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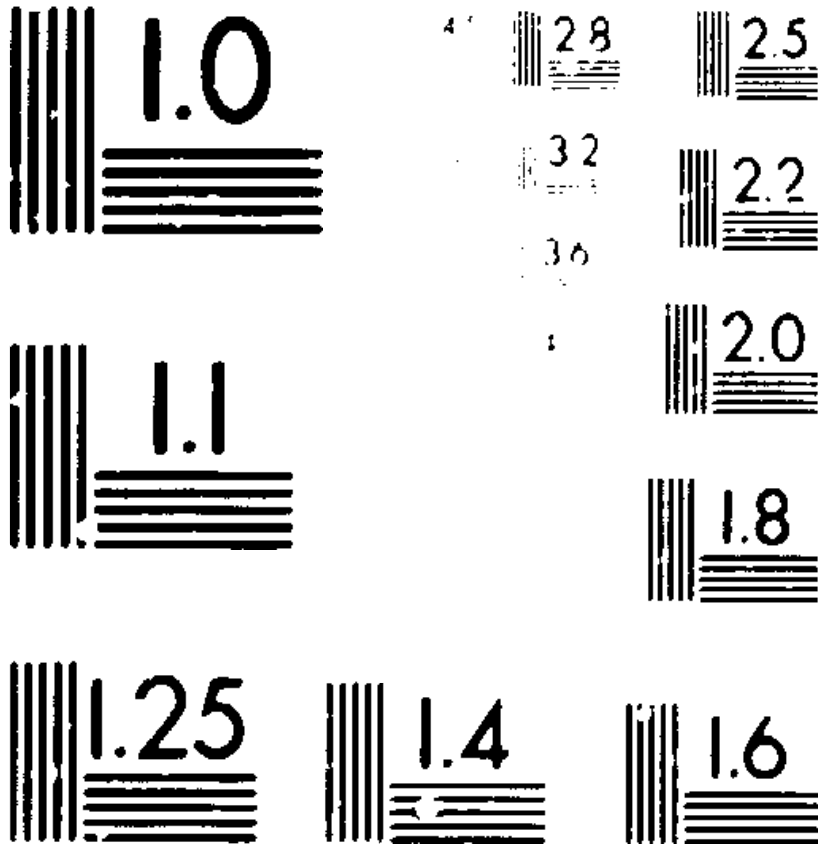

Item 5(e) of the provisional agenda

INTERNATIONAL CO-OPERATION, RELEVANT NATIONAL ACTIONS INCLUDING INDUSTRIAL POLICIES, AND UNIDO'S CONTRIBUTION IN CRITICAL AREAS OF INDUSTRIAL DEVELOPMENT 1985-2000:

World industrial restructuring and redeployment

Background paper prepared by the UNIDO secretariat

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CONTENTS

I. DECLARATIONS, DECISIONS AND CONCEPTS RELATING TO RESTRUCTURING AND REDEPLOYMENT

A. Declarations and decisions

1. Over the years, the redeployment of industries from developed to developing countries and restructuring of industry has been the subject of several resolutions and declarations in international forums and of calls for action by the international community. The Lima Declaration and Plan of Action on Industrial Development and Co-operation, adopted at the Second General Conference of UNIDO in 1975 (A/10112, chap. IV) established a basis for global industrial restructuring and redeployment by calling for a gradual increase of the developing countries' share in world industrial production and for the adoption by developed countries of policies to encourage internationally less competitive industries to move into more viable lines of production, thus leading to structural adjustments in developed countries and redeployment to developing countries (ibid., p. 54, para. 59(i)). In addition, the Lima Declaration recommended the establishment of a system of continuing consultations in order to facilitate the achievement of the goals set forth in the field of industrialization, including the redeployment of certain productive capacities existing in the developed countries and the creation of new industrial facilities in the developing countries.

2. These basic principles were further substantiated in other forums. Thus, structural adjustment in developed countries would entail an ending of support to uncompetitive industries, and a shifting of resources to other sectors of the economy, and would be accompanied by increased access to those countries' markets. Redeployment, it was stressed, should primarily consist in creating new industrial capacities in developing countries. It should stimulate these countries' economies in line with their national priorities and should lead to a greater use of natural and human resources.

3. For example, at the Third General Conference of UNIDO, held at New Delhi from 21 January to 9 February 1980, it was emphasized that successful restructuring called for long-term strategies at national and international levels. The Conference declared that the System of Consultations was an instrument for the redeployment of industry from developed to developing countries and for the restructuring of world industry (PI/72, para. 41). Whereas both the role of market forces and that of the public sector were seen to have important roles for redeployment, it was stressed in the New Delhi Plan of Action on Industrialization of Developing Countries and International Co-operation for their Industrial Development that the process of redeployment should be pursued according to the principle of dynamic comparative advantage (ID/CONF.4/22, chap. VI, para. 140). At the same time, a number of conditions were specified for redeployment to developing countries. Thus, redeployment should not be a pretext for establishing industries which use domestic human or natural resources to the disadvantage of developing countries or do not respect national sovereignty over such resources. It should not accentuate economic inequalities nor should it transfer obsolete or unacceptably polluting technologies.

4. In the texts adopted at Lima and New Delhi, several calls were made for specific action by the international community, including positive adjustment and a halt to protectionism by developed countries, "transparency" of policies, and the exchange of information on policy measures generally, in order to increase production and trade opportunities for developing countries. UNIDO, in particular, was called upon to undertake surveillance of the restructuring process and to carry out studies on policies conducive to redeployment and on industries and sectors that were amenable to it.

5. Other important international forums subsequently referred to industrial restructuring and redeployment. The International Development Strategy for the Third United Nations Development Decade (General Assembly resolution 35/56, annex) reiterates the central role of the attainment of the Lima target, which calls for "far-reaching changes in the structure of world production" (ibid., para. 72). In this context, redeployment of industrial capacities is seen as a crucial element and the concept and relevant factors are described in the strategy in some detail (ibid., para. 73).

6. Also, at the Seventh Conference of Heads of State or Government of Non-aligned Countries, held at New Delhi in March 1983, specific reference was made in the Conference's Economic Declaration to the redeployment of industry and to the System of Consultations as a mechanism for redeployment (A/38/132-S/15675, annex, chap. III, p.96, para. 111).

7. The United Nations Conference on Trade and Development (UNCTAD) has over the years taken a series of initiatives on these issues. In the report on protectionism, trade relations and structural adjustment submitted to its sixth session, UNCTAD stressed the connection between global restructuring and structural adjustment in developed countries by stating: "The ability of developing countries to continue their development efforts depends, to a large extent, on the willingness of developed market economy countries to adopt positive structural adjustment policies." 1/ To this end, UNCTAD made a number of recommendations for strengthening the international trading system and devising positive structural adjustment policies. 2/

8. In its resolution 159(VI), 3/ UNCTAD saw structural adjustment as a "global ongoing phenomenon", which would lead to an "effective, equitable and dynamic international division of labour enabling developing countries to secure an increase in their share in world production and trade in processed goods and manufactures." Developed countries were called upon to facilitate structural adjustment based on a dynamic pattern of comparative advantage.

9. The purpose of this paper is to draw attention to the need to start anew on the design of a policy framework and modalities for global industrial restructuring in which national action and equitable international co-operation mechanisms can bring about sustained industrial development in developing countries. The issues to be jointly reviewed are whether or how past concepts and approaches by Governments, corporations and international entities could be adapted and synchronized to meet the emerging challenges of the world economy in the 1980s and enable developing countries to resume their industrial development. It seems very unlikely that the scope for the direction and mechanisms of industrial redeployment and structural change after the current crisis will revert to the pattern that prevailed in the 1960s and 1970s. At this turning point, the Fourth General Conference of UNIDO offers an occasion to reassess the basis for and the approach to

industrial restructuring and redeployment as adopted through the System of Consultations and to conceive new strategies conducive to a gradual increase in the share of developing countries in world industrial production.

10. The question seems to be how to create a new basis for a consensus on nationally perceived but internationally agreeable modes of restructuring. Can the interdependence of the world's industrial production be made more "equitable"? Can an international industrial policy or set of principles be found that encompasses both the rights of national sovereignty and a collective responsibility for the industrial advancement of the developing countries? Can global industrial restructuring become the common denominator to which the treatment of finance, trade, manpower and technology issues should be linked? How then are national policies and international agreements to be gradually adjusted to these new concepts? The present paper on restructuring and redeployment provides only a brief review of some key issues.

B. Terminology

11. In the texts referred to above, the terms "structural change", "structural adjustment" and "restructuring" seem to be used simultaneously and sometimes interchangeably. The use of these different terms and their definitions in the context of industrial development is briefly discussed below.

12. For example, the Buenos Aires Platform adopted at the Fifth Ministerial Meeting of the Group of 77 (TD/285), calls upon developed countries to facilitate structural adjustment and also mentions the acceleration of restructuring in developed countries. The UNCTAD secretariat, on the other hand, differentiates between "structural change" defined as "shifts in the shares of different sectors of the economy in terms of value added and employment", and "structural adjustment" entailing a normative dimension and defined as "the transformation of national patterns of production and factor allocation in a socially optimal way in order to accommodate shifts in comparative advantage as revealed by unhindered trade flows". 4/ In the same document the term "restructuring" appears to be used in the same sense as "structural change". 5/ The term "positive" adjustment is used to accentuate further this normative connotation, implying that this entails the enhancement of structural shifts. 6/

13. In the present paper, "industrial restructuring" connotes a long-term change in the composition of manufacturing output, brought about by Governments, regional authorities or corporations, within the framework of a defined development goal or target. Global industrial restructuring as seen in the context of the Lima target would thus mean the active pursuit of policies that would gradually increase the share of developing countries in total world production. In a national context, industrial restructuring would mean government-policy-induced shifts of industrial production towards a nationally preferred structure. Structural adjustment would, on the other hand, primarily entail a systematic shift of the structure itself to reflect or respond to occurring or anticipated changes in the international trade or production pattern.

14. "Restructuring" and "structural adjustment" thus have a normative connotation but the normative criteria may again be subject to different judgements and applications by different agents. Whether an adjustment programme is "positive" or "negative" obviously depends on the assessment of the choice and timing of policies and of the various implications of the resulting structural shifts.

