution and the emission of greenhouse gases.
- d. *Requests for UNIDO Services:*
With its growing interest and expertise in the field of environmentally sustainable industrial development (ESID), UNIDO is looked upon as a valuable partner in the quest for environmentally safe industrial technologies. A number of requests in this field have thus been received from the Indonesian authorities. The Department of Industry, for example, has requested assistance for a programme to enhance the implementation of environmental controls, while the Office of the Minister of State for the Environment has sought assistance for a wide range of programmes including the development of environmental standards, the implementation of a spatial use management scheme, and the phasing-out of ozone-depleting substances in industry. The Environmental Impact Assessment Agency, meanwhile, has requested assistance in the promotion of cleaner production technologies, and the Agency for the Assessment and Application of Technology has sought assistance for the evaluation of natural gas as a potential substitute for ozone-depleting chlorofluorocarbons. In addition, the Department of Health has called for assistance with the transfer and dissemination of industrial production technologies that minimize the use of hazardous chemicals in line with the recommendations of the International Conference on Chemical Safety held in Stockholm in April 1994.
- e. *Scope for UNIDO Response:*
As indicated above, UNIDO has adopted the promotion of ESID as one of its five main development objectives, and accumulated a considerable expertise in this field. It is therefore well placed to provide a wide range of ESID-related services at the policy, institutional and enterprise level in all the fields for which such services have been requested. In determining its responses to these requests, however, UNIDO would also have to take into account similar services already being rendered by other bilateral and multilateral organizations in order to minimize any duplication of effort and maximise the degree of coordination and collaboration.

Priority Area 8: Branch-Specific Industrial Master Plans

- a. *The Development Objective:*
Despite the limited effectiveness of the planning mechanism as a tool for overall economic development, the preparation of coherent and comprehensive master plans can nevertheless make an important contribution towards promoting the coordinated development of a number of large investment-intensive industries, either by the private sector itself or in partnership with the public sector. Specifically, such plans would help to ensure that the establishment and

development of these industries proceeds in an efficient manner by taking account of the available resource base, ascertaining the degree to which these resources can be increased or improved, setting specific development goals for the industries in question, and establishing a logical time frame for the phased development of their various components. The result would be a careful phasing of the industry's growth and development aimed at avoiding the emergence of supply bottlenecks and minimizing the waste of scarce economic resources.

b. *The Indonesian Context:*

As noted in Chapter I, the structure of the Indonesian manufacturing sector is extremely complex, and is marked by a high degree of diversity in terms of scale, output, technology, location and ownership consistent with its still relatively early stage of development. This complexity, combined with the effect of a number of other structural and institutional weaknesses (including shortages of business skills, transport and communication facilities, and industrial support services) often prevents the Indonesian economy from transmitting, and potential entrepreneurs from receiving, clear signals about investment opportunities, choice of technology, the scope for partnerships with other domestic or foreign businesses, potential markets, etc. The preparation of carefully conceived and researched master plans for specific industrial subsectors can help to overcome many of these constraints and thereby enhance the efficiency of Indonesia's industrial development process. Equally importantly, from the point of view of increased equity, such research can help to pinpoint areas of particular need, and facilitate the drafting of appropriate policy measures involving, *inter alia*, incentives for channelling industrial investment into depressed areas, the promotion of labour-intensive industrial technologies, and the encouragement of subcontracting and other linkages between enterprises.

c. *Official Priority:*

Both the Repelita VI document issued by the Government of Indonesia and the CSN prepared by the office of the Resident Coordinator of the UN System's Development Activities in Indonesia place high priority on the twin objectives of efficient and equitable industrial development, which is seen by both documents as the main engine of economic growth and a prime source of poverty alleviation in the foreseeable future. The need for some degree of research and indicative planning on a sub-sectoral level is a prerequisite for the achievement of both of these goals. On the one hand, it will help entrepreneurs to identify promising business opportunities and encourage an appropriate phasing of the development of the subsector in question, and for this reason has been highlighted as a priority activity by many of the senior government officials and private businessmen responsible for ensuring the achievement of the Repelita VI targets during consultations held in September 1994. On the other hand, such research will help to identify social imbalances and provide a basis for the formulation of suitable policy responses to overcome them, thereby making an important contribution towards the achievement of the government's aim of poverty alleviation and equitable development.

d. *Requests for UNIDO Services:*

UNIDO assistance has been sought for the preparation of master plans for four industries in particular. The Department of Industry, reflecting the growing concern over the impending depletion of Indonesia's crude oil reserves and accepting the need to conserve its natural gas resources for export, wishes to encourage the use of the country's substantial deposits of coal as a raw material for the growth of the chemical industry. The Department of Agriculture, meanwhile, is interested in the orderly and efficient development of the food processing industries. These official requests have been echoed to some extent

by the private sector, with the chemical industry associations calling for UNIDO assistance in the framing of an overall chemical industry master plan designed to promote a balanced development of the industry's upstream and downstream sectors, and the association of food processing industries requesting assistance in the formulation of a master plan for the development of the export-oriented prepared-food industries.

c. *Scope for UNIDO Response:*

UNIDO has both the mandate and the capacity to respond to these requests. The preparation of such industrial master plans falls well within the scope of UNIDO's first development objective, which is aimed at promoting industrial and technological growth and competitiveness, *inter alia* through the provision of policy advice on strategies for industrial and technological development. The organization is also well equipped with the technical expertise required to prepare these subsectoral master plans, with the Institutional Support and Private Sector Development Branch of the Human Resource and Enterprise Division having considerable experience in this field.

Priority Area 9: Agro-industry

a. *The Development Objective:*

One of the principal objectives of industrial development is to establish a local capacity for adding value to a country's output of products based on its natural resource endowments. This objective can be achieved through various forms of primary and secondary processing, packaging and marketing aimed at enhancing the competitiveness of these products in both domestic and foreign markets. Especially in the case of the agricultural sector in developing countries, however, where much of the production is commonly in the hands of small-scale farmers with traditional skills and limited access to information, technology and capital, the process of agro-industrial development tends to lag behind the development of other industrial sub-sectors. Yet, the development of agro-industries has an extremely valuable contribution to make in precisely this environment by generating increased incomes for the often disproportionately poor and vulnerable populations of rural areas, enhancing the quality, safety and longevity of processed foods for domestic consumption, and supporting the growth of agriculture-based exports.

b. *The Indonesian Context:*

Despite its increasing industrialization, Indonesia has retained a strong agricultural base, with agricultural activities continuing to account for almost 20 per cent of gross domestic product, providing employment for about 56 per cent of the labour force, and contributing significantly to the country's export earnings. The output of the agricultural sector, defined to include animal husbandry, forestry and fishing, also provides a considerable raw material base for industrial development, which Indonesia's industrial planners and industrialists are becoming increasingly keen to tap. In line with the discussion presented above, the further development of the agro-related industries would provide considerable benefits to the Indonesian economy, adding domestic value to the country's substantial output of agricultural products, providing non-agricultural employment opportunities in rural areas, improving food safety and nutrition, and helping to increase Indonesia's export-earning capacity. Because many of the underlying agricultural activities are conducted in remote rural areas, moreover, the establishment of an associated industrial infrastructure would also encourage a regional dispersal of the economic development process.

c. *Official Priority:*

The development of agro-industry and agro-business is a stated objective of Repelita VI, which recognizes the wide-range of benefits likely to accrue to the economy as a result and designates the development of natural resource-intensive industries as one of its main priorities. Specifically, it announces the intention of the government to pursue policies aimed at supporting the growth of agro-processing industries that "utilize comparative advantage, create competitiveness, and stimulate demand for agricultural commodities which will improve farmers' purchasing power and create domestic markets."⁷ Though less specific, the CSN also implicitly gives a high degree of priority to agro-industrial development through its promotion of a number of related objectives, including the creation of off-farm employment in rural areas, a downstream shift in the structure of production towards more processing and value-added manufacturing, and an improvement in the nutritional status of the population. The incidental benefit of a spread of the development process to remote rural areas would also be consistent with the regional development objective of the Government of Indonesia, which is fully endorsed by the CSN.

d. *Requests for UNIDO Services:*

An extensive list of UNIDO services potentially required to support the development of agricultural processing industries has been provided by the Department of Agriculture. This covers activities of general relevance to the overall agro-industrial development process (such as a request for an integrated master plan for agricultural processing industries and export-oriented agribusiness development, and another for a strengthening of the institutional support base for agricultural processing industries), as well as activities related to the development of processing facilities for specific products (such as rice, soybeans, natural rubber and seaweed). These proposals have been supplemented by additional requests from the Department of Industry and several private industry associations. The range of such potential industries is extremely diverse, and includes food processing, the production of industrial raw materials, fish preparation and preservation, and the production of forestry-based products.

e. *Scope for UNIDO Response:*

As noted in the earlier discussion of UNIDO's development objectives, the promotion of agro-related industries is one of the principal elements of UNIDO's goal of supporting equitable development through industrial development. In this connection, UNIDO assigns special priority to programmes emphasizing the selection, adaptation and diffusion of processing technology, including extension services for cottage and small industries; the modernization/rehabilitation of ailing food processing plants; quality control throughout the processing chain; introduction of health and environmental standards for food products; and packaging for preserving quality and facilitating transport and storage. Having chosen to focus on these activities, UNIDO has also assembled a considerable expertise in this field, and is therefore well placed to respond to the requests received from both the public and private sector entities in Indonesia. With some assistance in this field already being provided by other international development assistance agencies, including the U.S. Agency for International Development, there would be considerable scope for UNIDO to cooperate in a

⁷ Government of Indonesia, National Development Planning Agency (BAPPENAS), *Repelita VI, Indonesia's Sixth Five-Year Development Plan (1994/95-1998/99) - A Summary*, Jakarta, n.d., p. 28.

broad-based multi-donor programme covering a wide range of agro-industries in many regions of the country.

Priority Area 10: Special Assistance for Selected Manufacturing Subsectors

- a. *The Development Objective:*

One of the principal features of the industrial development process is the emergence of hitherto non-existent industries, or the growth of embryonic industries, in which the country concerned may have a latent comparative advantage. Despite their frequently strong potential for development, and their scope for supporting the achievement of such ancillary development objectives as employment creation, regional development and export promotion, the growth of many of these industries may often be inhibited in the first instance by a number of constraints, the removal of which requires external financial and/or technical assistance of varying forms. This may include assistance with the preparation of feasibility studies, investment promotion, transfer of technology and the development of a variety of entrepreneurial, production and marketing skills.
- b. *The Indonesian Context:*

As a resource-rich country at a comparatively early stage of industrialization, Indonesia still has a considerable scope for developing a wide range of potentially successful resource-based, labour-intensive and export-oriented industries. The country's capacity to develop many of these industries remains constrained by its geographical and demographic complexities, however, and by the unavailability of appropriate information, skills and technologies. Once these constraints are overcome through the application of suitable foreign assistance programmes, the prospects for realizing the full potential of these industries may be significantly enhanced.
- c. *Official Priority:*

Industrial growth and diversification, and in particular the development of resource-based industries employing labour-intensive production technologies and aimed at satisfying external demand is an explicitly stated objective of Repelita VI. Similarly, the CSN also regards support for a gradual downstream shift in the structure of production towards increased processing and value-added manufacturing in response to incentives and markets as one of its principal priorities. The development of new industries is an implicit corollary of these objectives.
- d. *Requests for UNIDO Services:*

The preparatory discussions for the drafting of the present Country Support Strategy document held in September 1994 with Indonesian government officials and entrepreneurs revealed a strong desire for external assistance for the development of a number of individual industries. Specific UNIDO assistance has been requested for the development of the engineering, ceramics, leather, educational equipment, coal-briquetting, solar panel, laminated bamboo, iodized salt and cocoa processing industries, all of which appear to have considerable merit at first glance.
- e. *Scope for UNIDO Response:*

In responding to these requests, it will, of course, be necessary first to determine their technical and economic viability. Once this has been verified, special tailor-made projects and programmes will have to be formulated for the industries in question, taking into consideration the broader development objectives of the Government of Indonesia, the UN Country Strategy Note and UNIDO itself.

ANNEX I:

PROPOSALS FOR UNIDO SERVICES PRESENTED BY INDONESIAN RESPONDENTS

I. INTRODUCTION

This Annex summarizes the demand for UNIDO services as identified through extensive discussions with senior members of various government departments (ministries), non-departmental institutions and other bodies and agencies, as well as representatives of numerous private industry associations and federations, including the Indonesian Chamber of Commerce and Industry. These discussions were for the most part conducted in the form of group meetings, at which the Indonesian participants were informed about the mandate and activities of UNIDO, the purpose of the country support strategy exercise, and the priority areas for technical assistance by the United Nations system identified in the draft Country Strategy Note (CSN). They were then asked to indicate the areas in which they might benefit from the services UNIDO can provide in achieving their development objectives within the context of Repelita VI in general and the narrower framework of the CSN in particular. Wherever possible, the participants were also requested to write up their proposals after the meetings, and to submit them to the office of the UNIDO Country Director for Indonesia as background material for the present Country Support Strategy (CSS) document and any subsequent project preparation activities.