15. While no one single, unambiguous definition seems to exist, in international debate the exact meaning of these terms in a particular context must be made explicit in each instance.

C. Basic considerations

16. The broad concept of restructuring and redeployment as it emerged from the texts adopted seems in any case to presuppose implicitly or explicitly an international framework and a set of measures conducive to a systematic restructuring of world industry. Some of the fundamental assumptions underlying restructuring or redeployment concepts could be singled out. First, redeployment of industries from developed to developing countries seems to assume a transferability of resources from developed to developing countries (i.e. capital, technology, manpower) and the supporting acquisition and absorption in the developing countries of these resource transfers. A second assumption seems to be the existence of a notion - and its acceptance by the major agents in the redeployment process - of a changing pattern in the international division of labour on the basis of economic criteria, such as comparative advantage. Thirdly, redeployment would seem to presuppose a basically liberal international trading regime within the framework of accepted rules. Fourthly, redeployment seems to be viewed as an element of the long-term global restructuring of industry, and seems to presuppose a policy of long-term international co-operation. This would entail a lasting commitment by the agents and a certain predictability and stability of the policies and economic parameters affecting the markets for products and production factors. On this basis, the following key questions could be raised:

(a) Do the above concepts and measures provide a consistent framework for fostering international industrial restructuring?

(b) Can these concepts and measures be considered valid, appropriate or sufficiently effective for fostering international restructuring in the changing international conditions in the 1980s and 1990s?

(c) If the answer to these questions is "no", what new international and national action could be taken to accelerate industrial restructuring in the coming years?

17. On the basis of the analyses and findings obtained from the 21 Consultations covered since 1977 at the sectoral, regional, and global levels, it appears that a number of critical situations are encountered by the developing countries, which are characterized by the present share of those countries in total world output in each of the sectors and by the nature of the obstacles that must be overcome (ID/B/284 Chap.III). However, an examination of the various conceptual interpretations and the measures and

policies called for clearly reveals different approaches. Countries at varying stages of development, with different economic systems and resource endowments, obviously wish to pursue different strategies and policies for industrialization and redeployment. Whereas some countries thus stress comparative advantage as a guiding rule for redeployment, others firmly resist some of the implied features of this rule, i.e. redeployment based on the use of primary commodities or low-wage labour. Whereas some countries may see an economic advantage in acquiring second-hand, older and even relatively polluting technologies, others reject such technologies. In a recent UNIDO expert group meeting on transfers of used plant and equipment to developing countries, it was shown that, owing to the shutting down of companies, obsolescence of equipment and over-capacity in the developed countries, there are growing possibilities for the transfer of used complete plants, machinery or parts to developing countries. If they are carefully assessed to avoid serious pitfalls and long-term losses, developing countries may be able to use these cost and time-saving supplies as one - albeit limited - form of redeployment.

18. It may be asked whether it is possible or even desirable to attempt to establish a completely consistent international approach to industrial redeployment. On the one hand, it has to be left to decision-makers at the national level to establish national priorities and approaches for actual redeployment based on their perceptions of long-term development. On the other, it is equally evident, first that the choice of national action and strategy is limited in an increasingly interdependent world and, secondly, that a certain coherence in concepts and policies is crucial to the restructuring of industry through international co-operation. Restructuring is thus a question of relating the guiding principles for international industrial co-operation to a basic framework for national action in each country.

19. Drastic changes are already emerging or are anticipated in the international trade system, in the financial system, in technological parameters, in the price system for various commodities and products, in the development strategies and policies of major members of the Organisation for Economic Co-operation and Development (OECD) and in developing countries, in the world's geopolitical structure and in other key parameters. From these it is evident that the guiding principles for world industrial restructuring will need to be re-examined in terms of their validity and effectiveness and possibly revised or supplemented.

20. These guiding principles, on which a general consensus seemed to have prevailed among major agents in developed and developing countries in the two previous decades, imply that the comparative advantage of a country should be used as a major criterion for allocating productive resources and redeploying industries. However, comparative advantage is a way of describing past trade developments and whereas it can give some broad indications of competitiveness of various industries, it may not really be a tool to be used systematically for long-term planning. Moreover, as long as full employment prevailed, developed countries were indeed able to pursue international restructuring on the basis of revealed comparative advantage; international restructuring corresponded to national restructuring, whereby productivity gains were achieved by shifting resources from declining to growth industries. With the present high and possibly growing unemployment in these countries, however,

other considerations will dominate the decision-making process. Labour in crisis-struck industries and local and central government in individual developed market economy countries are increasingly doubtful whether sufficient economic gains can be achieved if the industries are closed down, since alternative employment seems unlikely and compliance by other developed countries with market principles for international restructuring is in doubt. Under these circumstances, industrialized countries may prefer to retain capacity levels through various types of protectionist measures and to regain competitive advantage through innovation and rationalization.

21. While both developed and developing countries previously seemed to assume that reliance on market forces or "economic rationality" would be the best guide to international restructuring, this principle is less and less practised today. Nor are the existing multilateral finance institutions equipped to take over the role of constructing new productive structures and promoting industrial co-operation.

22. It could thus be deduced that new approaches to international and national action are needed in order to reduce international disruptions to a minimum and to revive the restructuring process. A just and efficient system needs to be built up, in which trade in manufactures and resource flows support a long-term, non-disruptive restructuring process, instead of bilateral solutions and beggar-my-neighbour policies. The international community must now identify areas of convergence in a non-perfect situation. Simultaneously, efforts must be made to bring about a longer-term reform of the system as a whole.

II. TRENDS IN INDUSTRIAL RESTRUCTURING

A. An overview

23. The following overview documents recent trends of structural changes in world industry and discusses how they are likely to influence the outlook for industrial restructuring. Amidst a severe crisis in the world economy, past patterns of internationalization of industrial production are rapidly changing. Major shifts can already be seen in the pattern of industrial production and consumption, and this is bound to impose substantial modifications on the international division of labour in practically all major industrial branches. Furthermore, industrial restructuring has not been a homogeneous process. Depending on the countries, sectors and companies involved, it has taken many different forms. One common, overriding concern is the need to free capital from the constraints built into the existing structure of production.

24. Conventional macro-economic indicators only give an incomplete picture of these developments. This certainly applies to the criterion used in paragraph 28 of the Lima Declaration, i.e. the share of the developing countries in total world industrial production (see table 1 below).

Table 1. Share of economic groupings in world manufacturing value added, a/ selected years, 1948 - 1982
(Percentage)

Economic grouping	1948	1953	1963	1970	1973	1975	1978	1980	1982 b/
Developed market economies	72.2	72.0	77.3	73.4	72.0	67.5	65.8	65.2	64.0
Centrally planned economies	22.1	23.2	14.6	17.8	18.7	22.5	22.9	23.8	25.0
Developing countries	5.7	4.8	8.1	8.8	9.3	10.0	10.3	11.0	11.0

Source: "Selected statistical indicators", paper submitted to the High-Level Expert Group Meeting Preparatory to the Fourth General Conference of UNIDO, Industrial Development Strategies and Policies for Developing Countries, held at Lima from 18 to 22 April 1983 (ID.WG.391/1), table 3.

a/ Data for 1948-1953 are in current prices. Figures for 1948-1953 were derived from data compiled according to industrial census concepts. Figures for 1963-1980 were compiled from national accounts sources for manufacturing value added expressed in United States dollars at 1975 prices.

b/ Estimate.

25. The same applies to conventional industrial classifications such as the Standard International Trade Classification Revision 2 (SITC, Rev. 2) and the International Standard Industrial Classification of All Economic Activities (ISIC). Table 2 shows, for 28 branches of industry defined according to ISIC, how the share of developing countries in world manufacturing value added has changed since the mid-1960s.

26. The table shows that, within manufacturing as a whole, progress for the developing countries at the sectoral level was very uneven. The figures reveal high shares in traditional industries such as food products, beverages, tobacco and textiles (in addition to an extremely high share in petroleum refining). However, the developing countries' share of world value added has scarcely risen in the technologically advanced sectors such as metal products, non-electrical machinery, electrical machinery and transport machinery, which

Table 2. Share of developing countries a/ in world manufacturing value added at constant (1975) prices, by industrial branches, 1963, 1973 and 1980 (Percentage)

Industrial branch	ISIC code	1963	1973	1980
Food products	311	13.6	13.8	15.1
Beverages	313	12.2	13.7	18.6
Tobacco	314	24.6	27.4	30.7
Textiles	321	17.4	17.5	18.7
Wearing apparel	322	8.0	9.0	10.2 b/
Leather and fur products	323	10.3	10.8	12.7 b/
Footwear	324	8.9	10.5	11.1
Wood and cork products	331	9.0	9.4	12.0
Furniture and fixtures, excluding metal	332	6.8	6.0	7.5 b/
Paper	341	6.1	6.9	8.2
Printing and publishing	342	5.9	6.6	6.1
Industrial chemicals	351	6.2	6.9	7.7
Other chemicals	352	13.7	16.2	18.0
Petroleum refineries	353	45.9	39.1	41.8
Miscellaneous products of petroleum and coal	354	4.8	12.6	14.6
Rubber products	355	9.8	11.6	14.2
Plastic products	356	11.3	8.4	10.2 b/
Pottery, china and earthenware	361	12.6	12.6	13.1
Glass	362	7.4	9.4	9.9
Other non-metallic mineral products	369	7.1	8.9	12.1
Iron and steel	371	5.4	6.7	10.3
Non-ferrous metals	372	8.3	8.2	10.4 b/
Metal products, excluding machinery	381	5.1	6.0	7.3
Non-electrical machinery	382	2.4	4.6	5.0
Electrical machinery	383	4.1	5.2	6.6
Transport equipment	384	4.6	6.6	7.5
Professional and scientific equipment, photographic and optical goods	385	1.3	1.7	2.1 b/
Other manufacturing	390	8.4	7.1	8.4 b/

Source: UNIDO data base; information supplied by the Statistical Office of the United Nations Secretariat, with estimates by the UNIDO secretariat.

a/ Excluding China.

b/ Estimates based on data with limited coverage.

are crucial to the overall growth of modern economy both from the point of view of capital goods and the provision of infrastructure for accelerated social and economic development. *

27. There is obviously no automaticity in global industrial restructuring, which is the outcome of a network of economic, geopolitical decisions and negotiations between agents. Thorough analyses at the sectoral and country levels would have to be made to detect the driving forces of ongoing structural changes and to identify the strategic options for developing countries. To illustrate the complexity of the process of restructuring and redeployment, some subsectors are examined in greater detail. It should be noted, though, that in the present paper the choice of subsectors had to be very selective and the review had to be limited to a few major development aspects of these subsectors. The capital goods industry has been chosen because of its strategic importance for industrial transformation, electronics for its apparent capacity to become a future growth industry, petrochemicals as a typical process industry and textiles and garments as a traditional industry. In addition, reference should also be made to other industrial sectors and topics that have been the subject of Consultations: leather and leather products (see ID/WG.258/9 and ID/255); wood and wood products (see ID/306); agricultural machinery (see ID/239, ID/285, and ID/307); food processing (see ID/278); vegetable oils and fats (see ID/WG.260/9); iron and steel (see ID/WG.243/6/Rev.1, ID/244 and ID/291); the pharmaceutical industry (see ID/259 and ID/308); the fertilizer industry (see ID/WG.242/8/Rev.1, ID/221 and ID/260); and training of industrial manpower (ID/294). The examination of recent trends in these subsectors illustrates the new challenges to industrial policies and overall strategies of industrial transformation and the constraints placed on them. It also demonstrates the need for such disaggregated analyses and the working-out of sector-specific approaches for industrial restructuring.

B. The capital goods industry

1. The issues

28. In pursuing their industrial development process, developing countries need to increase their capital investment significantly, and as rapidly as possible. ** This requires an increasing supply of capital goods both for the

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* Relative gains in iron and steel exceeded those in other similar sectors, although to some extent these increases reflect a decline in ouput in major developed countries.

** This has also been stressed in unequivocal terms by a background study to the OECD interfutures project: "Whatever their development strategies, developing countries will have to rely heavily on capital investment, be it to satisfy the basic needs of rapidly expanding populations, to increase productivity in the agricultural sector, to implement industrialization programmes, whether these are based on import substitution, export promotion, 'self-reliance' policies or valorization of domestic primary resources". (OECD, Capital Goods - Structural Evolution and World Prospects, Interfutures (Paris, 1979), p. 115.)

establishment of new plants and the adjustment and rationalization of existing plants. In 1979, trade in machinery and transport equipment (including passenger cars) represented half of the world's trade in manufactured goods. 7/ With regard to international flows of industrial investment and technology, and particularly to the redeployment of industrial assets to developing countries, the export of capital goods and integrated industrial projects - particularly turnkey projects - has played an important role.

29. Developing countries rely almost exclusively on capital goods imported from developed market economy countries. According to estimates, 8/ 58 units of imported capital goods are on an average needed to produce 1,000 units of gross domestic product (GDP) in developing countries. For capital formation in industry, this dependence on imported capital goods is considerably higher. At present, 118 countries have only a rudimentary capital goods production. Some countries in the Middle East depend almost entirely on imported capital goods, primarily for investment in infrastructure and basic industrial capacity (basic petrochemicals, iron and steel). Even the few developing countries that have made progress in building up a national capital goods industry, such as Argentina, Brazil, India and Mexico, still have to import substantial quantities of capital goods and the knowledge needed to operate, maintain, reproduce, adapt and develop them.

30. This dependence is even more pronounced for machine tools, which play a crucial role in industrial capital formation. 9/ The gap has been growing between the developing countries' share in world demand for machine tools and their ability to produce them locally. Whereas the share of the developing countries in world use of machine tools increased from 8 per cent in 1970-1971 to 14 per cent by 1979-1980, their share in the world's gross output of machine tools only rose from 2.5 per cent in 1970-1971 to 5.8 per cent in 1979-1980. Production and exports of machine tools in developing countries is concentrated in only a few countries, i.e. Argentina, Brazil, China, India, the Republic of Korea and Singapore. These six countries were in 1980 responsible for roughly 90 per cent of the production and exports of machine tools by developing countries.

31. The developing countries' reliance on capital goods imports from developed countries has to be reduced. The rapidly worsening balance-of-payments deficits and external debt burdens of most non-oil-exporting countries, especially the heavy importers of capital goods, has already decreased their import capacity, even for the most essential capital goods. These countries are bound to pursue new types of import substitution policies, which must now cover more and more segments of capital goods production and of complementary technological know-how. Otherwise, they will simply not be able to expand their industrial sector or, for that matter, to modernize their agriculture. The question is how this restructuring of the world's capital goods industry will proceed. Three main forces of development can be singled out.

32. First, certain segments of capital goods production, such as low-cost and highly standardized machine tools and light electrical equipment, are probably going to be redeployed from developed to developing countries. With rising production costs and global competition, companies in developed countries are under growing pressure to devise new forms of internationalization of production. Of course, changes in cost structure and reductions in

overall production costs, made possible by the introduction of innovations in micro-electronics and the recent deterioration of the investment climate in non-oil-exporting developing countries, might act as countervailing trends to some degree. Yet, in the long run, redeployment of capital goods production to a growing number of third world countries is almost bound to continue. 10/

33. Secondly, companies and Governments in developed countries perceive effective control over new generations of capital goods as a strategic asset in the increasing international competition in manufactures. Developed countries may therefore attempt to restrict the access of developing countries to various groups of new capital goods and technology.

34. Thirdly, producers of capital goods in developed countries are under increasing pressure to supply new markets outside the main industrial growth centres. With regard to machinery, manufacturing equipment, complete industrial complexes and engineering services, OECD exporters are highly dependent on markets in the developing countries. Currently, roughly 45 per cent of the total capital goods and equipment exports go to these markets. The proportion is even higher for international engineering and construction activities. 11/

35. This dependency on third world markets indicates on the one hand that the companies based in developed countries are directly affected by a stagnation, let alone a decline, in investment in developing countries, aggravated by rising balance-of-payment deficits and debt burdens. On the other hand, it is obvious that developed-country-based suppliers of capital goods, with Government export-credits, tied aid, negotiations etc., will pursue very active strategies to maintain their dominance in the market. With the even tougher competition, established and new producers in developing countries will be under heavy pressure.

36. There are also various internal constraints on developing countries in their endeavours to build up a viable, dynamic capital goods industry. The cost-efficient production of capital goods calls for the availability of a design capability in the country and depends upon a well-functioning research and development infrastructure. Capital goods production is a highly dynamic process; there is permanent pressure to adapt the basic characteristics of the end products, the machines, i.e. the architecture of the hardware and the structure of the software, to a continuously changing economic and social environment.

37. Recent developments in micro-electronics are thus already changing the prevailing modes of designing, producing, operating and maintaining capital goods. * These innovations could lead to the irreversible obsolescence of the capital goods produced in developing countries. One immediate result could be

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* An important example is provided by recent developments in micro-electronic hardware and software and in complementary interface technologies, for instance, sensor technology ("artificial intelligence"), which has led to the emergence of a new generation of flexible and integrated automation systems ranging from computer-numerical-control (CNC) systems, computer-controlled robots and flexible machining systems (FMS), to computer-aided design/computer-aided manufacturing (CAD/CAM) and computer-integrated manufacturing (CIM) systems.

that capital goods firms in such countries as Brazil or India would lose their export markets for low-cost, relatively simple general-purpose machine tools, both in developed and developing countries. These innovations will have considerable implications for the domestic market: it would become increasingly costly for developing countries to try to protect local producers of capital goods against competing imports of machinery, since the competitiveness of national producers is bound to deteriorate considerably.

38. Measures to counter the growing technological gap between developed and developing countries are of crucial importance for any strategy to build up viable capital goods industries. One possible approach would be to import the relevant innovations by means of the licensing strategy that now dominates capital goods production in developing countries.

39. The licensing strategy also has some drawbacks. It usually does not allow for adaptation to the relative factor prices and insufficient market; licensing arrangements are frequently burdened with explicit or implicit restrictions; and the costs of transferring both hardware and software technology for machine-building tend to be extremely high.

40. Whatever the benefits and costs of the licensing strategy, it would seem safe to state that an exclusive reliance on it would engender considerable social costs. How to proceed with policies to strengthen self-reliant innovative capacities and whether and in which form they should differ from the dominant technology systems developed in major OECD countries still remains very much open to debate.

2. Conclusions

41. Global restructuring of the capital goods industry is likely to proceed in the 1980s and 1990s. In the course of their further industrialization, developing countries have little choice but to build up an increasingly integrated capital goods industry. The larger of the developing countries obviously have a broader scope to pursue this development, whereas the smaller countries would need to have a highly selective strategy and to rely to a large extent on international markets . Many of the least developed countries are in a particularly difficult situation and may attempt to work out spatial arrangements on a bilateral basis with both other developing countries and developed countries.

42. The First Consultation on the Capital Goods Industry agreed on the necessity to increase production by developing countries in order to correct a fundamental disequilibrium between developed and developing countries. The Consultation also concluded that there was a substantial mutual interest between, on the one hand, enterprises having technology and their Governments and, on the other hand, the developing countries wishing to establish capital goods industries. It recommended a permanent dialogue on this industry between all countries and the examination of long-term technical trends and forecasts of supply and demand for capital goods. Long-term arrangements for the transfer of technology should be facilitated through the preparation by UNIDO of a checklist of specific elements for inclusion in those arrangements, thus permitting the interests of all parties to be taken into account.

43. The issue for developing countries is no longer whether to build up a national capital goods industry, but what type of capital goods should be produced, according to which criteria, and using which negotiation and co-operation modes. For instance, the establishment of a capital goods industry might be conceived as part of an import substitution strategy or might be subordinated to the prerequisites of an export-oriented industrialization strategy. Furthermore, the build-up of capital goods industries could be conceived of as an instrument for increasing economic circuits within the developing countries, for instance as part of new forms of regional or even bilateral South-South industrial co-operation.

44. Some specialization and selectivity may also be necessitated. For example, producers in the developing countries may be able to establish particular types of capital goods for third-world markets, such as new small-scale plants and other applications of new technologies.