The proposals submitted by these official and private sources are presented in the following pages under the heading of the organization from which they were received. While this inevitably gives rise to a shopping list of individual programmes and projects, this form of presentation has been adopted in this annex in order to highlight the concerns of the various organizations consulted and to indicate the areas where the interests of these organizations overlap. An attempt to integrate these proposals into a more coherent strategy for UNIDO activities in Indonesia has been attempted in Chapter III, where the requests for specific UNIDO services have been discussed in the context of the major industrial development constraints identified in the course of the meetings with the Indonesian partners.

II. REQUESTS FOR UNIDO SERVICES FROM THE PUBLIC SECTOR

1. Department of Industry

a. *Capacity building at the Department of Industry*

The issue: The shortage of skilled technical and managerial manpower in Indonesia, combined with the comparatively low remuneration offered

in the public sector, have a "brain-drain" effect on the Department of Industry. In order to retain and develop its staff resources, the Department is therefore keen to establish a staff-training programme, but lacks the capacity to do so on its own.

- Additional documentation provided: None.
- Potential UNIDO response: The development of a training and skills upgrading programme, possibly including the outposting of one or more UNIDO experts at the Department to provide a steady flow of technical assistance and advice.
- Relevance in relation to CSS: Priority areas "Human Resources Development - Education and training" and "Governance - Decentralization, regional development and institutional innovation".

b. *Capacity building at the regional level*

- The issue: There is a need for the regional decentralization of the government's industrial development activities, with only the strategic planning function being retained at the central level and the implementation of industrialization process being left to regional officials and the private sector. The regional officials lack the capacity to undertake the necessary studies and research to match local resources with local needs and opportunities, however, and also have only a limited capacity to encourage the growth of local entrepreneurship in the face of strong cultural constraints.
- Additional documentation provided: None.
- Potential UNIDO response: The development of a training programme for regional officers of the Department of Industry and other relevant regional officials. This programme could be formulated and implemented in conjunction with the training and skills upgrading programme for the Department of Industry under item II.1.a (Capacity building at the Department of Industry) above.
- Relevance in relation to CSS: Priority areas "Human Resources Development - Education and training" and "Governance - Decentralization, regional development and institutional innovation".

c. *Support for the development of an industrial information base*

- The issue: A data processing and analysis centre, known by the acronym PUSDATA, was established within the Department of Industry in 1978 for the purpose of collecting, collating, storing, processing and analyzing industrial data and information. Although this centre collects and publishes a wide range of industrial statistics, the Department of Industry regards its scope as being too narrow to provide an effective support service for industrial development, and would like to expand it into a more comprehensive clearing house for all kinds of industrial information, including information on industrial technology, production processes, quality standards, market opportunities, etc. While such an information base would assist the Department's own officials in the conduct of their work, its primary function would be to provide private entrepreneurs with a centralized resource base of industrial information.
- Additional documentation provided: None.
- Potential UNIDO response: Assessment of the feasibility of widening the scope of PUSDATA's activities, possibly followed by assistance in the establishment of the proposed information centre. Such an assistance programme could be formulated to take into account related requests received from other sources, including the Department of Health (proposal II.6.a and II.6.c, "Establishment of a food industry

information and data base" and "Establishment of a training and information centre for traditional drugs"), the Office of the Minister of State for the Environment (proposal II.9.c, "Development of an integrated information network on the environmental effects of industrial development"), the National Investment Coordinating Board (proposal II.12.c, "Establishment of an integrated data base and information network in support of investment promotion activities"), and the National Chamber of Commerce and Industry (proposal III.1.a, "Establishment of an information network and related publication programme").

- Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training", "Governance - Decentralization, regional development and institutional innovation", "Growth - Maintenance of growth" and "Growth - Science and technology".

d. *Promotion of industrial research and development*

- The issue: The increasing global competition resulting from the liberalization of international trade will necessitate continuous efforts to increase industrial efficiency and productivity in order to enable Indonesia to maintain its international competitiveness. This, in turn, will require considerable research and development efforts at company level. In order to stimulate the growth of these research and development activities, the Department of Industry proposes the introduction of specific policy measures, which may include tax benefits and other financial incentives.

- Additional documentation provided:

- i. Potential Role of Industry in Priority Area and Science and Technology.

- Potential UNIDO response: Assistance with the formulation of appropriate incentive-oriented policies.

- Relevance in relation to CSN: Priority areas "Growth - Maintenance of growth" and "Growth - Science and technology".

e. *Training in negotiation techniques with suppliers of technology*

- The issue: As a developing country still largely dependent on the acquisition and adaptation of foreign technologies, Indonesian buyers of industrial technology are often in a comparatively weak bargaining position when negotiating with their external suppliers. To strengthen their hand, the Department of Industry proposes the holding of further workshops on negotiation techniques in technology transfer of the kind conducted in Jakarta in March 1994 with the assistance of UNIDO. These additional workshops should be held in Indonesia's other major industrial centres, such as Surabaya, Medan and Ujung Pandang.

- Additional documentation provided:

- i. II. Transfer of Technology - Negotiation techniques to technology supplier.

- Potential UNIDO response: Conducting the requested workshops.

- Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training", "Governance - Decentralization, regional development and institutional innovation" and "Growth - Maintenance of growth".

f. *Development of industrial maintenance systems*

- The issue: The maintenance of industrial plant and machinery is an important prerequisite for the achievement of high-quality outputs. Maintenance levels tend to be relatively low in Indonesian industry.

however, because the managers usually have little knowledge of the maintenance requirements of the equipment installed in their plants and the operators have little motivation or incentive to maintain this equipment properly. The Department of Industry is therefore interested in assessing the feasibility of a programme to provide the necessary training and incentives to increase the awareness of entrepreneurs and industrial workers of the importance of appropriate maintenance.

- Additional documentation provided:

i. III. Maintenance System in Industry.

- Potential UNIDO response: Assistance with the conduct of the proposed study. This could be linked to UNIDO's response to a similar request from the Department of Agriculture (proposal II.3.c, "Repair and maintenance of agricultural machinery").

- Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training" and "Growth - Science and technology".

g. *Enhanced implementation of environmental controls*

- The issue: In response to the growing recognition of the importance of environmentally sustainable industrial development, the Department of Industry has taken a number of measures designed to prevent industrial pollution. The enforcement of these measures is hampered by a variety of constraints, however, including a lack of expertise in the technical aspects of industrial pollution control and similar shortages of monitoring facilities and testing equipment for industrial pollution.

- Additional documentation provided:

i. Potential Role of Industry in Priority Area 7: Environment.

- Potential UNIDO response: The development of a project to assist with the acquisition of appropriate skills and facilities. This project could be linked to UNIDO's response to related requests received from the Office of the Minister of State for the Environment and the Environmental Impact Assessment Agency outlined below.

- Relevance in relation to CSN: Priority area "Environmental Conservation and Management - Environment".

h. *Entrepreneurship development*

- The issue: Repelita VI calls for the creation of 230,000 new entrepreneurs, of whom 23,000 are proposed to be engaged in predominantly small and medium scale industrial activities, in order to provide adequate employment opportunities for the growing labour force. This requires the introduction of incentive policies, awareness creation/training programmes and other policy-level measures, as well as the provision of infrastructural facilities and the establishment of environmental control mechanisms. To achieve this goal, the Department of Industry proposes a comprehensive, integrated programme of small and medium scale entrepreneurship development encompassing all the requirements listed above.

- Additional documentation provided:

i. Potential Role of Industry in Priority Area 2: Income Generation and Job Creation.

ii. Potential Role of Industry in Priority Area 3: Education and Training.

iii. Potential Role of Industry in Priority Area 6: Economic Growth.

- iv. Potential Role of Industry in Priority Area 7: Environment.
- v. Priority Areas and Problems of SME's Development.

- Potential UNIDO response: Assistance with the formulation and implementation of the proposed programme, and the provision of appropriate policy advice to achieve the proposed objectives. This programme of assistance could be devised to include related requests from other sources, including in particular the Department of Cooperatives and Small Enterprise Development (proposals II.2.a and II.2.d, "Support for small enterprises and cooperatives" and "Education and training programmes for small-scale entrepreneurs and officials of the Department of Cooperatives and Small Enterprise Development") and the Office of the Minister of State for the Role of Women (proposal II.8.a, "Programme to support the development of women entrepreneurs in rural areas").
- Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Governance - Decentralization, regional development and institutional innovation", "Growth - Maintenance of growth" and "Environmental Conservation and Management - Environment".

i. *Regional diversification of industry, especially to eastern Indonesia*

- The issue: The government is attempting to encourage the private sector to play a greater role in the development of eastern Indonesia. These attempts have been only partially successful because of the remoteness of the region and the absence of appropriate infrastructural facilities, as a result of which investments in the region tend to yield comparatively low returns.
- Additional documentation provided: None.
- Potential UNIDO response: Advice in drawing up an incentive system to increase the attractiveness of such investments.
- Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Governance - Decentralization, regional development and institutional innovation", and "Growth - Maintenance of growth".

j. *Support for the engineering industry*

- The issue: The engineering industry is still comparatively weak. It tends to be characterized by poor management, insufficient technological skills, shortages of skilled labour, inadequate capital resources, low returns to scale and limited research and development activities.
- Additional documentation provided: None.
- Potential UNIDO response: An assessment of the potential of this industry and the scope for overcoming the existing bottlenecks, possibly involving help with manpower training, technology transfer and the establishment of subcontracting relationships with foreign firms. This general assessment could form the basis for the development of more specific assistance programmes along the lines requested by the private-sector engineering industry associations (proposals III.2.a, "Development of a skilled workforce for the engineering industries"; III.2.b, "Support for the development of small and medium scale component suppliers and subcontractors"; and III.2.c, "Assistance for the establishment and development of support institutions").
- Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and

training", "Growth - Maintenance of growth", and "Growth - Science and technology".

k. *Development of the ceramics industry*

- The issue: The development of the still comparatively small ceramics industry is regarded as a high priority because it can help to generate employment and export earnings. In addition to tableware and sanitaryware, which is already produced in Indonesia to some extent and is believed to have considerable export potential, the Department of Industry also wants to study the possibility of promoting the establishment of a domestic production capacity for engineering ceramics and art ceramics. In this context it also wishes to support the further development of the existing ceramics institute in Bandung, which requires more modern equipment and an upgrading of staff skills. Large volumes of raw materials are still imported despite the availability of substantial domestic resources, however, because of the lack of a domestic processing capacity.
- Additional documentation provided: None.
- Potential UNIDO response: Provide support for the formulation and implementation of a master plan for the development of the ceramics industry. This project may also take into account a related request from the Department of Mines and Energy (proposal II.4.c, "Assessment of the processing technology needs for ceramics inputs").
- Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation" and "Growth - Maintenance of growth".

l. *Support for agro-processing industries*

- The issue: The agro-processing industries depend critically on the price and quality of the inputs they receive from the agricultural sector. The small farmers within this sector are often unable to produce crops of a sufficiently high and uniform quality standard to meet the needs of the processors, however. The Department of Industry therefore proposes the formulation and implementation of an integrated and comprehensive master plan to identify and overcome the constraints inhibiting the further development of the agricultural processing industries.
- Additional documentation provided:
 - i. Rekapitulasi Matriks Hasil Temu Usaha Dirjen Industri Hasil Pertanian Dengan Asosiasi-Asosiasi Industri Hasil Pertanian, Tanggal 19, 21, 26, 28 Juli dan 2 Agustus 1994.
 - ii. Potential Role of Industry in Priority Area 2: Income Generation and Job Creation (from Directorate General of Agro Industry).
- Potential UNIDO response: Assistance with the development of the proposed master plan and the establishment of agri-business organizations with the objective of improving crop quality and developing entrepreneurship in rural areas. This programme could be designed to take into account similar requests from the Department of Agriculture (proposal II.3.a, "Integrated master plan for agricultural processing industries and agribusiness development, with special reference to export-oriented industries") and the private-sector food processing industries (proposal III.4.a, "Master plan for the development of export-oriented prepared-foods industries"), and to complement similar activities being undertaken by the United States Agency for International Development and the Food and Agriculture Organization of the United Nations.

- Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and training" and "Growth - Maintenance of growth".
- m. *Quality improvement in small-scale food processing enterprises*
- The issue: Small-scale enterprises constitute a significant proportion of Indonesia's food processing industry. The Department of Industry is concerned about the often low quality of their output, however, and in particular limited knowledge of food safety procedures. It therefore wishes to develop an integrated plan to increase their product quality through training in such fields as the use of food additives, hygienic processing and packaging methods, and the implementation of good manufacturing practices.
 - Additional documentation provided:
 - i. Potential Role of Industry in Priority Area 1: Population, Health and Nutrition.
 - Potential UNIDO response: Assistance with the design and implementation of the proposed programme. This could be formulated to include UNIDO's response to similar requests from the Department of Trade (proposal II.5.a, "Distribution of safe food additives for home industries") and the Department of Health (proposal II.6.b, "Education and training in food safety").
 - Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health and nutrition" and "Human Resources Development - Education and training".
- n. *Support for the leather processing and textile industries*
- The issue: Although textiles and leather goods have become major industrial export products in recent years, the industries suffer from a serious lack of expertise in such areas as product design, production management, quality control and marketing. To overcome these constraints the Department of Industry proposes a variety of training activities, including workshops, seminars and courses, as well as the establishment of research and development facilities and the transfer of technology through the promotion of foreign investments in these industries.
 - Additional documentation provided:
 - i. Direktorat Jenderal Industri Aneka.
 - Potential UNIDO response: Assistance in formulating and implementing the proposed support programme, especially through the provision of the training requirements.
 - Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and training" and "Growth - Maintenance of growth".
- o. *Support for the educational equipment industries*
- The issue: Repelita VI places great emphasis of the provision of equal and affordable education opportunities to all strata of society in Indonesia. The achievement of this goal depends critically on the availability of the relevant educational equipment, including textbooks, stationery, writing equipment, sports equipment and musical instruments. In view of their still comparatively underdeveloped state, however, the Department of Industry is seeking to promote the growth of the industries producing these goods.

- Additional documentation provided:
 - i. Potential Role of Industry in Priority Area Education and Training - Alat Peraga Pendidikan, Buku/Barang Cetak, Alat Tulis, Alat Olah Raga dan Alat Musik.
 - Potential UNIDO response: Assistance in the identification and acquisition of appropriate technologies for the production of the required equipment at affordable prices, preferably by small and medium scale enterprises.
 - Relevance in relation to CSS: Priority areas "Human Resources Development - Population, health and nutrition", "Human Resources Development - Education and training", "Governance - Decentralization, regional development and institutional innovation" and "Growth - Maintenance of growth".
- p. *Development of medical equipment industries*
- The issue: Repelita VI calls for a significant increase in the provision of health services throughout Indonesia. The achievement of this objective will require the availability of substantial volumes of medical equipment. The bulk of this equipment has hitherto been imported, with the total value of such imports amounting to more than US\$78.5 million in 1993. Against this background, the Department of Industry is keen to assess the feasibility of expanding the domestic medical equipment industry.
 - Additional documentation provided:
 - i. Potential Role of Industry in the Priority Area 1: Population Health and Nutrition - Alat Kesehatan.
 - Potential UNIDO response: Assistance with the formulation and implementation of the proposed feasibility study, and measures to improve the technical and managerial capabilities of the existing medical equipment manufacturers.
 - Relevance in relation to CSS: Priority areas "Human Resources Development - Population, health and nutrition" "Human Resources Development - Education and training" and "Growth - Maintenance of growth".
- q. *Formulation of a master plan for coal-based chemicals*
- The issue: In view of Indonesia's declining reserves of crude oil and its substantial deposits of coal, the Government is keen to diversify the country's hydrocarbon consumption patterns, both as fuels and as feedstocks for the chemical industry. While recognizing that such a diversification process may be only partially viable because of the costly technologies involved and the need to retrofit some existing oil-based industries, the Department of Industry wishes to assess the scope for such diversification and draw up a master plan for the production of coal based chemicals.
 - Additional documentation provided:
 - i. Potential Role of Industry in Priority Area 8: Science and Technology - Master Plan of Coal Based Chemicals.
 - Potential UNIDO response: Assistance with the formulation of the proposed master plan, possibly taking into account a related request from the Department of Mines and Energy (proposal H.4.c. "Development of coal as a feedstock for urea fertilizers).
 - Relevance in relation to CSS: Priority areas "Growth - Maintenance of growth" and "Growth - Science and technology".

- r. *Human resources development for the pulp and paper industry:*
- The issue: The need to employ large numbers of expatriate staff in strategic positions in the pulp and paper industries is perceived as a major weakness by the Department of Industry. It therefore wishes to upgrade the existing training institutions in the pulp and paper industry in order to increase the number of qualified Indonesian staff available for this increasingly important industry. Specifically, it seeks assistance with the provision of guest lecturers and laboratory equipment for the training centres.
 - Additional documentation provided:
 - i. Letter signed Direktorat Industri Pulp, Kertas dan Produk Kertas.
 - Potential UNIDO response: Assistance with the provision of the requested training facilities. The assistance programme should also take into account a similar request submitted by representatives of the chemical industry associations (proposal III.2.b. "Human resources development for the pulp and paper industry").
 - Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training", "Growth - Maintenance of growth" and "Growth - Science and technology".

2. Department of Cooperatives and Small Enterprise Development

- a. *Support for small enterprises and cooperatives*
- The issue: The latest data compiled by the Central Bureau of Statistics indicate that the total number of business enterprises operating in Indonesia amounts to some 33.4 million, of which 32.6 million are small enterprises with a workforce of up to 20 persons and annual sales of Rp50 million (\$23,200) or less. The government has also promoted the establishment of cooperatives by small-scale producers in a variety of fields, including leather footwear, soybean products such as *tahu* (beancurd) and *tempe* (fermented soybean cake), and handicrafts. These enterprises and cooperatives suffer from a variety of problems including limited access to credits, uncertain raw material supplies, weak marketing skills, and poorly trained labour. The Ministry wants to help these enterprises overcome their existing constraints because of their high capacity for labour absorption and the significant role they play in providing employment for women and other disadvantaged groups. At the same time, however, the Ministry stresses that its support activities should be aimed at "fostering and empowering" rather than protecting these industries.
 - Additional documentation provided: None.
 - Potential UNIDO response: The development of a programme to support small-scale, micro and cottage industries through manpower training, the use of superior raw materials and equipment, and an improvement of output design and quality. Such a programme could be linked to the growth of tourism, producing handicrafts for sale to tourists. It could also be devised to complement an ongoing ILO project for Self-employed Micro Enterprise Development (SEMED), and a recently approved incubator project funded by the UNDP for implementation by the Ministry with assistance from the ILO, three Indonesian universities and the Agency for the Assessment and Application of Technology (Badan Pengkajian dan Penerapan Teknologi (BPPT)). Similarly, it could also be designed to take into account related requests from the Department of Industry (proposal II.1.b.

"Entrepreneurship Development") and the Office of the Minister of State for the Role of Women (proposal II.S.a. "Programme to support the development of women entrepreneurs in rural areas").

Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and training", "Human Resources Development - Disadvantaged and vulnerable groups", "Governance - Decentralization, regional development and institutional innovation" and "Growth - Maintenance of growth".

b. *Strengthening of institutional support base for small enterprises and cooperatives*

The issue: Assistance of various kinds is provided to small enterprises and cooperatives by a wide range of private and public institutions. The former include the national chamber of commerce and industry (Kamar Dagang dan Industri Indonesia, KADIN), individual trade associations, rural Islamic schools (*pesantren*) and other non-governmental organizations. The latter include the Department of Industry, which provides technical services in the field through common service facilities and product promotion centres for clusters of small enterprises and cooperatives; The Department of Cooperatives and Small Enterprise Development, which operates training centres (Balai Latihan Koperasi dan Industri Kecil) in all provincial capitals to provide management training; and the Department of Manpower, which operates vocational training centres (Balai Latihan Kerja) at the provincial level. In order to maximize the effectiveness of these support services, the Ministry suggests that some effort should be made to coordinate them.

Additional documentation provided: None.

Potential UNIDO response: An assessment of the potential benefits and modalities of coordinating the existing support services for small enterprises and cooperatives, possibly followed up by assistance in the establishment of a network of regional offices to act as coordinators, facilitators and providers of technical assistance.

Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and training", "Human Resources Development - Disadvantaged and vulnerable groups", "Governance - Decentralization, regional development and institutional innovation" and "Growth - Maintenance of growth".

c. *Support for the development of small-scale woodcraft industries*

The issue: With substantial resources of forest and plantation timber, Indonesia is well placed to develop its wood-based industries. The Department of Cooperatives and Small Enterprise Development regards the promotion of wood-based craft industries as having particularly great potential for the creation of employment and income opportunities, but recognizes that these industries require assistance in product design, development and marketing. A successful programme in this field could subsequently be expanded to cover similar craft-based industries producing textiles and garments, leather goods, metal products, jewellery and objects d'art for the growing tourist market.

Additional documentation provided:

- i. Potential Role of Industry in Priority Area: 2 - Income Generation and Job Creation; Program Title: Product Development (Wood Craft).

- Potential UNIDO response: Assistance with the establishment of training facilities for product design, development and marketing in the small-scale woodcraft industries.
 - Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and training", "Human Resources Development - Disadvantaged and vulnerable groups", "Governance - Decentralization, regional development and institutional innovation" and "Growth - Maintenance of growth".
- d. *Education and training programme for small-scale entrepreneurs and officials of the Department of Cooperatives and Small Enterprise Development*
- The issue: Small-scale entrepreneurs are often hampered by a lack of appropriate management skills, while the skills of the government officials assigned the task of helping these entrepreneurs also frequently need to be upgraded. The Department of Cooperatives and Small Enterprise Development has therefore proposed an integrated programme for skill development at both levels, covering its own officials and the small-scale entrepreneurs themselves.
 - Additional documentation provided:
 - i. Potential Role of Industry in Priority Area: 3 - Education and Training; Program Title: Training and Education.
 - Potential UNIDO response: Assistance with the formulation and implementation of a suitable training and education programme for small-scale entrepreneurs and officials of the Department of Cooperatives and Small Enterprise Development. The scope of this programme could also be widened to encompass the more general entrepreneurship development objectives of the Department of Industry as presented in proposal II.1.h, "Entrepreneurship development".
 - Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and training", "Human Resources Development - Disadvantaged and vulnerable groups", "Governance - Decentralization, regional development and institutional innovation" and "Growth - Maintenance of growth".
- e. *The introduction of a cleaner production programme, with special reference to the soybean-based food products industries*
- The issue: As indicated in section II.2.a above, the manufacture of soybean-based food products, such as *tahu* and *tempe*, is regarded as an important potential activity for small and medium-sized enterprises by the Government of Indonesia. In addition to the general objectives of the proposal II.2.a, therefore, the Department of Cooperatives and Small Enterprise Development proposes the launching of a pilot project to assess and demonstrate the feasibility of introducing cleaner production techniques in the manufacture of these soybean-based food products.
 - Additional documentation provided:
 - i. Potential Role of Industry in Priority Area: 7 - Environment; Program Title: Cleaner Production Programme (Food-industry: Coop.Tahu-Tempe);
 - Potential UNIDO response: Assistance with the formulation and implementation of the proposed pilot project. This could form a part of a broader programme designed to take into account related proposals for the development of the *tahu* and *tempe* industries submitted by a number of other respondents, including the Department of Agriculture (proposal II.3.f, "Development of the soybean-based

food industries"), an inter-ministerial session on food and nutrition held on 6 September 1993 (proposal II.7.a, "Support for soybean-based food industries"), and the National Agency for the Assessment and Application of Technology (proposal II.11.c, "Development and standardization of *tempe* production"). It could also be linked to other more general requests for improvement in the quality of small-scale food processing enterprises submitted by the Department of Industry (proposal II.1.m, "Quality improvement in small-scale food processing enterprises"), the Department of Trade (proposal II.5.a, "Distribution of safe food additives for home industries") and the Department of Health (proposal II.6.b, "Education and training in food safety").

Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and training", "Human Resources Development - Disadvantaged and vulnerable groups", "Governance - Decentralization, regional development and institutional innovation", "Growth - Maintenance of growth" and "Environmental Conservation and Management - Environment".

f. *The dissemination of quality control technology to small entrepreneurs in the metal products industries*

The issue: The metal products industry is regarded as a promising field for small-scale entrepreneurs, especially if they can establish links with larger enterprises as component suppliers or subcontractors. The development of this industry is hampered by the frequent inability of the small-scale entrepreneurs to meet the high quality standards usually required for such components. The Department of Cooperatives and Small Enterprise Development therefore wishes to promote the spread of appropriate quality control technologies and skills to these entrepreneurs in order to overcome this constraint.

Additional documentation provided:

- i. Potential Role of Industry in Priority Area: 8 - Science and Technology; Program Title: Technology Development (Metal Component).

Potential UNIDO response: Assistance in the dissemination of quality control technology to small entrepreneurs in the metal products industries. This assistance programme could be designed to take into account a similar request presented by representatives of the engineering industry associations (proposal III.2.b, "Support for the development of small and medium scale component suppliers and subcontractors").

Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and training", "Human Resources Development - Disadvantaged and vulnerable groups", "Governance - Decentralization, regional development and institutional innovation", "Growth - Maintenance of growth", "Growth - Science and technology" and "Environmental Conservation and Management - Environment".

3. Department of Agriculture

- a. *Integrated master plan for agricultural processing industries and agribusiness development, with special reference to export-oriented industries*

The issue: The Government of Indonesia attaches high priority to the further development and expansion of the agricultural processing industries, both to improve the nutritional value of domestically consumed foods and to add domestic value to Indonesia's agricultural exports, many of which continue to be shipped in raw or semi-processed form. The growth of the agricultural processing industries is hampered by a number of constraints, however, including the frequent absence of standardized raw material supplies, the use of inappropriate handling and packaging techniques, and insufficient information on quality standards and labelling requirements in export markets. As a first step towards overcoming these constraints, the Government proposes the formulation of a comprehensive and integrated master plan for the agricultural processing industries aimed at identifying improved production technologies for the raw material base, appropriate processing and packaging technologies, and potential domestic and export markets. This project would complement an ongoing agribusiness development project being carried out with the assistance of the United States Agency for International Development, and could be implemented jointly with the FAO. In view of the widely divergent natural, human and capital endowments of Indonesia's various regions, it would also have to consist of several regional sub-plans.

Additional documentation provided:

i. The Development Policy of Agro-Industry On Pelita VI.

Potential UNIDO response: Technical assistance in preparing the proposed master plan. This assistance programme could be formulated to include a response to related requests received from the Department of Industry (proposal II.1.1. "Support for agro-processing industries"), and the private-sector food processing industry associations (proposal III.4.a. "Master plan for the development of export-oriented prepared-foods industries").

Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition", "Poverty alleviation and employment creation", "Growth - Maintenance of growth" and "Growth - Science and technology".

b. *Strengthening the institutional support base for the agricultural processing industries*

The issue: The government of Indonesia operates a number of research institutes to support the production of various food and cash crops, and to provide assistance and advice to the associated processing industries. These include the Central Research Institute for Food Crops (Pusat Penelitian dan Pengembangan Tanaman Pangan) at Bogor in West Java, with several subsidiary institutes for specific crops such as rice, maize, root crops and soybeans elsewhere in the country, and similar research centres for natural rubber and palm oil at Sungai Putih and Medan in Sumatra. These suffer from a variety of weaknesses, especially in the fields of post-harvest processing and the dissemination of their research findings to the producers of agricultural products.

Additional documentation provided: None.

Potential UNIDO response: Strengthen the capacities of the agricultural research institutes to identify and disseminate appropriate processing technologies and market opportunities for agriculture-based products.

Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition", "Human Resources Development - Education and training", "Poverty alleviation and employment creation", "Governance - Decentralization, regional

development and institutional innovation", "Growth - Maintenance of growth" and "Growth - Science and technology".

c. *Repair and maintenance of agricultural machinery*

- The issue: Although agriculture remains a comparatively labour-intensive activity in Indonesia, the use of agricultural production and processing machinery is increasing in response to the growing need to improve the quality of agricultural outputs and the expansion of local processing activities. Appropriate repair and maintenance of this machinery is essential in order to optimize its operating efficiency and prevent its premature deterioration. These high repair and maintenance requirements, which are exacerbated by the fact that much of this machinery is handled by only partially skilled operators, can often not be met because it tends to be deployed in remote rural locations with only limited service facilities.
- Additional documentation provided: None.
- Potential UNIDO response: Establishment of an appropriate training programme in selected rural areas. This could be related to a wider programme of assistance in industrial maintenance requested by the Department of Industry (proposal H.I.F. "The development of industrial maintenance systems").
- Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and training", "Growth - Maintenance of growth" and "Growth - Science and technology".

d. *Handling and packaging of horticultural crops*

- The issue: Indonesia produces a diversity of fruits and vegetables. Over the years the private sector has achieved considerable success in establishing processing industries for many of these crops, and now produces an extensive range of canned, frozen, dried and otherwise prepared products as well as fruit juices and other beverages for both the domestic and export markets. At the same time, however, Indonesia's capacity for handling and packaging fresh fruits and vegetables for export remains limited, due to the variable quality of the raw material supply, apparent difficulties in the acquisition of relevant technology, and insufficient knowledge of food standards in various export markets. A limited agribusiness development project focusing on selected commodities and regions has been initiated with the assistance of the United States Agency for International Development (USAID), and could be expanded or complemented with additional projects covering other crops and regions.
- Additional documentation provided:
 - i. Annual Report for Year 1 and Work Plan for Year 2 of the USAID-supported Agribusiness Development Project.
- Potential UNIDO response: Assistance with the development of an appropriate handling and packaging capacity for fresh fruit and vegetable exports, possibly in conjunction with the Food and Agricultural Organization of the United Nations and/or USAID, to improve and standardize the raw material base.
- Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition", "Poverty alleviation and employment creation", "Growth - Maintenance of growth" and "Growth - Science and technology".

c. *Post-harvest rice processing technology*

- The issue: Rice is the main staple food of the Indonesian population. After several decades of intensive efforts, Indonesia attained rice self-sufficiency in the mid-1980s, but this achievement has recently begun to come under threat as the growth of rice production appears not to be keeping pace with the growth in demand. Under these circumstances, priority is being given to efforts to minimise post-harvest losses through improvements in processing technologies. One of the primary areas for such an improvement is farm level drying in the rainy season, when the effectiveness of the traditional methods of open-air sun-drying is significantly reduced.
- Additional documentation provided: None.
- Potential UNIDO response: Assistance in the identification, testing and acquisition of appropriate technologies for farm-level drying of rice.
- Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition", "Human Resources Development - Education and training", "Poverty alleviation and employment creation", "Growth - Maintenance of growth" and "Growth - Science and technology".

f. *Development of the soybean-based food industries*

- The issue: As noted under item II.2.e above and items II.7.a and II.11.e below, the expansion of the soybean-based processing industry producing such foods as *tahu* (beancurd) and *tempe* (fermented soybean cake) is regarded as an important priority because of the high nutritional value of these foods and their widespread acceptance in Indonesia. This expansion is hampered by a number of constraints, however, including the fact that much of the current production is derived from small-scale cottage industries using simple technology and yielding a variable quality of output.
- Additional documentation provided: None.
- Potential UNIDO response: The preparation of a comprehensive production and marketing plan for the soybean-tahu-tempe complex, covering such issues as appropriate production technology, improved output quality, better packaging for sale in domestic supermarkets (and possibly for export), and the manufacture of a more diversified product range, including tempe crackers, chips and burgers. This programme could be designed to take into account related requests submitted by the Department of Cooperatives and Small Enterprise Development (proposal II.2.e, "The introduction of a cleaner production programme, with special reference to the soybean-based food product industries"), the inter-ministerial session on food and nutrition held on 6 September 1994 (proposal II.7.a, "Support for soybean-based food industries") and the National Agency for the Assessment and Application of Technology (proposal II.11.e, "Development and standardization of *tempe* production").
- Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition", "Poverty alleviation and employment creation", "Growth - Maintenance of growth" and "Growth - Science and technology".

g. *Support for the natural rubber and rubber wood processing industries*

- The issue: Indonesia is the world's second largest producer of natural rubber. The bulk of the country's production derives from smallholdings, however, most of which are planted with old, low-yielding trees and lack the expertise and technology to produce high-quality latex

or field coagulum. The revitalization of the rubber industry therefore depends crucially on an ongoing programme to replant the existing smallholder acreage, and on substantial improvements in farm-level processing facilities and skills. The replanting process, in turn, will give rise to large quantities of rubber wood as the existing senile stands are cut down, which can be utilized for a variety of purposes.

- Additional documentation provided: None.
- Potential UNIDO response: Assistance in the identification, testing and acquisition of appropriate farm-level processing technologies for natural rubber and rubber wood.
- Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Growth - Maintenance of growth" and "Growth - Science and technology".

ii. Development of the seaweed processing industries

- As an archipelagic state consisting of some 13,000 islands, Indonesia has extensive resources of seaweed, which could be processed into edible products such as agar-agar and algeine. Apart from their comparatively high nutritional value, these foods would have the added benefit of providing a natural source of iodine intake even more valuable than iodized salt, which involves an unstable inorganic binding of the salt with potassium iodate. The distribution of such seaweed-based foods to the inland areas of Indonesia would therefore also help to reduce the widespread incidence of goitre in these areas.
- Additional documentation provided: None.
- Potential UNIDO response: Assistance in the identification, testing and acquisition of appropriate seaweed processing technology for the production of iodine-rich foods.
- Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition", "Growth - Maintenance of growth" and "Growth - Science and technology".

4. Department of Mines and Energy

a. Workshop on microbial enhancement of oil recovery (MEOR) and bio-remediation

- The issue: Traditional recovery techniques permit only some 30-40% of the crude oil deposits in a particular field to be extracted. With Indonesia's known oil reserves being gradually depleted and the country facing the prospect of becoming a net importer of oil by the early years of the next century, the need to develop and acquire affordable enhanced oil recovery (EOR) techniques is becoming increasingly important. In this context the Department of Mines and Energy is particularly keen to assess microbial and biological methods of enhanced oil recovery, and develop a local expertise in this field. It has therefore proposed the holding of a workshop microbial enhancement of oil recovery (MEOR) and bio-remediation for this purpose.
- Additional documentation provided:
 - i. Science and Technology: Project proposal to UNIDO - Workshop on Microbial Enhancement of Oil Recovery (MEOR) and Bio Remediation.
- Potential UNIDO response: Assistance with the holding of the proposed workshop.

- Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training", "Growth - Maintenance of growth" and "Growth - Science and technology".
- b. *Establishment of the ASEAN Regional Development Centre for Mineral Resources (ARDCMR) at the Mineral Technology Research and Development Centre in Bandung, West Java*
- The issue: A proposal to establish the ARDCMR was approved by the now-dissolved ASEAN Committee on Industry, Mining and Energy (COIME) in 1992 as a regional institution for information exchange, human resources development, research and development, and investment promotion in the mineral sector, including the mineral processing industry. This project was accorded low priority by ASEAN, however, and although the centre was subsequently established by the Government of Indonesia, its activities are constrained by the limited funds provided.
 - Additional documentation provided:
 - i. Project Proposal Document for ARDCMR.
 - ii. The Establishment of the ASEAN Regional Development Centre for Mineral Resources (ARDCMR) at the Mineral Technology Research and Development Centre, Bandung, Indonesia.
 - iii. Terms of Reference for the establishment of the ASEAN Regional Development Centre for Mineral Resources (ARDCMR).
 - Potential UNIDO response: Assistance in staff training and the identification and acquisition of appropriate mineral processing technologies.
 - Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and training", "Growth - Maintenance of growth" and "Growth - Science and technology".
- c. *Assessment of processing technology needs for ceramics inputs*
- The issue: As indicated under item II.1.k above, the development of the ceramics industry is regarded as a high priority, but is constrained by the lack of an appropriate domestic processing capacity for the abundant resources of raw materials available domestically, including clay, kaolin and quartz.
 - Additional documentation provided: None.
 - Potential UNIDO response: Assistance with the assessment of suitable processing technologies for locally available raw materials for the ceramics industry. This programme of assistance could be designed to take into account a related request from the Department of Industry (proposal II.1.k, "Development of the ceramics industry").
 - Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", and "Growth - Maintenance of growth".
- d. *Training in coal briquetting techniques for household purposes and small industries*
- The issue: Although Indonesia remains an important producer of crude oil and natural gas, the steady depletion of the country's known oil reserves has caused the Government of Indonesia to place a high priority on the diversification of the prevailing energy consumption patterns. Coal is seen as a particularly important substitute for oil as both an industrial and a domestic fuel, and the coal mining industry has expanded dramatically during the past decade. In order to optimize the

use of the available coal resources, the Government is keen to promote the emergence of a coal briquetting industry, the output of which is seen as a potential substitute for kerosene as a domestic cooking fuel, and as a fuel for small-scale industries. The Department of Mines and Energy consequently proposes that a training seminar should be held to help disseminate knowledge of coal briquetting techniques.

Additional documentation provided:

- i. Training on Coal Briquetting for Household Purposes and Small Industries.

Potential UNIDO response: Technical assistance for the proposed training programme on coal briquetting techniques.

Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training", "Growth - Maintenance of growth", "Growth - Science and technology" and Environmental Conservation and Management - Environment".

e. *Development of coal as a feedstock for urea fertilizers*

The issue: In line with the policy of the Government of Indonesia to increase the utilization of coal as a substitute for crude oil and natural gas, the Department of Mines and Energy proposes an investigation of the feasibility of using coal as a raw material for the production of urea fertilizer.

Additional documentation provided:

- i. Science and Technology: Project proposal to UNIDO - Development of Coal Technology for Industry.

Potential UNIDO response: Technical assistance with the identification, assessment and transfer of appropriate technologies for the use of coal as a feedstock for the production of urea fertilizer. This assistance programme could form part of a wider programme in response to a similar request from the Department of Industry (proposal H.L.Q. "Formulation of a master plan for coal-based chemicals").

Relevance in relation to CSN: Priority areas "Growth - Maintenance of growth" and "Growth - Science and technology".

f. *Research on the utilization of oil produced from asphalt*

The issue: Against a background of steadily depleting oil reserves, the need to optimize the use of Indonesia's available resources has prompted the Department of Mines and Energy to consider the possibility of producing oil from the country's substantial deposits of asphalt.

Additional documentation provided:

- i. Project proposal to UNIDO - Research on the Utilisation of Oil Produced from Asphalt.

Potential UNIDO response: Technical assistance for research on the production of oil from asphalt.