45. There are potentialities for trade in capital goods among developing countries which would call for some suitable and efficient trade régimes and trade-supporting measures by developing countries. However, a build-up of capital goods production in the third world will come up against three major obstacles:

(a) Fierce competition from OECD countries, among others, in terms of export credits, supporting services etc., and resistance to major shifts of production;

(b) A prevailing bias in the developing countries for traditional sources of supply of capital goods from OECD countries;

(c) Basic internal constraints on capital goods production in the developing countries.

46. It would be unrealistic to expect developing countries to rely exclusively on market-induced redeployment of capital goods industries from developed to developing countries. Rather, systematic government policies and negotiation will be required to achieve the restructuring. The development of the capital goods industry in these countries will probably not end their dependency on the industrialized countries; instead, there will be a shift to dependency on know-how, inputs, skills required for establishing a capital goods industry.

47. A corresponding long-term, gradual shift could be expected in the structure of developed countries' exports to developing countries, from actual plant and equipment to technological, managerial and other industrial services.

48. The developing countries will need to identify realistic options for strategies and to reassess the basic goals of industrial transformation. Only then will it be possible to identify and selectively promote priority subsectors, technologies, support services and organizational structures. A strategy of broad or selective development of the capital goods industry calls for a built-in monitoring of company performance and international development so as to be able to produce efficient and up-to-date capital goods. The major obstacles to this are likely to be the lack of skills in engineering, design and research and development. Even countries that have created a skill basis

will need to develop the skills and to build up institutional support. These requirements will play a crucial role in the redeployment of capital goods industries from developed countries.

49. The financing of training received particular attention in the agreed conclusions and recommendations of the First Consultation on Industrial Financing (ID/293), the First Consultation on Training of Industrial Manpower (ID/294) and the Third Consultation on the Iron and Steel Industry (ID/291). It was recommended that the financing of training should form part of the overall finance package in the purchase of capital goods, and that training should be provided under contract. At the same time, it has to be recognized by developing countries that, in order to derive maximum benefit from the international restructuring of the capital goods industry, improvements in absorptive capacity need to be strengthened, whether the restructuring takes the form of direct foreign investment, subcontracting, licensing, or some other arrangements.

C. The electronics industry

1. The issues

50. Since the early 1960s, there has been a significant redeployment of electronics manufacturing to developing countries. The redeployment has been confined to the assembly of consumer electronic products and semi-conductor devices, concentrated in a few countries in South-East Asia, as well as in a few locations in the Caribbean and northern Mexico. It has largely (with the possible exception of India until around 1979) been motivated by the requirements of world-wide sourcing strategies of transnational corporations in search of cheap unskilled labour. The developing countries, on their part, were glad to provide their location for these labour-intensive activities in order to create employment and to use their comparative advantage in this respect on the world market.

51. As computer-based automation 12/ is pervading practically all stages of the design, production, application and maintenance of electronic hardware and complementary software, the economics of designing and manufacturing semi-conductors, computers and electronic consumer products have been subordinated to a radical change characterized by sky-rocketing capital outlays, an upsurge in capital intensity and pressure to increase technical and industrial synergism.

52. Consequently, the internationalization of production and support services in the electronics industry is acquiring new forms and mechanisms. At the same time, there have been major structural transformations in electronics manufacturing in the developing countries.

53. It is safe to conclude that the issue for the 1980s is not so much the possibility of relocating industrial activities from the developing countries back to the developed countries - manufacturing of semi-conductors in the developing countries will continue to expand, at least for certain product groups and to a limited number of production sites. Rather, in consumer

electronics and in electronic components, both automation and industrial redeployment to developing countries are taking place as complementary processes, with automation coming to the fore as the driving force.

54. This trend towards increasing automation and capital intensity will thus lead to industrial restructuring within and between the United States of America, Western Europe and Japan, as well as to redeployment to some growth poles in the European periphery and in the third world. This demand potential for electronic applications may lead to increased production of semi-conductors in some growth poles in South-East Asia, Brazil, India and Mexico. In addition to (semi-) automated assembly and final control, one could expect, at least for medium-scale mass chips, an expansion of the so-called "silicon foundries". * There are already some indications that regional production and design centres for the semi-customized chips particularly gate arrays, ** required for more sophisticated applications, e.g. for the military and for industrial automation and control systems, are about to emerge in locations such as the area of Hong Kong, Malaysia, the Republic of Korea, Singapore and the Taiwan Province of China. However, the developmental benefits of offshore production to be reaped by developing countries in terms of employment generation, skill formation, forward and backward inter-industrial integration and technological spin-offs might become even smaller and less viable than they are today. It is to these changes and their impact on industrial redeployment perspectives in the electronic industry that future analysis and policy activities should be mainly geared. This in turn would require much more in-depth, firm-specific information on the newly emerging patterns of interest and co-operation between the leading agents (firms, Governments and labour movements) involved in this industry. A new system for information exchange on industrial international restructuring is therefore called for.

55. Corporate management of companies based in developed countries is likely to see three major motives spurring the progressive allocation of computerized automation systems to the developing countries, the first being the availability of cheap, highly skilled labour and engineers, particularly in some urban growth poles in Latin America and Asia.

56. Whereas automation tends to decrease the share of labour costs in the overall costs of production, the wage level still plays a major role for international investment decisions. Moreover, in the OECD region, the progressive automation of industrial production is running into an increasingly severe shortage of skilled labour. In the semi-conductor industry, for instance, new integrated capabilities are needed in the computer aided designing, testing and manufacturing of integrated circuits, which

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* New forms of subcontracting in which the main focus is on wafer fabrication, i.e. on transferring the original design, as embodied in the mask, into a silicon architecture.

** "Gate array" technology is a technique for producing complex micro-electronic circuits quickly and cheaply. It has led to the emergence of a new type of programmable integrated circuit, the semi-customized chip (also called uncommitted logic arrays) which can be mass produced with a standardized arrangement of gates that determine how the chip functions.

existing educational and training systems are still incapable of providing. The most acute shortages involve wafer-processing engineers, maintenance and text technicians, application engineers with multidisciplinary skills and experience in micro-electronic applications, and design engineers who, at the same time, have good software skills.

57. Companies based in developed market-economy countries have attempted to offset this shortage by instituting in-house training and retraining programmes, downgrading technology and adapting it to existing skill levels and recruiting foreign personnel. * These attempts, however, have a limited scope and companies tend to rely more and more on the cheap human capital available in some developing countries. **

58. A second motive is the need to maximize annual overall utilization of very costly equipment. Unit costs of new equipment can only be kept at an acceptable level by working round the clock, for example, on the basis of multi-shift work. In the context of existing social legislation in developed countries, this will hardly be possible, whereas some developing countries may offer such possibilities. Pending further technological breakthroughs in robotics, for instance sensors, transducers and actuators, it might well be profitable to run numerical-control machine tools worth $US 75,000 - $US 100,000 on a multi-shift basis in an export zone. In some third-world growth poles, there may also be less resistance to experiments in organizing the production process.

59. A third motive is the availability of incentives and low-priced infrastructure. In the face of global investment stagnation, Governments are increasing their efforts to attract foreign investment. Companies will no doubt respond to these efforts. Some developed countries are introducing extreme forms of foreign investment promotion, i.e. the establishment of "export processing zones" and "science parks", and Governments in a growing number of developing countries are returning to open-door policies on foreign investment and are competing to attract foreign companies. There has been a proliferation of programmes to promote foreign investment, particularly in so called "high-technology" industries, through a variety of tax incentives and policies to reduce overhead costs (infrastructure and labour and environmental regulations).

60. On the other hand, certain expected developments in leading developed market economies are likely to limit the effect of the motives for redeployment. The transition to new forms of a qualitatively intensified technological

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* In the United States, for instance, at least 15 per cent of the higher level electronics engineers are from developing countries, and 5 per cent are European. Recently, however, there has been growing opposition against this use of cheap human capital from abroad.

** In some of these countries, for example India, there is in fact a surplus of programmers, systems analysts, solid-state physicists and design engineers. There are also crash training programmes for programmers, systems analysts and electronic engineers, funded out of government budgets, in, for example, Malaysia, the Republic of Korea, Singapore, and, recently, in the Philippines and Thailand.

competition and emerging protectionism, particularly between the United States, Japan and Western Europe, may work against further international relocation. Decisive changes in the general environment for international investment and lending could also counteract redeployment. Thus, increasing economic and political risks in some third-world growth poles may considerably reduce the effect of investment incentives and subsidies. In the international context, the crisis of international trading and finance systems, growing neo-protectionism and increasing segmentation of world markets obviously have a serious impact.

2. Conclusions

61. Overall, one could hypothesize that the international diffusion of computer-based automation systems from the industrialized countries is likely to expand further, although still at a relatively slow pace and in a strictly selective manner, i.e. with expansion restricted to a few growth poles.

62. Changes in the international location pattern are assumed to take place at four levels:

(a) Locational shifts among major OECD countries, i.e. mainly between Japan, the United States of America and a few production centres in Western Europe;

(b) Locational shifts from the centre to the periphery of the OECD region;

(c) Transition to new patterns of investment in established Asian exporters (such as the area of Hong Kong, Malaysia, the Republic of Korea and Singapore);

(d) Redeployment from these established exporters to new locations such as Bangladesh, the Caribbean, China, the Philippines and Sri Lanka. 13/

63. Locational shifts within the OECD region, in particular to the European periphery and to Japan, are expected to be the dominant feature of international restructuring in this industry during the 1980s. Relocations to and within the South are, however, bound to become increasingly important. *

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* A number of examples of relocation within the South and of a consequent industrial restructuring of offshore production facilities can already be discerned:

(a) In the "classical" offshore locations in South-East Asia, a period of stagnating net investment between roughly 1974-1975 and 1978 was followed by the beginning of a transition to more capital-intensive and integrated production activities;

(b) Among the latecomers in South-East Asia, the Philippines was able to attract substantial new investment. Other countries such as China (particularly its coastal "Special Economic Zones"), India, Indonesia, Sri Lanka and Thailand have also become candidates for offshore location with varying success;

64. The application of micro-electronics to industrial products and processes is already dramatically changing the established modes of industrial production and consumption. The key issue, both for individual and grouped developing countries, is to identify areas of application that would strengthen their long-term industrial development potential. This requires a highly selective approach, which would endeavour to link applications to the strategic sectors of the national economy concerned. Developing countries can no longer afford to lag behind in the introduction of micro-electronics, which they should pursue systematically in a manner suited to their own conditions.