Relevance in relation to CSN: Priority areas "Growth - Maintenance of growth" and "Growth - Science and technology".

g. *Development of technology for the production of tin compounds*

The issue: In view of Indonesia's position as one of the leading producers and exporters of tin in the world, the Government is keen to enhance the country's capacity to produce a wide range of tin-based products in order to add increased value to its output and exports of tin. The Department of Mines and Energy therefore proposes the

- establishment of a pilot plant for the acquisition and dissemination of technology for the production of tin compounds.
 - Additional documentation provided:
 - i. Assistance in the development of pilot plant technology for the production of tin compounds in tin producing countries.
 - Potential UNIDO response: Technical assistance for the transfer of technology for the production of tin compounds.
 - Relevance in relation to CSN: Priority areas "Growth - Maintenance of growth" and "Growth - Science and technology".
- h. *Training course on mineral beneficiation and extraction*
- The issue: Indonesia is endowed with a diversity of mineral resources, and is seeking assistance in developing a domestic capacity for mineral beneficiation and extraction. In this connection, the Department of Mines and Energy proposes the holding of a two-month training course on this subject.
 - Additional documentation provided:
 - i. Training Course on Mineral Beneficiation and Extraction among Developing Countries.
 - Potential UNIDO response: Technical assistance in support of the proposed training course.
 - Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training", "Growth - Maintenance of growth" and "Growth - Science and technology".
- i. *Development of the small-scale mineral processing industry, with special reference to precious stones*
- The issue: Although Indonesia produces a variety of minerals, including gemstones, which are capable of being processed further by small-scale enterprises, the development of such a processing capacity remains very limited. To enhance this capacity, the Department of Mines and Energy proposes a project to acquire and disseminate such mineral processing skills and technologies among small-scale enterprises in a number of selected mineral-producing regions.
 - Additional documentation provided: None.
 - Potential UNIDO response: Assistance with the acquisition of the relevant technologies for small-scale mineral processing and the associated training of small-scale entrepreneurs.
 - Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training", "Growth - Maintenance of growth" and "Growth - Science and technology".
- j. *Development of iron-making processes using locally available iron sand*
- The issue: Indonesia has substantial deposits of ilmenite-magnetite iron sand. In the absence of a domestic processing capacity, however, the commercial exploitation of these resources has remained limited to their export in unprocessed form. In order to add value to these exports and utilize the available iron sand resources for Indonesia's domestic development needs, the Government of Indonesia would like to establish a domestic processing industry.
 - Additional documentation provided:
 - i. The Development of Iron-Making Process Using Ilmenite-Magnetite Typed Iron Sand.
 - Potential UNIDO response: Assistance with the identification and acquisition of the necessary processing technologies.

- Relevance in relation to CSN: Priority areas "Growth - Maintenance of growth" and "Growth - Science and technology".

5. Department of Trade

a. *Distribution of safe food additives for home industries*

- The issue: The Government of Indonesia is becoming increasingly concerned about the safety of the food additives being used in growing quantities by the many small-scale food processing industries in Indonesia. This is due both to a lack of public awareness of the importance of safe additives and the frequently high price or unavailability of such additives in the small volumes required by the entrepreneurs concerned. The Department of Trade therefore proposes a programme to inform the small-scale food processing industry about the use of safe food additives and to promote the establishment of new supply and distribution patterns for these additives.
- Additional documentation provided:
 - i. Potential Role Industry in Priority Area 1: Population, Health and Nutrition - Project Title: Distribution Effort of Safe Food Additives For Home Industries in Indonesia.
- Potential UNIDO response: Assistance with the design and implementation of the proposed programme, which could form part of a wider programme to improve the general quality and safety of prepared food in line with related proposals submitted by the Department of Industry (proposal II.1.m, "Quality improvement in small-scale food processing enterprises"), the Department of Cooperatives and Small Enterprise Development (proposal II.2.c, "The introduction of a cleaner production programme, with special reference to the soybean-based food products industries") and the Department of Health (proposal II.6.b, "Education and training in food safety").
- Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition", "Human Resources Development - Education and training" and "Poverty alleviation and employment creation".

6. Department of Health

a. *Establishment of a food industry information and data base*

- The issue: The Directorate of Food and Drink Control of the Department of Health is concerned to ensure the safety of processed foods. In this connection it wishes to establish a food industry information data base to enable it to perform its functions more effectively. This data base should include, inter alia, information on the use of good manufacturing practices and the Hazard Analysis Critical Control Points (HACCP) system to identify the likely points of contamination by large-scale food processing enterprises, the use of food additives by small-scale and cottage based industries, and the food handling techniques employed in cottage industries.
- Additional documentation provided:
 - i. Potential Role of Industry in Priority Area 1: Population, Health and Nutrition - 1. Survey untuk pengumpulan data dasar (data base) mengenai:

- Potential UNIDO response: Assistance in the establishment of such a data base and appropriate staff training to ensure its effective utilization. This data base could form part of, or be networked with, a broader industrial information base along the lines suggested by the Department of Industry (proposal II.1.c, "Support for the development of an industrial information base") and the National Chamber of Commerce and Industry (proposal III.1.a, "Establishment of an information network and related publication programme").
 - Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition" and "Human Resources Development - Education and training".
- b. *Education and training in food safety*
- The issue: In line with its objective of ensuring the safety of processed foods, and in conjunction with proposal II.6.a above, the Directorate of Food and Drink Control of the Department of Health wishes to establish an education and training programme in the field of food safety. This would be aimed at disseminating quality assurance technologies and methodologies to the food processing industry and food safety control staff of the Department of Health. The programme should ideally support training in both preventive and diagnostic techniques, with the trainees being taught how to avoid contamination through the adoption of the HACCP system and how to investigate cases of food contamination and food poisoning. The programme should cover staff at the national, provincial and district levels.
 - Additional documentation provided:
 - i. Potential Role of Industry in Priority Area 3: Education and Training - Pendidikan dan pelatihan keamanan makanan mengenai:
 - Potential UNIDO response: A training programme for quality control staff concerned with food safety in the public and private sectors. This could form part of a broader programme on food safety taking into account related requests from the Department of Industry (proposal II.1.m, "Quality improvement in small-scale food processing enterprises"), the Department of Cooperatives and Small Enterprise Development (proposal II.2.e, "The introduction of a cleaner production programme, with special reference to the soybean-based food products industries") and the Department of Trade (proposal II.5.a, "Distribution of safe food additives for home industries").
 - Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition", "Human Resources Development - Education and training" and "Governance - Decentralization, regional development and institutional innovation".
- c. *Establishment of a training and information centre for traditional drugs*
- The issue: Indonesia has a long history in the manufacture of traditional drugs, known locally as *jamu*, which are usually produced by small scale or cottage enterprises. The government of Indonesia regards these drugs as a national heritage, and their further development is a stated objective of government policy. At the same time, however, the Department of Health wishes to ensure that these drugs are safe and manufactured according to clearly specified safety guidelines. It therefore wishes to establish a training centre for this purpose, which could be extended to include an information centre providing data on marketing, investment opportunities, technology and new markets both within Indonesia and abroad.

- Additional documentation provided:
 - i. The Safety Programme of Traditional Drugs (Jamus) in Indonesia.
 - Potential UNIDO response: Technical assistance for the establishment of the proposed training and information centre for traditional drugs. This assistance programme could be designed as part of a wider programme for the collection and dissemination of industrial data and information along the lines of the requests submitted by the Department of Agriculture (proposal II.1.c. "Support for the development of an industrial information base") and the National Chamber of Commerce and Industry (proposal III.1.a. "Establishment of an information network and related publication programme").
 - Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition" and "Human Resources Development - Education and training".
- d. *Expansion of the domestic production capacity for pharmaceutical raw materials*
- The issue: Indonesia's has a well-developed formulation industry for pharmaceutical products. This industry continues to depend heavily on imported raw materials, however, with the domestic production capacity for such raw materials remaining extremely limited. Although the private sector has considered several projects in the past to expand this capacity, they have usually had to be abandoned because the small size of the Indonesian market did not permit the achievement of the necessary economies of scale. While recognizing that any expansion of the industry must be contingent upon its economic viability and competitiveness, the Department of Health would nevertheless like to encourage increased private sector activity in the production of pharmaceutical raw materials. In this connection it is seeking technical assistance in identifying alternative production techniques that may be viable at relatively low output levels, or alternatively in identifying export markets to allow the necessary production volumes to be achieved. The potential for increased linkages between the pharmaceutical raw material industry and Indonesia's rapidly expanding basic chemicals industries could also be explored in this context.
 - Additional documentation provided: None.
 - Potential UNIDO response: Assistance in identifying suitable production technologies or export markets to enable the further development of the pharmaceutical raw material industry.
 - Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition", "Growth - Maintenance of growth" and "Growth - Science and technology".
- e. *Measures to reduce the use of hazardous substances in industry*
- The issue: The government is concerned about the growing use of hazardous chemicals in Indonesia as a corollary of the country's rapid industrial growth, but is faced with considerable difficulties in enforcing laws against the use of these substances even where they do exist. In line with the recommendations of the International Conference on Chemical Safety held in April 1994 in Stockholm under the auspices of the World Health Organization, the United Nations Environment Programme and the International Labour Office, the Department of Health is keen to reduce the use of hazardous chemicals in industry and would welcome assistance in the acquisition and dissemination of alternative industrial production technologies.

- Additional documentation provided:
 - i. Final Report of the International Conference on Chemical Safety, Stockholm, 25-29 April 1994.
- Potential UNIDO response: Assistance with the identification and dissemination of alternative production technologies in industries employing hazardous substances.
- Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition", "Environmental Conservation and Management - Environment", "Growth - Maintenance of growth" and "Growth - Science and technology".

7. Inter-ministerial session on food and nutrition on 6 September 1994

- a. *Support for the soybean-based food industries:*
For details please see items II.2.e and II.3.f above, as well as item II.11.c below. This request from the participants of the Inter-ministerial session on food and nutrition held in the Department of Industry on 6 September 1994 is merely repeated here to indicate the high degree of government priority attached to this issue.
- b. *Production and marketing of iodized salt:*
 - The issue: The increased production and distribution of iodized salt is regarded as a high priority by the Government of Indonesia in order to combat the widespread incidence of goitre in inland areas of the country. The achievement of this objective is hampered by the poor quality of much of the salt produced in Indonesia, the bulk of which is sea-salt derived from small-scale producers or cooperatives, and the lack of appropriate equipment and know-how.
 - Additional documentation provided:
 - i. Keadaan Iodisasi Garam di Indonesia.
 - Potential UNIDO response: Assistance to increase the quantity and quality of iodized salt, involving measures to improve the quality of the raw material and the provision of training and technical assistance to producers of iodized salt, many of whom are small-scale enterprises in the private sector. This assistance could build upon an earlier project supported by the United Nations Children's Fund (UNICEF) in the 1980s.
 - Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health, nutrition", "Human Resources Development - Education and training", "Poverty alleviation and employment creation" and "Growth - Science and technology".

8. Office of the Minister of State for the Role of Women

- a. *Programme to support the development of women entrepreneurs in rural areas*
 - The issue: Recognizing that women play a significant economic role in the rural areas of Indonesia, the Office of the Minister of State for the Role of Women is developing a programme to enhance the entrepreneurial capacities of rural women and enable them to play a leading role in rural development. This programme, designated Wanita Pemandu Pembangun Pedesaan (Women as Guides for Rural Development), is intended, inter alia, to help overcome the credit constraints often faced by small-scale women entrepreneurs in rural areas, and to provide them with other forms of institutional support.

Particular attention may also be paid in this context to supporting the entrepreneurial activities of elderly women.

Additional documentation provided:

- i. Chapter IV (Goals, Strategic Objectives and Action to be Taken) of the Draft Report of the Meeting of Ministers on Women in Development, 14 June 1994, ESCAP.

Potential UNIDO response: Support for the development and possible future implementation of the Wanita Pemandu Pembangun Pedesaan programme. This could be linked to a broader programme of support for entrepreneurship development along the lines requested by the Department of Industry (proposal II.1.h. "Entrepreneurship development").

Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and training", "Human Resources Development - Disadvantaged and vulnerable groups", "Governance - Decentralization, regional development and institutional innovation" and "Growth - Maintenance of growth".

9. Office of the Minister of State for the Environment

a. *Development of environmental standards and regulations for industry*

- The issue: In response to the growing concern to ensure that Indonesia's industrial development should proceed in an environmentally sustainable manner, the Office of the Minister of State for the Environment is in the process of establishing environmental standards and regulations for industry. These are intended to cover such areas as marine, air, water, soil, radiation, noise, vibration and light pollution, and take into account Indonesia's international commitments under the existing global conventions on greenhouse gases, climate change, ozone depleting substances, etc.

- Additional documentation provided: None.

- Potential UNIDO response: Assistance with the formulation of the proposed environmental standards and regulations for industry. This programme of assistance could be linked to a related request for assistance from the Department of Industry (proposal II.1.g. "Enhanced implementation of environmental controls").