65. A transition to more viable patterns of electronics manufacturing is unlikely to succeed if developing countries continue to rely exclusively on firms based in developed countries and on their willingness to redeploy production facilities and technologies. Within such a strategy of passive and unselective world market integration, only very few countries could expect to keep some offshore chip assembly lines and upgrade them to the more integrated patterns of a national electronics industry. Indeed, only countries which, in addition to their export-oriented chip assembly plants, already have a more established network of capital goods industries could in any way qualify for an integrated electronics industry. For other developing countries, a more selective approach is called for.

66. With regard to electronic components, developing countries have to decide whether to buy components and assemble them into systems (e.g. mini-computers or control devices). In order to do so, they would need an integrated informatics strategy and, more important, rapid and absolutely accurate marketing information. With the growing integration of chips (transition to Very Large-Scale Integration (VLSI)), the dividing lines between components, systems and software are becoming increasingly blurred.

67. In other words, developing countries can no longer afford to fall back on the logic of comparative advantage when discussing strategic options for an electronics industry. Political decisions are required which would link the design and manufacturing capacities for electronic components and systems to the social needs and development requirements of the developing countries concerned. Furthermore, such strategies would have to spell out the hidden economic and social costs involved in such policies in order to avoid being roped into ephemeral projects. In short, what matters is the measure of selectivity, in which the focus is on a few strategic areas of attack and support.

(c) In Latin America, some traditional locations, such as Mexico's "border industries" belt and the Caribbean basin, have experienced a relative stagnation of new investment, whereas Brazil shows an overall dynamic trend. In fact, for Brazil, access to the potentially huge Latin American markets has been the guiding principle, and costs - particularly labour costs - are only of secondary importance;

(d) In the Mediterranean basin, some offshore locations have recently emerged, albeit on a rather limited scale.

68. Basic operational goals include:

(a) A projection of likely changes in demand structure (identification of priority application areas);

(b) A systematic assessment of available resources (tangible and intangible; strategic versus secondary resources);

(c) An assessment of trends in specific regional and world markets and an evaluation of the scope for improving international competitiveness (on a subsector and firm-specific level);

(d) Changes in organizational patterns (work-place, product-flows, interfirm subcontracting networks, integration into intrasectoral and intersectoral linkages);

(e) An assessment of the likely implications for the economics of production (barriers to entry, local value added);

(f) An assessment of the implications for regional development;

(g) An assessment of the implications for job generation, skill formation and labour conditions;

(h) Identification of the scope for policies to integrate export-oriented production lines into an integrated electronics industry subordinated to the country's or region's needs.

69. Any strategy of applying micro-electronics in developing countries to agriculture, industry or the exploration, exploitation and use of natural resources requires a strong capacity to develop, operate and maintain software, particularly applications software. A strong capacity in applications software is indeed a prerequisite not only for selective delinking from the application patterns prevailing in industrialized countries but also for effective integration of the application of micro-electronics to the overall concept of development. What matters is that there is secured access to the knowledge needed to run, adapt and maintain information processing and communication systems and industrial electronic equipment (for instance numerical control), and to subordinate their use to the requirements of development strategies.

70. In terms of industrial restructuring policies, minimum requirements include the building up of domestic capacities; selective international subcontracting for software reconversion and application packages; and strengthening of the capacity to develop, operate and maintain applications packages, both in the national context (scope for decentralization) and as part of arrangements for technical co-operation among developing countries.

D. The petrochemical industry

1. The issues

71. In contrast to the spectacular growth of the petrochemical industry between 1948 and 1973, developed countries experienced a slowdown after 1973. Sharp increases in feedstock costs, overcapacity and the stagflation in major industrialized countries made radical restructuring necessary, particularly in Western Europe and Japan. In the developing countries, on the other hand, there was a significant increase of petrochemical facilities from 1970 up to 1981, when the severe financial crisis brought about by huge international debt has forced postponement or cancellation of most petrochemical projects in these countries. The number of developing countries involved in this field is, however, still fairly limited: less than 15 developing countries have or are developing a petrochemical production capacity. Since feedstock costs in 1979 accounted for about 70 per cent of the total cost of producing basic petrochemicals (compared with about 40 per cent at the beginning of the 1970s), developing countries with oil and gas resources are expected to have a potential competitive advantage in this industry. Table 3 shows the UNIDO projections of the developing countries' share in world production capacities for main petrochemicals up to 1984 and 1990 (as estimated in June 1981).

Table 3. Actual and projected share of the developing countries in total world production of selected petrochemical products
(Percentage)

Petrochemical product	Developing countries' share				
	1975	1979	1984	1990 Case 1 a/	1990 Case 2 b/
Basic petrochemicals					
Ethylene	4.7	7.2	12.4	19.8	19.8
Propylene	3.7	6.0	9.5	12.1	12.1
Butadiene	5.8	7.9	14.4	19.3	19.3
Benzene	6.0	6.9	11.4	15.7	16.2
Xylenes	4.2	10.8	19.7	23.8	25.3
Methanol	3.3	10.3	15.3	12.9	12.9
Thermoplastics	16.1	17.9	23.4	29.5	33.6
Synthetic fibres	16.1	17.9	23.4	29.5	33.6
Synthetic rubbers	6.9	7.8	11.2	14.9	19.9

Source: UNIDO, "Second world-wide study on the petrochemical industry: process of restructuring" (ID/WG.336/3), p. 68 (June 1981).

a/ In which assumed imports of developing countries in 1990 are at the same level as in 1984.

b/ In which assumed developing countries' production in 1990 is sufficient to meet demand.

72. It must be stressed that the chances of realizing these new investments and their potential comparative advantage seem to be rather bleak. Many of the projects are suffering excessively from the inflated costs of equipment and financing, cost overruns etc. 14/ Major projects previously considered in some 30 developing countries are currently being shelved or postponed and only smaller projects remain. The estimated capacity share for 1984 may not be realized until 1987 at the earliest.

72. At the Second Consultation on the Petrochemical Industry, convened in June 1981, 15/ it was recognized that later in the 1980s there might be opportunities to match the shut-down of aging uneconomic capacities in industralized countries with the start-up of new plants in developing countries. However, petrochemical companies in developed countries are already well advanced in their own restructuring, through investments to modernize or replace uneconomic plants. This trend, coupled with the debt burden of developing countries, is precluding the realization of the above envisaged opportunities.

74. Since the market in most developed countries is highly integrated, dominated by a limited number of producers and therefore difficult to penetrate, the implementation of export-oriented projects depends on the negotiation of long-term arrangements for the volume of exports, their prices, marketing channels, the cost of feedstock etc. The experience of a number of developing countries, for example, Qatar, Brazil, and the Republic of Korea, has shown that if the efforts to penetrate the market are energetic enough, the chances of success are enhanced. These and other elements that may be included in long-term arrangements were discussed at the Second Consultation, which recommended that UNIDO should make an in-depth examination of various forms of long-term arrangements. The Consultation also recommended that further work should be carried out on the finalization of a model form of licensing agreement, which would be disseminated as soon as possible.

2. Conclusions

75. Unless they were constructed specifically to supply domestic markets, petrochemical facilities in major oil-producing developing countries will only remain viable if large export outlets can be opened up. These countries must therefore overcome trade barriers and obstacles to marketing their products in a highly integrated world market. Negotiations on long-term marketing arrangements are to a large extent a pre-condition for the implementation of projects for which the raw materials are available in developing countries with oil and gas resources. The future process of world restructuring in this industry will therefore largely depend on trade negotiations between developing and developed countries and between the developing countries themselves. Important steps towards the realization of such co-operation have been taken in connection with the recommendations of the OPEC/UNIDO/OPEC Fund Seminar in March 1983.

E. The textile and clothing industries

1. The issues

76. The textile and clothing industries have played an important role in the past industrialization of developing countries. In 1979, textiles accounted for between 25 and 50 per cent of industrial value added in the leading exporting developing countries, compared to 3 to 12 per cent in the OECD countries, and they provided up to 50 per cent of the industrial employment, compared with a maximum of 15 per cent in major OECD countries.

77. Until around 1979, export-oriented textile and clothing production was largely the preserve of a small number of third world growth poles, particularly in South-East Asia. In clothing, three-quarters of all the developing countries' exports came from three leading producing countries or areas (Hong Kong and Macao and the Republic of Korea) while six of them accounted for 83 per cent of those exports. Exports of textiles were similarly concentrated in a few leading countries or areas: the three leading ones accounted for some 40 per cent and the six leading ones for some 60 per cent.

78. This seems to indicate that even in times of high growth of production and international trade, export-oriented textile and clothing production could hardly act as a catalyst for an accelerated industrial transformation in the majority of the developing countries. For countries that yet have to emerge as exporters of manufactured goods, however, reliance on the textile and clothing industries is expected to increase, and they will attempt to take over the production of low-priced labour-intensive products from the present leading producers.

79. The successes of a few countries in South-East Asia led private firms and Governments in developed market-economy countries to devise increasingly effective countervailing policies, four of which are of particular importance. One consists in imposing restrictions on textile and clothing imports from developing countries, particularly from the four dominant suppliers, in conjunction with the December 1981 renewal of the Multifibre Agreement (MFA). Under the renewed Agreement, considerable quota reductions were imposed for practically all product groups, in contrast to the 1972 MFA, which stipulated that developing countries could increase their exports to the developed market economies at the rate of 6 per cent a year. The second type of policy is geared towards intensified export promotion, based, inter alia, on export subsidies. The third type is an adjustment policy that has as its goal the modernization and consolidation of the industry through cost-reducing process innovations, which include such traditional sectors as garments manufacturing.* The fourth type is designed to accelerate product innovation and to concentrate on higher-value-added items. These, however, account at present for only 10 to 15 per cent of the market.

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* According to the Commission of the European Communities, for instance, "advanced technology has yet to penetrate the clothing industry, where automation is still virtually unknown. However, one sweeping change in production methods as a result of automation could considerably reduce the cost disadvantage under which the community's industry operates as compared with its competitors in the developing countries". (Commission of the European Communities, "Commission communication to the Council on the situation and prospects of the textile and clothing industries in the Community", (COM 81/388 final), p. 45.)