- Relevance in relation to CSN: Priority area "Environmental Conservation and Management - Environment".

b. *Implementation of the Spatial Use Management Act of 1992*

- The issue: A Spatial Use Management Act was promulgated by the Government of Indonesia in 1992. It is designed to ensure an appropriate allocation of land for various agricultural, industrial, residential and recreational uses in order to minimize the environmental stresses arising from the country's rapid economic development. The Office of the Minister of State for the Environment has been assigned the main responsibility for ensuring the implementation of this Act, including the environmental management of industrial areas and the possible relocation of environmentally damaging industries. In view of its own staff constraints, however, the Office of the Minister of State is seeking external assistance and advice on matters related to regional industrial development and the spatial allocation of land for industrial uses.

- Additional documentation provided: None.
- Potential UNIDO response: Provision of the required assistance and advice.
- Relevance in relation to CSN: Priority area "Environmental Conservation and Management - Environment".

c. *Development of an integrated information network on the environmental effects of industrial development*

- The issue: The task of the Office of the Minister of State for the Environment as a central coordinating agency for all matters related to environmental conservation and management is hampered significantly by the absence of an integrated and comprehensive information network on environmental issues. While substantial quantities of such information exist, they are scattered throughout various government departments and private entities. The Office of the Minister of State is therefore seeking external help to establish the necessary network, which would enable the various parties involved to adopt a more coordinated and coherent approach to environmental management. A pre-feasibility study on the establishment of such a network has already been conducted by the Global Resource Information Database (GRID) centre of the United Nations Environment Programme at Arendal, Norway, in 1993.
- Additional documentation provided:
 - i. Pre-feasibility Study for the Establishment of a GRID-Compatible National Environmental Information Network in Indonesia, GRID-Arendal, 20 October 1993.
- Potential UNIDO response: Assistance with the establishment of the proposed database and information network. This could be coordinated with other appropriate organizations of the United Nations system, such as UNEP-GRID, so that the input of UNIDO is limited to issues dealing with the environmental effects of industrial development. This assistance could also be linked to a broader programme of support for the development of an industry-related data and information base along the lines requested by the Department of Industry (proposal II.1.c. "Support for the development of an industrial information base").
- Relevance in relation to CSN: Priority area "Environmental Conservation and Management - Environment".

d. *Sustainable industrial exploitation of Indonesia's biodiversity*

- The issue: Indonesia's vast territory and maritime exclusive economic zone contain a wide variety of different ecosystems with a great diversity of flora and fauna. Apart from its stated objective of conserving and protecting these environmental resources, the Office of the Minister of State for the Environment is also keen to promote their sustainable economic and industrial exploitation. It is therefore seeking assistance in identifying suitable biological materials for use in such industries as pharmaceuticals and cosmetics, and to stimulate the development of these industries. The collection of the biological materials needed for these industries would also provide a source of additional income for the often underprivileged populations of the areas in which they are found.
- Additional documentation provided: None.
- Potential UNIDO response: Assistance in the identification of possible industries based on the sustainable exploitation of Indonesia's biodiversity, and in the establishment of such industries.
- Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Population,

health and nutrition", "Human Resources Development - Disadvantaged and vulnerable groups", "Environmental Conservation and Management - Environment" and "Growth - Science and technology".

e. *Phasing out of ozone depleting substances in industry*

- The issue: In line with the terms of the Montreal Protocol, the Government of Indonesia is beginning to take steps to phase out the use of Chlorofluorocarbons and other ozone depleting substances in the industrial sector. Small-scale enterprises will be targeted in the first stage, which will be followed by larger scale enterprises in the fields of refrigeration and air conditioning. The programme is intended to include the provision of information and training to promote the use of alternative substances, as well as assistance with the retro-fitting of plant and equipment.
- Additional documentation provided: None.
- Potential UNIDO response: Assistance in the provision of training in the use of non-ozone depleting substances, possibly through the holding of workshops for entrepreneurs, and in the promotion of investments in alternative technologies.
- Relevance in relation to CSN: Priority areas "Environmental Conservation and Management - Environment" and "Growth - Science and technology".

10. **Environmental Impact Assessment Agency**

a. *Promotion of cleaner production technologies for industry*

- The issue: As the government agency responsible for ensuring the environmental sustainability of Indonesia's economic development process, the Environmental Impact Assessment Agency (Badan Pengendalian Dampak Lingkungan, BAPEDAL) has initiated a wide-ranging cleaner production programme. This is intended to offer technical assistance to industry, set up systems for the collection and dissemination of information, provide appropriate training, foster awareness, and establish economic incentives for the adoption of cleaner production methods. Not all elements of this proposed programme are being implemented as yet because of resource constraints, providing scope for the provision of UNIDO services in these areas.
- Additional documentation provided:
 - i. BAPEDAL Cleaner Production Program.
- Potential UNIDO response: Assistance in the implementation of the still dormant parts of the BAPEDAL cleaner production programme.
- Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training", "Environmental Conservation and Management - Environment", "Growth - Maintenance of growth" and "Growth - Science and technology".

11. **National Agency for the Assessment and Application of Technology**

a. *Assessment of manufacturing technology and safety*

- The issue: The Agency for the Assessment and Application of Technology is concerned about the fact that the export potential of the growing range of technology-intensive manufactured goods produced in Indonesia is hampered by safety-based certification requirements in

possible export markets. It therefore wishes to introduce a system to assess manufacturing technology and safety into the country's high-technology industries, in order to ensure that safety is built into their products from the design stage. In pursuit of this objective, the Agency is seeking technical assistance from an external source to develop an integrated programme covering a preliminary feasibility study followed by a comprehensive analysis of the manufacturing sector's safety needs and the implementation of the recommendations arising from this study.

- Additional documentation provided:
 - i. Terms of Reference - Project Aid Proposal for the Technical Cooperation on the Assessment of the Manufacturing Technology and Safety (AMTS).
 - Potential UNIDO response: Technical assistance for one or more activities of the proposed programme.
 - Relevance in relation to CSN: Priority areas "Growth - Maintenance of growth" and "Growth - Science and technology".
- b. *Development of an information technology policy*
- The issue: In view of the growing importance of information technology (IT) for economic growth and development, the Agency for the Assessment and Application of Technology deems it important to develop a comprehensive policy and national plan to promote and coordinate its spread within Indonesia. It therefore proposes a study into the current state of IT in the country and its prospects for the future, on the basis of which to formulate the proposed policy.
 - Additional documentation provided:
 - i. Information Technology Policy Development.
 - Potential UNIDO response: Technical assistance for the preparation of the proposed study and subsequent formulation of the IT policy.
 - Relevance in relation to CSN: Priority areas "Growth - Maintenance of growth" and "Growth - Science and technology".
- c. *Production of solar panels to support the rural electrification programme*
- The issue: The provision of electric power to Indonesia's predominantly rural population poses considerable problems because of the dispersed nature of this population and the fact that a significant proportion of it lives in remote areas. At the same time, however, the availability of electric power is a major prerequisite for rural industrial development, and hence for employment creation and poverty alleviation. The National Agency for the Assessment and Application of Technology therefore proposes the development of Indonesia's solar panel industry through collaborative ventures with foreign companies having the appropriate technology, in order to enable households and small-scale enterprises in rural areas to generate their own power. In this connection it is seeking technical assistance for a feasibility study into the viability of such a project, and help with the establishment of the necessary partnerships between Indonesian and foreign firms.
 - Additional documentation provided: None.
 - Potential UNIDO response: Assistance in the preparation of the requested feasibility study and the required transfer of technology.
 - Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Disadvantaged and vulnerable groups", "Governance - Decentralization, regional development and institutional innovation", "Growth - Maintenance of growth" and "Growth - Science and technology".

d. *The use of solar energy for drying estate crop products*

- The issue: Although Indonesia is a major producer of a wide range of estate crops, the country's tropical climate gives rise to a high risk of post-harvest spoilage, especially if the harvested crops are not adequately dried. The high degree of humidity and frequent rainfall often renders traditional methods of sun drying inadequate, however, and necessitates the use of artificial dryers. In order to economize on the use of fossil fuels and enable artificial dryers to be used in rural areas with insufficient electricity supplies, the Agency for the Assessment and Application of Technology is interested in developing crop-drying technologies driven by renewable energy sources such as solar power and biomass. The technology has already been developed and tested during 1986-93, but now needs to be integrated into the production of commercially viable low-cost equipment for use by small farmers on a variety of crops.
- Additional documentation provided:
 - i. The Use of Solar Energy for Drying Estate Crop Products.
- Potential UNIDO response: Assistance with the further development and commercialization of the technologies for the use of solar energy to dry estate crops.
- Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Disadvantaged and vulnerable groups", "Governance - Decentralization, regional development and institutional innovation", "Growth - Maintenance of growth" and "Growth - Science and technology".

e. *Development and standardization of tempe production*

- The issue: In recognition both of the importance of *tempe* (fermented soybean cake) as an inexpensive source of protein in the Indonesian diet and of the fact that much of the current production is undertaken in small-scale or cottage industries under often unhygienic conditions, the Agency for the Assessment and Application of Technology wishes to initiate a programme to support the improvement and standardization of tempe production processes. This proposal is related to proposals II.2.e, II.3.f and II.7.a above, and underlines the high priority given by all relevant bodies in the Government of Indonesia to the development of soybean-based foods.
- Additional documentation provided:
 - i. Development and Standardization of Tempe (Fermented Soybean) Production.
- Potential UNIDO response: Assistance with the introduction and dissemination of improved but affordable tempe production technologies. This assistance programme should be designed to respond also to the related requests submitted by the Department of Cooperatives and Small Enterprise Development (proposal II.2.e, "The introduction of a cleaner production programme, with special reference to the soybean-based food product industries"), the Department of Agriculture (proposal II.3.f, "Development of the soybean-based food industries") and the inter-ministerial session on food and nutrition held on 6 September 1994 (proposal II.7.a, "Support for soybean-based food industries").
- Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health and nutrition", "Poverty alleviation and employment creation", "Growth - Maintenance of growth" and "Growth - Science and technology".

- f. *Evaluation of the use of natural gas as a potential substitute for CFCs*
- The issue: As part of the global effort to reduce the use of ozone-depleting substances, including CFC-based refrigerants, the Agency for the Assessment and Application of Technology is keen to assess the potential of natural gas as a substitute for CFCs. This interest is based on the expectation that the use of refrigerants in such equipment as air conditioners and refrigerators will inevitably increase in the coming years as income levels rise, and on the fact that Indonesia has extensive reserves of natural gas.
 - Additional documentation provided:
 - i. Studies on the Use of Natural Gas as an Alternative Substitute for CFCs.
 - Potential UNIDO response: Technical assistance for the proposed study on the feasibility of using natural gas as a substitute for CFC-based refrigerants.
 - Relevance in relation to CSN: Priority areas "Environmental Conservation and Management - Environment", "Growth - Maintenance of growth" and "Growth - Science and technology".
- g. *Development of laminated bamboo as a low-cost building material*
- The issue: The provision of adequate housing for Indonesia's large and growing population is a major development need, and will place considerable demands on the country's natural and financial resources. In order to reduce the environmental threat that the growing need for wood will pose for Indonesia's forests in particular, the Agency for the Assessment and Application of Technology has developed a technique for producing laminated bamboo using urea formaldehyde adhesive as an alternative building material. In view of the widespread availability of bamboo in Indonesia and the country's substantial natural gas resources for the production of the adhesive, laminated bamboo represents a promising building material for low-cost housing in both rural and urban areas. Over the coming years the Agency plans to develop this technology further and expects it to be applied commercially by mid-1998.
 - Additional documentation provided:
 - i. Project proposal document on laminated bamboo.
 - ii. Leaflet entitled Penelitian dan Pengembangan Teknologi Bambu Laminasi.
 - Potential UNIDO response: Assistance with the development and commercialization of the bamboo laminating technology, including an assessment of its export potential.
 - Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health and nutrition", "Environmental Conservation and Management - Environment", "Growth - Maintenance of growth" and "Growth - Science and technology".
- h. *Development of n-Alkane as an alternative environmentally-friendly raw material for the production of household detergents*
- The issue: Most detergents presently in use in Indonesia are based on surfactants such as alkyl benzene sulfonate, which degrade slowly and leave a persistent residue. In order to reduce the resulting threat of water pollution, the Agency for the Assessment and Application of Technology proposes a study into the technical and economic feasibility of using n-Alkane as an alternative surfactant, analyzing in particular the various processing technologies available in order to determine the most appropriate for Indonesia.

- Additional documentation provided:
 - i. n-Alkane plant.
- Potential UNIDO response: Technical assistance for the proposed study.
- Relevance in relation to CSN: Priority areas "Environmental Conservation and Management - Environment" and "Growth - Science and technology".