80. The scope for implementing a policy of industrial "positive" adjustment based on process and product innovations is probably smaller than it is generally thought to be. In the textile sector (in particular man-made fibres, spinning, weaving and knitting), which already has a long tradition of capital-intensive automation, new capital investment resulting in improved production speeds will encounter demand stagnation and may thus lead to falling profits and growing vulnerability.

81. Garment manufacturing has thus far proved remarkably resistant to the introduction of automation. Before investment in highly computerized and as yet untested automation systems can take place, confidence in the future viability of this branch of the industry will have to be strengthened.

82. If new generations of computer-based automation systems do penetrate the most skilled labour-intensive sectors of garment production, such as grading, designing and cutting, there will be considerable pressure to increase the effective annual utilization of such equipment. * Developing countries may then present a more favourable location than the industrialized countries.

83. The trend towards increasing automation and capital intensity could, of course, also apply to some textile and clothing growth poles in the third world. Thus, whereas production structures could be expanded, the benefits to be reaped by developing countries in terms of employment generation, skill formation, forward and backward inter-industrial integration and technological spin-offs might become fewer and less viable than they are today.

2. Conclusions

84. In the major developed countries, both firms and Governments can be expected to increase their resistance to industrial redeployment and international restructuring in the textile and clothing industries. Attempts will be made through "positive adjustment" and process and product innovation to regain market domination and profitability. With limited scope for survival, individual firms and Governments are likely to seek individual and short-term gains. Rather than adapting themselves to the expected transformation of production and consumption patterns, major OECD countries seem to be relying increasingly on protectionism and improving competitiveness through technological upgrading.

85. Under these circumstances, the possibility for developing countries to obtain more assured outlets seems to be fairly limited, even if the developed countries do pursue "positive structural adjustment".

86. On the other hand, the prospects for domestic demand in the developing countries - primarily the larger ones - are very good, but in many cases these have not so far been followed up systematically. The industry could be substantially expanded through price and income policies and rationalization programmes. This selective application of new process technologies and new organizational forms of production is likely to foster growth in the industry.

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* In Western Europe, for instance, in the context of given social legislation, equipment utilization is estimated to average around 5,700 hours a year, whereas in South-East Asia it often exceeds 7,000 hours.

87. Structural adjustment programmes in the developing countries and increased reliance on the internal dynamics of individual developing countries or groups of countries may thus complement their endeavours to increase access to developed country markets for some product groups through consultations.

III. CONSTRAINTS AND PROSPECTS

88. The analysis of major trends in the restructuring of world industry has shown that, while the internationalization of industrial production is likely to continue and to take on new forms, it is becoming increasingly important to establish a consensus on how to proceed. New conflicts of interest between the major actors of industrial restructuring in industrialized and in developing countries may emerge, as may new potential for industrial co-operation.

89. The dialogue undertaken through the System of Consultations has revealed that developing countries face a number of constraints. A first set of constraints concerns the sectors in which developing countries have a relatively substantial industrial base, and encounter problems in enlarging that base, e.g. the food-processing industry, including vegetable oils and fats, and the leather and leather products industry. A second set of constraints appears where developing countries have a significant industrial base, but where project implementation is delayed because of financing difficulties and high costs of capital equipment, e.g. iron and steel and fertilizers. In a third situation, developing countries have either a very narrow industrial base or none at all, e.g. capital goods and agricultural machinery. The fourth situation is similar to the latter, except that in their attempts to enter these sectors, developing countries are blocked by opposing interests and hampered by other obstacles, such as those associated with the transfer of technology, e.g. the petrochemical and pharmaceutical industries (ID/B/284, paras. 17 to 21).

90. It is with regard to those prospects and constraints that developing countries now have to reassess their strategies and policies of industrial development and redeployment. Only when they have done so can they hope to resume a process of sustained growth.

A. Constraints on industrial restructuring and redeployment *

91. Among recent changes in the international framework that further hamper the restructuring of world industry in favour of the developing countries, as well as the redeployment of industries to developing countries, the following deserve particular attention.

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* Further information on this subject is contained in the background papers on provisional agenda items 5(c) "Mobilizing of financial resources for industrial development" (ID/CONF.5/13) and 4 "Lima and New Delhi Declarations and Plans of Action: retrospective and perspective" (ID/CONF.5/14).

1. The emergence of new forms of neo-protectionism

92. Protectionism seems to be taking on global proportions in the 1980s. Persistently high unemployment and slow economic growth in most developed market economies have combined to intensify protectionist pressures and to weaken liberal trade norms. Trade frictions have multiplied between nations and across sectors as the expansion of world trade has come to a halt. This outbreak of protectionism has taken on a variety of new forms. The proliferation of so-called "voluntary export restraints" (VERs) and "orderly marketing agreements" (OMAs) has become so widespread that these barriers now rank equally with tariffs and quotas as the most widely used commercial policies.

2. The crisis in the world financial system

93. The world's financial system is facing its greatest crisis in decades. High real interest rates have driven borrowing costs out of control, the price and volume of commodity exports is falling, and the global recession is exerting an increasing constraint on demand for third world goods and services. On the other hand, the prices for the imports that are essential inputs to the prevailing modes of industrial production continue to rise or at least remain at constantly high levels. Rapidly mounting debt burdens and exploding debt-servicing obligations have already led a growing number of developing countries to impose increasingly severe deflationary policies. This is bound to place even greater strains on the economic and political structure of these societies and the viability of their stategies and policies.

94. The external debt of developing countries currently amounts to about $US 800 billion. With an average rate of interest of about 10 per cent, the debt service requirement amounts to about $US 80 billion each year. Developing countries can only service this debt by running an overall trade surplus of some $US 80 billion with the developed countries; that is, the developed countries would run an overall trade deficit of that amount. This demonstrates the crucial link between debt and developing country exports, notably of manufactured products.

95. The First Consultation on Industrial Financing (Madrid, October 1982) was convened by UNIDO against this background of a deteriorating global economic and financial situation, which was adversely affecting the industrialization of developing countries. The Consultation agreed that there was a shortfall between funds available to and required by developing countries. While UNIDO is continuing to examine the obstacles to the flow of industrial finance to developing countries, it is also analysing the benefits to them of the extended use of co-financing arrangements and of programme lending for industrial programmes in developing countries (ID/293).

3. The impact of structural adjustment policies in industrialized countries

96. The structural adjustment policies of developed market economies are focusing to a growing extent on intra-OECD issues and do not seem to be working towards a more dynamic international restructuring of industry that would increase the share of developing countries in world industrial production, as assumed in earlier international declarations.

97. "Positive adjustment" as pursued by OECD does call on member countries to develop policies that would "facilitate movement of labour and capital from the production of goods and services in declining demand to those where demand is increasing, from less to more efficient forms and locations of production, and from production in which other countries are gaining a comparative advantage to new competitive lines of production." 16/ However, increasing rigidities in these economies, the high social costs of adjustment in periods of significant structural unemployment and stagnating demand are likely to increase the resistance to international restructuring. Adjustment pressures tend to be primarily treated through measures to modernize the same product groups within OECD and the European Economic Community (EEC). The manner of implementing "positive adjustment" makes it at best positive just to the individual country or possibly to the regional grouping of the OECD, and negative to other countries.

98. As revealed through the System of Consultations and also documented in "Monitoring progress made in accelerating industrialization in the developing countries: third survey, 1981-1982" (UNIDO/IS.370, p.50), most developed countries recognize the importance of structural adjustment. The need for government intervention is admitted to influence the rhythm and direction of the adjustment process in order to prevent or mitigate politically, economically and socially unacceptable consequences. The protectionist measures tend to cover industrial activities in which developing countries have a comparative advantage, as is the case in certain traditional and mature industries. Also, the incentives to promote investments in local industries or by specially affected categories of enterprises, such as smaller firms, that could otherwise be oriented to redeployment in developing countries, may have a negative impact from the viewpoint of an efficient international division of labour. National innovation policy is seen more and more as a powerful instrument for improving developed countries' international competitiveness.

99. In many key sectors of industry, automation is rapidly becoming the main driving force and redeployment to developing countries is less an alternative than a possible supplement to or, simply a by-product of, some few industrial activities.

100. The European countries of the Council for Mutual Economic Assistance (CMEA) are undergoing substantial internal structural adaptations in view of constraints in industrial production, organization and intra-CMEA specialization. It is likely that in spite of potentially large markets and less utilized international division of labour, the European CMEA countries will not offer any significant opportunities for restructuring between the region as a whole and the developing countries in the 1980s. 17/ A more systematic consideration of this issue by the CMEA countries concerned would, however, reveal growing prospects for intensified industrial co-operation with developing countries.

4. The impact of some major technological breakthroughs 18/

101. Major technological breakthroughs are likely to have an impact on the scope for future third world industrialization. As they are already imposing radical changes on prevailing modes of industrial manufacturing, the need to reassess past concepts of industrial restructuring and redeployment will become ever more urgent. Furthermore, developing countries need to monitor these developments carefully and to assess the impact of such innovations on their economic and social development and particularly on their scientific and technological self-reliance. The purpose of such monitoring would not need to remain a purely defensive exercise, however. In addition to a preventive countering of negative impacts on international competitiveness and the viability of existing industrial structures, such monitoring could also contribute to a better utilization of the potential inherent in some of these basic innovations to redirect science and technology to the fulfilment of basic social needs, particularly in key sectors, such as food, energy and health care. Special attention may need to be given to the following areas:

(a) Development of new energy technologies, especially with regard to solar and thermal technology and photo-voltaic energy conversion;

(b) Development of synthetics and other forms of substitutive research; *

(c) Major innovations in the field of information technology which are already causing, on a world-wide scale dramatic changes in the established patterns of producing goods and services, of consuming them and of organizing systems of social control and regulation. For instance, the introduction of new industrial automation systems to formerly very labour-intensive assembly activities or to small batch production will have a considerable impact on the fate of third world industrial production;

(d) Technological innovations concerning sea-bed mining, offshore prospecting, offshore drilling etc;

(e) The "civilian spin-offs" of defence and space research, for instance laser technology, optronics, weather modifications etc.;

(f) New technologies concerning material testing and production in space;

(g) Technologies to increase the world-wide mobility of capital, e.g. shipboard factories, low-cost or no-cost maintenance and repair and mobile building techniques;

(h) The technological potential inherent in genetic engineering and molecular biology, 19/ which has already induced big capital to invest in the newly emerging bio-industries;

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* Test cases would be, for instance, the introduction of glass fibre in telecommunications (fibre optics) as a substitute for copper; sugar and sweetener produced on the basis of corn derivates; guayule as a new source of natural rubber; chocolate produced on the basis of soya; and synthetic substitutes for cobalt and chromite.

(i) The development and application in industry of less energy-intensive product and process technologies and of technologies needed to make increasing use of alternative energy sources;

(j) The development of environmentally sound technologies, including low and non-waste technologies;

(k) The miniaturization of plants, especially in basic intermediates such as steel, cement and even bulk chemicals. 20/

B. Strategic implications for developing countries

102. At the Lima preparatory meeting on industrial strategies and policies (see para. 4 above), it was underlined that the industrialization prospects and possible pattern of developing countries in the coming decades were to be assessed according to the different premises of various categories of developing countries (see ID/WG.391/12). The meeting singled out issues for: (a) countries with a potential for increased exports of manufactures; (b) countries with a potential for domestic market-oriented industrialization; and (c) countries in the initial stages of industrialization. Whereas in countries of the latter two categories increasing attention will be given to internal needs and growth dynamics, countries attempting to pursue an export-oriented industrialization will be directing their efforts along the lines of previously successful third world exporters to the OECD countries. It is in this context that a separate examination of the restructuring process, internationally and nationally, needs to be carried out, in this case taking the logic of the free-trade comparative advantage paradigm to its conclusion. Thus, some countries of South-East Asia have followed with a considerable degree of success an export-led growth model. Without a resumption of accelerated growth, the question arises whether the international community and its institutions in the 1980s can accommodate a similar degree of success in increasing numbers of developing countries from other regions of the world.

103. The situation of developing countries at the initial stages of industrialization, and in particular the least developed countries, has been aggravated by the current international crisis as they are increasingly becoming integrated into the international system. There is little doubt that these countries are in a particularly disadvantaged position, which is bound to get worse. If one examines, on the one hand, existing forms and current motivations for redeployment of industrial capacities from the developed to the developing world and, on the other hand, the actual weight of the least developed countries on the international economic scene and within the developing world itself, the disadvantages would seem to be three-fold. First, the least developed countries are short of the resources that seem to favour redeployment (such as natural resources, a minimum degree of industrial infrastructure, transport and communication network and administrative infrastructure). Secondly, these countries are more likely to embody the characteristics that seem to be viewed as obstacles by potential redeploying industries in developed countries. And thirdly, they have fewer options in the context of international economic sense: the scope for "screening" the inflow of external resources (i.e. foreign investment packages, industrial projects, technology inputs etc.) seems to be even more reduced for them than

for other developing countries. They therefore appear to be caught in a vicious circle, whereby scarce resource endowment limits their ability to attract foreign resources, and the resulting weakness of their bargaining power makes it even more difficult to choose the right opportunities and to exercise control over their own national economic development. The international community must take extraordinary measures to enable the least developed countries to break out of this vicious circle and participate in the future industrial restructuring process.

104. The basic message of this paper is that, in spite of the increasing handicaps of the developing countries in key areas such as finance and technology, new starting points for their strategies must be identified. This requires a fundamental reassessment of the prevailing approaches to industrial restructuring and redeployment. The prevailing crisis has caused the developing countries to retreat to short-term national interests, served by ad hoc bilateral arrangements, which more often than not have had rather divisive effects on collective third-world negotiating positions. Furthermore, day-to-day crisis management has been substituted for strategic planning in a number of developing countries. There are, however, considerable possibilities for active rather than reactive strategies and policies on industrial revitalization of developing countries. Some illustrative examples are discussed below.

105. International transfer of technology is a key prerequisite for the effective redeployment of industries to developing countries. Despite the recent progress made in exporting technology from developing countries, firms based in major OECD countries are still by far the dominant source of the technology required for industrial production in developing countries. These companies are beginning to place more and more reliance on the world-wide proliferation of their technologies. They must strive to increase their technology exports, in order to extend the life-cycle of these technologies, to penetrate or at least retain increasingly protected markets through local investment, and to spread the cost burden of research and development. A growing share of those technology exports will be directed to developing countries, as those countries possess significant dynamism in the long run in terms of investment and consumption.

106. On the other hand, the process of transferring and disseminating technology is to a growing extent eroding the capacity of companies based in developed countries to control the technology and to remain in a position of technological dominance. Consequently, corporate managements in some sectors seem to secure their control over key technologies and innovative capacities by relying more and more on restrictive measures.

107. There thus seem to be two contrasting lines of company strategy regarding technology. Governments and companies in developing countries need to examine very carefully the emerging constraints and prospects inherent in prevailing corporate strategies of global technology management. Governments, regional groupings and entrepreneurs in those countries should make more systematic use of internationally available technology for acquiring and upgrading technology as part of their industrial restructuring process.

108. This, in turn, requires a continuous monitoring of industrial restructuring patterns in the developed countries through analyses of industry-sector and firm-specific information. For this purpose, a UNIDO

advisory system on industrial restructuring could be established to service the developing countries, building on the data and expertise available in the organization and in the network of collaborating institutions and specialists.

109. It seems evident that in the process of international industrial restructuring and redeployment in the 1980s and 1990s, the North-South link will continue to be the predominant feature. In this increasing interdependence, the areas of convergence of interest between the developed and developing countries need to be fully examined.

110. The developing countries' industrial sectors are and will for some time to come be subject to great pressure to adjust the processes, products and organizational setting of production. This process of adjustment will require various - and changing - inputs from both developed and other developing countries. Developing countries should in their industrial strategies and policies focus on the form, source and terms of these required inputs. It is here that increasing scope seems to arise for closer co-operation among developing countries, both in terms of increased exchange of goods and services and of joint approaches for negotiations for the acquisition of goods and services from developed countries. This would entail an examination of prospects for South-South redeployment of industries and the use of regional country groupings as bargaining power. It would also seem essential for individual developing countries to be continuously aware of the development of other developing countries' redeployment and restructuring policies and to have a complete picture of these developments and their relation to their own national policies. This becomes all the more necessary as new bilateral links and co-operation agreements between developed and developing countries are established in various geographical subregions. Monitoring of world industrial restructuring involves the surveillance of strategies and policies being pursued by existing and new country groupings and co-operation schemes between developing countries and between developed and developing countries.

IV. CONCLUSIONS AND RECOMMENDATIONS

111. The current world economic crisis has accentuated and brought into focus a number of fundamental problems that affect industrial restructuring. The significant expansion of industrial capacity in developing countries in the last decade was achieved by importing equipment, intermediate products and know-how, mainly from developed countries, and was financed to a large extent through private bank lending. Industrial strategies and policies were adopted by developing countries in the expectation of relative stability and growth in the external economic environment, notably as regards the proceeds from commodity exports, the level of interest rates, and market access in developed countries for competitive, mainly labour-intensive manufactured products. Moreover, there was a general commitment by the international community in the Lima Declaration and Plan of Action to change the structure of world industry.

112. The crisis has revealed a progressive erosion of the external economic environment and the vulnerability of the established structures to external shocks. It now appears that, owing to the world economic environment, inadequacies in internal policies in many developing countries and the adoption in certain major economies of rigid monetarist policies, the

international restructuring and redeployment processes in the past largely failed to attain the established industrial and socio-economic objectives and to create a basis for sustained economic and industrial development in the developing countries.

113. National policy-makers analysing established structures of industrial production in developing countries find that these structures are highly import-dependent and in many cases achieve only limited net foreign exchange. The creation of employment in industry has not proceeded as expected. Underused capacity, lack of productivity, lack of integration with other sectors, agglomeration of industries in metropolitan areas, environmental problems, increasing social costs - these are some features of industries that were established under different conditions and assumptions from those now prevailing. Increasing challenges are expected in the 1980s and 1990s in terms of technological developments in industrial processes, products and entrepreneurial organization; market access; changing price structures; and foreign exchange flows.

114. In recent years industrialization has come to a halt in many developing countries and, in some cases, has even retrogressed. Industries that were set up with large financial costs and long-term commitments in terms of both internal and external resources are threatened with extinction.

115. Against this background, the following areas of concern for the deliberations on restructuring and redeployment and industrial recovery can be singled out.

116. First, the current economic crisis has created a crisis in the industrialization of developing countries and in the basic notions and concepts of world industrial restructuring.

117. Secondly, the critique against the past industrialization pattern and disenchantment with it should be seen as arguments against the form and direction of industrialization and not as arguments against industrialization itself. The need to accelerate the industrialization of the developing countries should be re-emphasized and the call for world industrial restructuring strengthened. Only through industrialization can developing nations meet the basic material needs of their populations. It has been estimated that, if the minimal needs of the poorest 20 per cent of the population in the developing countries are to be satisfied by the end of this century, the national income of these countries would need to grow on an average by 7-8 per cent a year, implying an expansion of manufacturing industry of more than 10 per cent a year. Thus, development <u>is</u> industrialization.

118. Thirdly, notwithstanding their shortcomings, past developments in developing countries also show impressive industrial achievements and skills. Industrialization strategies and policies in the 1980s and 1990s must ensure that industrial investment and operation are geared to the objectives of national socio-economic development and that resources are managed effectively. Industry must use with care the natural resource base so as to ensure sustainable industrial development in the long run. Science and technology must be seen as a fundamental input to a national industrial restructuring process. Research and development capabilities and monitoring of international technological developments should be one basis for enhancing the process.