12. National Investment Coordinating Board

a. *Staff training for the National Investment Coordinating Board*

- The issue: Repelita VI calls for a total private investment of Rp484,200 billion (approximately US\$220 billion). Attracting private investment on this scale will require a considerable effort from the various Indonesian authorities involved in investment promotion, including the National Investment Coordinating Board. The Board is concerned, however, that its staff may not have the skills needed for this task, and would like to initiate a training programme in the field of investment promotion, both for its headquarters staff in Jakarta and for its regional staff in the provincial capitals. This training is intended to enable the staff concerned to identify, assess and promote investment opportunities in the various regions of Indonesia.
- Additional documentation provided: None.
- Potential UNIDO response: Formulating and implementing an appropriate training programme for the staff of the National Investment Coordinating Board and its provincial offices. Particular emphasis would be placed in this connection on the special needs of promoting manufacturing investment, in order to complement an ongoing training programme being carried out with the assistance of the UNDP.
- Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training", "Governance - Decentralization, regional development and institutional innovation" and "Growth - Maintenance of growth".

b. *Intensification of investment promotion activities*

- The issue: The National Investment Coordinating Board has hitherto been a largely reactive organization, being more concerned with controlling and licencing private investment activities than with encouraging them. In order to meet the ambitious investment targets set for Repelita VI, however, the Board will have play a much more proactive role in investment promotion, involving itself, *inter alia*, in the identification of investment projects, the creation of investment profiles, the preparation of feasibility studies, and the holding of investment promotion meetings in Indonesia and abroad.
- Additional documentation provided: None.
- Potential UNIDO response: Technical assistance in support of the Board's attempts to intensify its investment promotion activities, possibly including training in the use of COMFAR to prepare feasibility studies.
- Relevance in relation to CSN: Priority area "Growth - Maintenance of growth".

c. *Upgrading of investment promotion equipment and facilities*

- The issue: The investment promotion facilities at the disposal of the National Investment Coordinating Board, including publicity materials,

exhibition rooms, video equipment, etc., are regarded as inadequate by the Board. It therefore wishes to upgrade these facilities, and seeks external technical assistance in this field. The proposed activities include the drafting and designing of attractive publications in English and other languages, the production of high-quality promotional films and videos, and the modernization of the Board's exhibition rooms and exhibits.

- Additional documentation provided:

i. Badan Koordinasi Penanamam Modal - Usulan Kepada UNIDO

- Potential UNIDO response: Assistance in the upgrading of investment promotion equipment and facilities.

- Relevance in relation to CSN: Priority area "Growth - Maintenance of growth".

d. *Measures to increase the low implementation rate of approved private investment projects*

- The issue: The record shows that only about 50 per cent of the foreign direct investment projects and 40 per cent of the domestic investment projects approved by the National Investment Coordinating Board have been implemented. While various explanations have been suggested for this low implementation rate, including high domestic interest rates and continued regulatory impediments at the regional level despite efforts to liberalize the investment regime at the national level, no conclusive study has yet been conducted into its actual causes. The Board therefore wishes to initiate such a study with a view to identifying the precise causes for the low implementation rate and proposing remedial measures to the Government.

- Additional documentation provided: None.

- Potential UNIDO response: Assistance with the preparation of the proposed study and analysis of its findings in order to derive the appropriate policy responses.

- Relevance in relation to CSN: Priority area "Growth - Maintenance of growth".

e. *Establishment of an integrated data base and information network in support of investment promotion activities*

- The issue: The computerized information system for investment promotion at the National Investment Coordinating Board is outdated and in urgent need of replacement. In order to be able to operate effectively, the Board believes that it needs a new information system capable of monitoring the full range of its activities (including investment planning, promotion, licensing and implementation) as well as being able to be linked to its regional offices and to other relevant institutions within Indonesia and abroad. An analysis of these information technology requirements has already been conducted by a national consultant, which revealed the need to invest some Rp1.7 billion (US\$770 million) in new hardware and software. This study has been rejected by the National Development Planning Agency, however, which has instructed the Board to carry out a new study.

- Additional documentation provided:

i. Rencana Induk Studi Komputerisasi.

- Potential UNIDO response: Assistance with the preparation of the required study. This could form part of a broader programme to establish an industrial data and information base in response to a related request from the Department of Industry (proposal II.L.c. "Support for the development of an industrial information base").

- Relevance in relation to CSN: Priority areas "Governance - Decentralization, regional development and institutional innovation" and "Growth - Maintenance of growth".
- f. *Greater selectivity in the choice of permitted technologies*
- The issue: The National Investment Coordinating Board has hitherto approve all private investment projects that meet the existing regulations and conditions stipulated by the Government of Indonesia. These regulations do not specify the production technologies to be employed by individual investors in their investment projects, however, who remain free to select their own technologies. In view of the growing recognition of the need to promote environmentally safe technologies, the Board now wishes to place greater emphasis on this issue when assessing private investment proposals for approval in order to ensure that investors employ the best available technologies or clean technologies. To be able to do so, it requires an information network able to provide it with access to the relevant international technology databases, including UNIDO/INTIB.
 - Additional documentation provided:
 - i. Usulan Biro Pembinaan Investasi.
 - ii. Study on the information system on the best available technology or clean technology.
 - Potential UNIDO response: Assistance with the establishment of an appropriate information network. This would effectively represent the follow-up stage to the study for the modernization of the Board's data base and information network proposed in II.12.e above.
 - Relevance in relation to CSN: Priority areas "Governance - Decentralization, regional development and institutional innovation", "Environmental Conservation and Management - Environment" and "Growth - Maintenance of growth".
- g. *Encouraging partnerships between foreign investors and national small and medium scale industries*
- The issue: Government Regulation No. 20 of 1994 allows 100 per cent foreign equity ownership in investment projects for 15 years after they commence commercial production, following which they must divest a proportion of their holding to Indonesian interests. In order to promote the development of small and medium scale enterprises within Indonesia, the National Investment Coordinating Board is seeking to determine non-coercive ways of encouraging the foreign investors to enter into partnerships with such enterprises, in order to prepare them for the eventual participation in the foreign firms' equity ownership. These partnerships could include subcontracting agreements or other arrangements for the supply of inputs and components, as well as the transfer of technology from the foreign firms to their local partners.
 - Additional documentation provided:
 - i. Badan Koordinasi Penanaman Modal - Usulan kepada UNIDO.
 - Potential UNIDO response: Assistance with the formulation of appropriate policies and incentives to encourage the emergence of the desired partnerships.
 - Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Governance - Decentralization, regional development and institutional innovation" and "Growth - Maintenance of growth".

III. REQUESTS FOR UNIDO SERVICES FROM THE PRIVATE SECTOR

1. National Chamber of Commerce and Industry

a. *Establishment of an information network and related publication programme*

- The issue: In view of Indonesia's expanse and geographical structure, the timely dissemination of appropriate business information represents a major constraint for the development of private enterprise. In order to overcome this constraint, the Chamber has initiated a programme to establish an information network designed to provide such information to entrepreneurs in outlying areas and at the same time to provide foreign and domestic businessmen with information about investment opportunities in these regions. This programme is intended initially to provide information on publicly funded capital projects, government regulations, export opportunities and the development potential of Indonesia's various regions, and subsequently to be expanded to include information on technology, foreign tax systems and investment opportunities. It is also intended to be linked to a publication programme to improve the content and quality of the Chamber's current biweekly bulletin. The first stage of this programme has already been launched with a training plan in five provinces.
- Additional documentation provided:
 - i. August 30 edition of Bulletin Kadin Indonesia.
- Potential UNIDO response: Assistance with the establishment of the proposed information network. This assistance could be integrated into a broader programme covering responses to similar requests received from other sources, including *inter alia* the Department of Industry (proposal II.1.c, "Support for the development of an industrial information base"), the Department of Health (proposals II.6.a and II.6.c, "Establishment of a food industry information and data base" and "Establishment of a training and information centre for traditional drugs") and the National Investment Coordinating Board (proposal II.12.c, "Establishment of an integrated data base and information network in support of investment promotion activities").
- Relevance in relation to CSN: Priority areas "Governance - Decentralization, regional development and institutional innovation", "Growth - Maintenance of growth" and "Growth - Science and technology".

2. Engineering industry associations

a. *Development of a skilled workforce for the engineering industries*

- The issue: Although Indonesia is endowed with a large, adaptable, willing and almost universally literate labour force, the particular skills needed for the growth of the engineering industries are insufficiently developed. This significantly increases the competition for the suitably trained manpower that does exist, and consequently raises the costs of employing such manpower. Alternatively, it forces individual enterprises to invest heavily in the training of their staff, which may subsequently be lured away by competitors. In the view of the entrepreneurs, therefore, the creation of an adequately trained labour force possessing the required industrial and vocational skills should be regarded as a social overhead, with the government being responsible for the provision of the necessary training facilities. The government may, however, need to be

provided with policy advice for the formulation of an appropriate training programme, and with technical assistance for its implementation.

- Additional documentation provided: None.
- Potential UNIDO response: Identification of training requirements and assistance with the formulation and implementation of a suitable training programme. These activities could be linked to similar activities in response to a related request from the Department of Industry (proposal II.1.j, "Support for the engineering industry").
- Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training" and "Growth - Maintenance of growth".

b. *Support for the development of small and medium scale component suppliers and subcontractors*

- The issue: In most developed economies the major industrial enterprises depend on a network of component suppliers and subcontractors. The development of such supporting industries has not proceeded very far in Indonesia for a variety of reasons, including the high cost of capital, the fact that such industries often have to produce in small volumes and hence cannot benefit from economies of scale, the absence of an adequate market information system and the lack of access to modern proprietary technologies. A comprehensive integrated programme is needed to overcome these constraints and promote the development of small and medium scale support industries for the manufacturing sector.
- Additional documentation provided: None.
- Potential UNIDO response: Assistance with the formulation of an appropriate strategy to help the development of the necessary support industries. This assistance programme could be designed also to respond to a related request from the Department of Cooperatives and Small Enterprise Development (proposal II.2.f, "The dissemination of quality control technology to small entrepreneurs in the metal products industries").
- Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation", "Human Resources Development - Education and training", "Governance - Decentralization, regional development and institutional innovation", "Growth - Maintenance of growth" and "Growth - Science and technology".

c. *Assistance for the establishment and development of support institutions*

- The issue: In order to be able to compete effectively, the engineering industries in Indonesia must ensure that they achieve high standards of product design, output quality and production efficiency, and that they adopt appropriate technologies and marketing techniques. Entrepreneurs often lack the skills to achieve all of these objectives on their own, but are unable to acquire these skills or buy in the necessary expertise owing to the weakness of the institutional support base. The representatives of the engineering industry associations therefore felt very strongly that assistance was needed for the establishment or strengthening of such institutions as design centres, quality assurance and testing facilities, technology and market information centres, and management schools and consultancies.
- Additional documentation provided: None.

- Potential UNIDO response: Assistance with the establishment and strengthening of the required industrial support institutions.
- Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training", "Governance - Decentralization, regional development and institutional innovation", "Growth - Maintenance of growth" and "Growth - Science and technology".

3. Chemical industry associations

a. Formulation of an overall master plan for the chemical industries

- The issue: A major policy-level concern of many of the chemical industry representatives was the need to harmonize government policies towards the upstream and downstream components of the chemical industry in general and the petrochemical industry in particular. In this connection, the high level of protection frequently accorded to large-scale upstream industries was regarded with special concern by downstream producers, who saw their costs increased and their competitiveness eroded as a result of this policy.
- Additional documentation provided: None.
- Potential UNIDO response: Assistance with the formulation of a more balanced policy stance, possibly also including assistance with the choice of more efficient and competitive upstream production technologies at the enterprise level.
- Relevance in relation to CSN: Priority area "Growth - Maintenance of growth".

b. Human resources development for the pulp and paper industry

- The issue: The rapid growth of the pulp and paper industry in recent years has resulted in a severe shortage of manpower with the appropriate skills, leading to competition between the various mills for the available qualified labour and an increase in labour costs. To overcome this problem, the pulp and paper manufacturers association established a technical academy in 1991, but the school has virtually collapsed in the meantime owing to the lack of continuous support from the association's members. The association's representative at the meeting therefore proposed that the government should intervene and require every mill to support the academy, possibly through the imposition of a levy on the production or sale of paper.
- Additional documentation provided: None.
- Potential UNIDO response: Analysis of the relevance of the technical academy for the industry, and of alternative ways of funding it. This activity may form part of a broader project to assess the industry's human resource requirements in line with a related request from the Department of Industry (proposal II.1.r, "Human resources development for the pulp and paper industry").
- Relevance in relation to CSN: Priority areas "Human Resources Development - Education and training" and "Growth - Maintenance of growth".

c. Development of the small-scale salt producing industry

- The issue: The government gives high priority to the production of sufficient quantities of salt to meet the needs of the Indonesian people, and has launched a major programme for the production of 500,000 tonnes of iodized salt per year to help overcome the problem of goitre, which is said to affect some 30 million people. Some 60-70 per cent of

Indonesia's salt production emanates from small-scale producers, whose output tends to be of variable quality. Before it can be iodized, this salt needs to be washed in order to remove the remaining impurities. The industry therefore needs to institute a training programme for the small-scale producers and also to establish quality control facilities with qualified personnel.

- Additional documentation provided: None.

- Potential UNIDO response: Assistance with the introduction of improved salt production technologies for small-scale producers, and provision of training and equipment for quality control institutions. This assistance should be devised to take into account a related request from the participants at the inter-ministerial session on food and nutrition held at the Department of Industry on 6 September 1994 (proposal II.7.b, "Production and marketing of iodized salt").

- Relevance in relation to CSN: Priority areas "Human Resources Development - Population, health and nutrition", "Human Resources Development - Education and training", "Growth - Maintenance of growth" and "Growth - Science and technology".

4. Food processing industry associations

a. Master plan for the development of export-oriented prepared-foods industries.

- The issue: With its capacity to produce a wide variety of horticultural goods, its vast fisheries resources and its still largely underutilized potential as a livestock producer, Indonesia has a substantial scope for the development of its export-oriented prepared-foods industries. This development has so far been hampered by a variety of constraints, however, including the often poor quality and lack of standardization of the agricultural raw materials, the absence of a suitable marketing infrastructure linking the predominantly smallholder producers of the raw materials with the processors, and the lack of a market intelligence system providing farmers and processors with information on international prices, market opportunities, labelling requirements, quality standards, etc. The creation of such an infrastructure is seen as an important prerequisite for the expansion of this promising industry.

- Additional documentation provided: None.

- Potential UNIDO response: Assistance with the formulation of an appropriate master plan for the establishment of the required marketing infrastructure and information system. This assistance programme could be designed to take into account related requests received from the Department of Industry (proposal II.1.1, "Support for agro-processing industries") and the Department of Agriculture (proposal II.3.a, "Integrated master plan for agricultural processing industries and agribusiness development, with special reference to export-oriented industries").

- Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation" and "Growth - Maintenance of growth".

b. Support for the cocoa processing industry

- The issue: Cacao production has increased dramatically over the past two decades from negligible levels to a point where Indonesia is now the world's third largest producer of the commodity. According to the representative of the Indonesian Cocoa Association, however, Indonesia's cocoa sells at a discount on world markets because much of

it is produced by smallholders who lack the facilities and skills to process it to the required quality standards. These problems are particularly severe with respect to the fermentation of cacao beans.

- Additional documentation provided: None.
- Potential UNIDO response: Assessment of the need for improvements in the primary processing of cacao, and the development of an appropriate programme of technical assistance if necessary.
- Relevance in relation to CSN: Priority areas "Poverty alleviation and employment creation" and "Growth - Maintenance of growth".

ANNEX II:

SCHEDULE OF APPOINTMENTS AND LIST OF PERSONS MET

MONDAY, SEPTEMBER 5, 1994

09.00 Meeting with directors at the Department of Industry

Attended by:

Name	Designation
Mr. Soenaryo Danusaputro	Head, Bureau of Planning
Ms. Ratna Djuwita	Head, International Cooperation Division, Bureau of Planning
Ms. Penny	Agency for Small-scale Industry Development
Mr. Danus Sidik	Director, Centre for Development of International Industrial Cooperation
Mr. H. A. Ghazali	Director for basic chemical, rubber and plastic industries, Directorate-General of Chemical Industry
Mr. Agra Kusuma	Director for non-metallic mineral industries, Directorate-General of Chemical Industry
Mr. Agus T.	Director of Programme Development, Directorate-General of Metal, Machinery and Electronic Industry
Mr. A. M. Oesman	Director of Programme Development, Directorate-General of Agro-based Industry
Mr. Agus Setiadi	Director of Programme Development, Directorate-General of Agro-based Industry
Ms. Dame W.	Director of Programme Development, Directorate-General of Multifarious Industry

14.00 Meeting with directors at the National Development Planning Board (BAPPENAS)

Attended by:

Name	Designation
Mr. Dipo Alam	Head, Bureau for Industry and Mining
List of other participants' names not available.	

TUESDAY, SEPTEMBER 6, 1994**09.00 Inter-ministerial Session on Food and Nutrition at the Department of Industry****Attended by:**

Name	Representing
Mr. Sujata M. Widodo	Department of Industry
Mr. Soenaryo Danusaputro	Department of Industry
Ms. Ratna Djuwita	Department of Industry
Mr. Agra Kusuma	Department of Industry
Mr. Agus T.	Department of Industry
Mr. A. M. Oesman	Department of Industry
Mr. Agus Setiadi	Department of Industry
Ms. Ida Machmuda	Department of Industry
Ms. Dame W.	Department of Industry
Mr. Massaruddin	Department of Industry
Mr. Tri Hardono	Department of Industry
Mr. Robert S	Department of Industry
Mr. Asmady Parman	Department of Industry
Mr. Sakri Widhianto	Department of Industry
Mr. Katri	Department of Industry
Ms. Siti Soeprapti	Department of Cooperatives and Small Enterprise Development
Mr. Sumpeno Putro	Department of Agriculture
Mr. Supriyadi	Department of Mines and Energy
Mr. Jajat Soedradjat	Department of Trade
Mr. Rahardjo	Department of Health
Mr. Suyanto	Agency of Assessment and Application Technology, (BPPT)
Mr. Sofyan	Investment Coordinating Board (BKPM)
Mr. Soedarmadji	Agency of Industrial R&D
Mr. Iskandar	Agency of Small-scale Industry Development
Mr. Soetedjo	Bank Indonesia

14.30 Meeting with Mr. Harijono Djojodihardjo, Deputy Chairman, Technology Development Division, Agency for the Assessment and Application of Technology (BPPT)**THURSDAY, SEPTEMBER 8, 1994****08.30 Meeting with representatives of engineering industry associations at the Department of Industry****Attended by:**

Name	Designation
Mr. Rafly Kimin	Head, Department of Infrastructure, Indonesian Chamber of Commerce and Industry
Mr. Frans Rehong	Head, Public Relations & Communications, Federation of Electronics Industries
Mr. Setiawan Muljadi	Chairman, Federation of Indonesian Metalwork & Machinery Industries Associations
Mr. V. H. Sembada	Chairman (Technology Development), Federation of Indonesian Metalwork & Machinery Industries Associations

Mr. Suprijanto	Chairman (Human Resource Development), Federation of Indonesian Metalwork & Machinery Industries Associations
Mr. Adirizal Nizar	Director of Industry & Technology Department, Association of Indonesian Automotive Industries
Mr. Achmad Safiun	Executive Vice President, Indonesian Automotive Parts & Components Industries Association
Mr. Mohamad Sjaffary	President, Indonesian Foundry Industry Association
Mr. H. Kartowisastro	Executive Secretary, Indonesian Automotive Parts & Components Industries Association
	Chairman, National Shipbuilding Industries Association

10.30 Meeting with representatives of chemical industry associations at the Department of Industry

Attended by:

Name	Designation
Mr. Kahar Haryopuspito	Executive Director, Indonesian Pulp & Paper Association
Mr. M. Z. Mughni	Chairman, Association of Iodized Salt Producers
Mr. Marsum Atmosputro	Representative, Alcohol & Spirits Association
Mr. Tarmidzi Rangkuti	Vice Chairman, Federation of Indonesian Vegetable Oils and Fats Associations
Mr. R. Martohutomo	Executive Secretary, Federation of Indonesian Vegetable Oils and Fats Associations
Mr. Mohammad Taha	Representative, Oleochemical Association

13.30 Meeting with representatives of food processing industry associations at the Department of Industry

Attended by:

Name	Designation
Ms. Indrawati	Secretary General, Indonesian Food and Beverage Association
Mr. Thomas Dharmawan	Co-ordinator of Food-based Agroindustry, Indonesian Chamber of Commerce and Industry
	Director for Information, Promotion, and Marketing, Indonesian Food and Beverage Association
Ms. Mieke Aric	Representative, Indonesian Cocoa Association

15.30 Meeting with representatives of multifarious industries' associations at the Department of Industry

Attended by:

Name	Designation
Mr. Ahmad Tarmizi	Editor API-News, Indonesia Textile Association (API)
Mr. P. A. Pattinama	Executive Director, Indonesian Footwear Association
Mr. Sujatmiko	Executive, Indonesian Wood Preservation Association
Mr. Chandra Wardhana	PT Kaltimex Wanaherang (representing leather industry)
Mr. Abdul Muchni	Director, PT Asiana IMI Industries (representing toy industry)

FRIDAY, SEPTEMBER 9, 1994

08.30 Meeting with Mr. Murasa Sarkariputra, Head, Bureau of Planning and Foreign Cooperation, Office of the Minister of State for the Role of Women

SATURDAY, SEPTEMBER 10, 1994

09.00 Meeting with directors at the Department of Cooperatives and Small Enterprise Development

Attended by:

Name	Designation
Mr. J. M. Sihombing	Executive Secretary, Directorate-General of Small Enterprise Development
Ms. Siti Socprapti	Director for Industry, Directorate-General of Small Enterprise Development
Mr. Dumpang Lumban Gaol	Head, Foreign Cooperation Division, Bureau of Planning
Mr. Ibrahim Sanusi	Director, Industrial Cooperatives Development

MONDAY, SEPTEMBER 12, 1994

08.30 Meeting with Mr. Sumpeno Putro, Director, Center for Standardization and Accreditation, Agency for Agribusiness, Department of Agriculture

14.00 Meeting with directors at the Department of Mines and Energy

Attended by:

Name	Designation
Mr. Supriyadi	Foreign Cooperation Bureau
List of other participants' names not available	

TUESDAY, SEPTEMBER 13, 1994

08.30 Meetings with directors at the Department of Health

Persons met:

Name	Designation
Mr. Ading Suryana	Head, Directorate of Food and Drink Control
Mr. Rahardjo	Pharmacist, Directorate-General of Food and Drinks
Ms. Andajaningsih	Director for Drug Control
Mr. H. A. Nawawi R.	Director of Narcotics and Hazardous Substances Control
Mr. Djoko Hargono	Head, Directorate of Traditional Drugs Control

11.30 Meeting with directors at the Office of the Minister of State for the Environment**Attended by:**

Name	Designation
Mr. R. T. M. Sutamihardja	Deputy to Assistant Minister, Office of the Minister of State for the Environment
Mr. Sudariyono	Deputy to Assistant Minister, Office of the Minister of State for the Environment
Mr. Bambang Setyabudi	Staff of the Assistant Minister for Policy Formulation, Office of the Minister of State for the Environment

WEDNESDAY, SEPTEMBER 14, 1994

09.00 Meeting with Mr. Iman Sucipto Umar, Secretary General, Indonesian Chamber of Commerce and Industry (KADIN)

15.00 Meeting with directors at the Agency for the Assessment and Application of Technology (BPPT)

Attended by:

Name	Designation
Mr. Harijono Djojodihardjo	Deputy Chairman, Technology Development Division,
Mr. Landjono Josowidagdo	Director for Manufacturing and Certification Technology
Mr. Prasetyo Sunaryo	Director for Human Settlement and Environmental Technology
Mr. Suyanto Pawiroharsono	Director for Industrial Processing Technology

THURSDAY, SEPTEMBER 15, 1994

16.00 Meeting with Mr. P. L. Coutrier, Deputy, Development Division, and Ms. Liana Bratasida, Director for Technical Guidance, Agency for Environmental Impact Assessment (BAPEDAL)

FRIDAY, SEPTEMBER 16, 1994

14.00 Meeting with directors at the National Investment Coordinating Board (BKPM)

Attended by:

Name	Designation
Mr. Sofyan	Head, Bureau of Foreign Investment Cooperation
Mr. Firdaus Abdullah	Bureau of Overseas Investment Promotion and Cooperation
Mr. Soehari Boedihidayat	Head, Data Processing Centre
Mr. J. D. Soediono Basuki	Head, Bureau of Investment Promotion
Mr. Hasbullah Tasman	Bureau Head
Mr. Sutowo Tirto	Head, Bureau of Investment Implementation

MONDAY, SEPTEMBER 19, 1994

13.30 Meeting with UNIDO Country Director to prioritize project proposals

TUESDAY, SEPTEMBER 20, 1994

14.00 Meeting with Mr. T. C. Patterson, Chief, Indonesia Resident Office, Asian Development Bank

WEDNESDAY, SEPTEMBER 21, 1994

08.30 Meetings with Mr. Dennis de Tray, Director, and Mr. Oscar de Bruyn Kops, Sector Representative (Industry, Finance, Telecommunications, Gas), The World Bank Resident Staff in Indonesia

10.00 Meeting with Mr. Robert A. Boydell, Regional Manager, UNDP/World Bank Water & Sanitation Programme

14.00 Meeting with Mr. Dipo Alam, Head, Bureau for Industry and Mining, National Development Planning Board, BAPPENAS

THURSDAY, SEPTEMBER 22, 1994

09.30 Meeting with directors at the Department of Industry

Attended by:

Name	Designation
Mr. A. Fuad Rivai	Secretary-General
Mr. Soenaryo Danusaputro	Head, Bureau of Planning
Ms. Ratna Djuwita	Head, International Cooperation Division, Bureau of Planning

List of other participants' names not available

13.00 Meeting with officials of US Agency for International Development

Attended by:

Name	Designation
Mr. Charles F. Weden	Director
Mr. William M. Frej	Director, Private Enterprise Development Office and Rural Housing and Urban Development Office for East Asia.
Mr. A. M. A. Nakatsuma	Mission Environmental Officer
Mr. S. Samuel Tumiwa	Project Development Specialist

FRIDAY, SEPTEMBER 23, 1994

10.00 Meeting with Mr. J. Kamp, Resident Representative, and Mr. F. Loebusch, Deputy Resident Representative, United Nations Development Programme