119. Fourthly, developed market-economy countries, because of their internal rigidities and relatively high unemployment rates, tend to resist adjustment of their industries to accommodate international restructuring. However, besides blocking a potential improvement in world welfare, this policy would hardly solve the internal problems. There is a continued inducement to the manufacturing industry to introduce labour-saving technologies. Hence neither resistance to restructuring nor "positive" adjustment through rationalization of production will be able to generate or safeguard employment enough to offset long-term trends of falling employment in manufacturing. Even attempts to give official support to larger investments in new manufacturing complexes on the grounds of job creation seem only to be able to bridge short-term difficulties. As a parallel to such government policies, it is maintained by many of these countries that the international restructuring of industry should be left to the "invisible hand" of market forces. In contrast, it could be stressed that it is crucial to make both national and international policies and driving forces visible and to acknowledge their interdependence.

120. Fifthly, there is a need for greater consistency between the strategies pursued by developing countries at the national and at the international level, as revealed for example by the System of Consultations. It would appear necessary for developing countries at the national level to articulate the role of industry in relation to their development objectives including the desired pattern of domestic demand; to increase production of equipment and intermediate products required by key sectors of the economy; to determine the conditions under which foreign participation is to be encouraged and the levels of technology required, in line with strategies for self-reliant industrialization; and to develop human resources in order to facilitate the mastery of technology and its related know-how.

121. Sixthly, new approaches to industrial restructuring would need to be conceived on the basis of medium- and long-term considerations. This means designing for the initial phase an international recovery programme, as well as structural adjustments in industry in both developed and developing countries. In this recovery programme, the debt problem - constituting the main growth blockage for developing countries - must be solved. The developing countries must be able to resume their development through the production and export of manufactures from the capacities which were imported under credits from developed countries. It should be noted that these equipment exports from developed countries did contribute significantly to the prolonged growth of the OECD countries.

122. The internationalization and multipolarization of industrial production are bound to accelerate, and new forms of a sectoral and geographical division of labour and capital are expected to emerge. What matters is whether developing countries, both collectively and individually, will be able to anticipate these developments in time and thus increase industrial co-operation among themselves in matters pertaining, among other things, to trade, technology and finance.

123. For future long-term process of world restructuring, more systematic consideration will need to be given to achieving an international convergence of national industrial approaches. New national concepts for a "preferred" industrial structure in the 1990s would need to be formulated within a common framework of approaches at the subregional, regional and international levels

in order to overcome beggar-my-neighbour policies, to limit short-term disruptions in production and to move towards new (but flexible) forms of an international division of labour. To this end, a basic, coherent notion of a framework for a changing international division of labour and a set of mechanisms and information systems have been established by the international community, such as in the UNIDO System of Consultations.

124. Adequate consideration of the topic of industrial restructuring as the international economy stands at present (autumn 1983) is particularly difficult, first because of uncertainty regarding the pace, scope and impact of the beginning recovery, and secondly because the paper can reflect only "a first wave" of the dramatic changes in the industry sector of developed countries as these changes affect developing countries. A second wave of changes is building up but its features and its repercussions on the various groups of developing countries will only gradually become visible. These changes may involve a departure from established concepts such as "industry" and "factory" to new modes and systems of production and distribution on a world-wide level.

125. In the dilemma of being caught between eroding assumptions and concepts and the emerging but uncertain new modes of restructuring, it is important to put forward at least some suggestions for principles of global restructuring so as to allow the Conference to conceive proposals for concrete actions by Governments and to design appropriate functions for UNIDO. To this end the following issues should be considered.

126. The concept of global industrial restructuring should not be seen as a mere statistical measure of changes in the location of the industrial production; it must also have a normative and qualitative connotation. Industrial restructuring as a long-term process would encompass not only the establishment of manufacturing capacity per se (such as isolated production of components or assembly) in a developing country but also the commensurate building up of the country's capacity to manage, expand, adapt and direct industrial development as part of a national development process.

127. Both the concept of and approaches to global restructuring are part of an iterative process that needs continuous monitoring by all Governments.

128. One major task of the monitoring function of UNIDO would be to improve the "transparency" of national policies for industry development and adjustment and to work towards the adoption of a set of principles for guiding restructuring policies between developed and developing countries.

129. Another task would be to assist individual and groups of developing countries in assessing global developments and their implications, and on this basis to participate in designing the strategy for production and trade and supporting research and infrastructural requirements in a changing international environment. One important means of achieving this would be to further develop the dialogue conducted within the System of Consultations. These are the questions that must be asked: Can developing countries avoid the rigidities and structural problems that now seem to hamper some of the industrialized countries? Can developing countries be effectively supported in their move towards a more intensive exchange of capital goods between themselves? Could technological developments be perceived in advance by developing countries through national and international networks at the industry sector level? Could new forms and modes of redeployment from

developed countries be conceived for packages of services, skills and production? Could developing countries be better assisted technically and financially and through the proper inputs in the identification and implementation of structure adjustment projects against the bias for new grand projects? Can indicative sectoral agreements constitute an instrument for the orderly change of world industrial structures with minimal disruptions?

130. In order to perform these tasks, an international consensus of policies would be required and a new form and direction would need to be given to some of the activities of UNIDO. As regards the latter, particular impetus would need to be given: (a) to setting up a system of information exchange on international industrial restructuring and related policies drawing on information systematically accumulated by UNIDO; (b) to establishing a special programme of feasibility studies for developing countries' programmes to adjust current structures; (c) to establishing special programmes of technical co-operation and promotional services to assist developing countries in formulating programmes to adjust current structures; and (d) to providing systematic support to more dynamic measures to create and retrain human skills and to the establishment of stronger links between education and training and the skills required by industry.

131. Furthermore, the UNIDO System of Consultations needs to be utilized to its full potential as an established mechanism whereby the relevant aspects of the restructuring of world industry can be examined. The System also provides a sufficiently flexible forum to allow for negotiations at the request of interested parties (PI/84, para. 3). It has sought first and foremost to seek the views of the parties concerned on what might be the share of developing countries in specific sectors of industry. From the discussions held so far, it has been possible in some sectors to reach consensus on what share the developing countries might realistically look forward to in the year 2000. Although they commit neither the participants nor their countries, these consensus agreements in principle are of paramount importance for policy-makers. Resulting from in-depth discussions and hard bargaining amongst experienced experts, they express a common view of the future development of a given sector and, what is more important, an acceptable point of convergence for the interests involved (ID/B/284, para. 100).

132. In many sectors it has been possible to proceed a step further to identify areas and elements of increased industrial co-operation and to work out mutually acceptable arrangements which would facilitate the achievement of the shares previously agreed to in principle (ID/B/284, para. 101). Another step has been taken to translate the general intentions related to industrial co-operation into specific instruments designed to balance the different interests involved in international industrial co-operation (ID/B/284, para. 102-110).

133. In this connection, a suggestion was made at the seventeenth session of the Industrial Development Board that an integrated sectoral approach to consultations should lead progressively from the exchange of information towards the definition of general principles of co-operation, thereafter to an indicative framework for sectoral co-operation, and finally to a programme of action to be implemented at the country and regional levels with the involvement of member States and international organizations (ID/B/308, para. 54).

The adoption of such an approach would strengthen the capacity of the System of Consultations to fulfil its role in the restructuring of world industry, through the involvement of all parties concerned and the consideration of their respective interests.

134. The Executive Director, in his special report to the Third General Conference of UNIDO (ID/242, para. 55), argued in favour of strengthening the System of Consultations by having the recommendations adopted by Consultations reviewed by the Board, after examination by subsidiary technical committees, and then transmitted to the General Assembly. This would lead to positive action by the Governments concerned. Subsequently, a suggestion on how to move from consultations towards negotiations was put forward by the Executive Director (ID/B/284, paras. 146-150). The recognition of the changing realities of world industry requires new approaches to international industrial co-operation between developing and developed countries. This recognition has also led to the idea that there are mutual interests in negotiating indicative sectoral agreements so as to support the industrialization of developing countries with minimal risk of disruption to the world economy. It was therefore suggested by the UNIDO secretariat that several types of multilateral sectoral agreements might be negotiated (ID/B/284, para. 151-157.)

Notes

1/ United Nations Conference on Trade and Development, "Protectionism, trade relations and structural adjustment" (TD.274), para. 196.

2/ Ibid., paras. 216-219.

3/ See Proceedings of the United Nations Conference on Trade and Development, Sixth Session, Belgrade, 6 June-2 July 1983, vol. I, Report and Annexes, part one, sect. A (in preparation).

4/ United Nations Conference on Trade and Development, "Protectionism, trade relations and structural adjustment" (TD.274), para. 169.

5/ Ibid., paras. 170-171.

6/ Ibid., paras. 170 and 172.

7/ United Nations, Monthly Bulletin of Statistics, May 1982, Special Table D.

8/ The International Flows of Technology to Developing Countries, Analytical Study No. 2 (Paris, OECD, 1979), p. 5 and pp. 17-19. See also "First global study on the capital goods industry: strategies for development" (ID/WG.342/3); "Technology in the service of development" (ID/WG.342/5); "Issue I: potentialities and possible progress of the capital goods industry development in the developing countries including the small and medium size developing countries" (ID/WG.342/1); Report on the First Consultation on the Capital Goods Industry (ID/276); World Bank, "The capital goods sectors in LDCs: a case for State intervention", Staff Working Paper No. 343; and Howard Pack, "Fostering the capital goods sector in LDCs", World Development, vol. 9, No. 3 (1981).

9/ See also National Academy of Engineering, The Competitive Status of the U.S. Machine Tool Industry: A Study of the Influence of Technology on International Industrial Competitive Advantage, (Washington, D.C., National Academic Press, 1983); Commission des Communautés européennes, "L'industrie européenne de la machine - outil situation et perspectives" (III/A/1) (October 1982); and "Machine tools and new technology", a study prepared for the World Conference of the International Metalworkers' Federation, held at Bern from 6 to 8 December 1982 (particularly chapters III and IV).

10/ See, inter alia, projections in OECD, "Future Industrial Structures.....".

11/ OECD, North-South Technology Transfer; (Paris, 1982).

12/ See D. Ernst, "Automating manufacturing equipment in a period of crisis", a report prepared for UNIDO in 1983.

13/ See Restructuring World Industry in a Period of Crisis - The Role of Innovation (UNIDO/IS.285), chapter VI.

14/ See "First world-wide study on the petrochemical industry: 1975-2000" (UNIDO/ICIS.83), pp. 46-53.

15/ For the report of the Consultation, see UNIDO/ID/273 and Corr.1.

16/ See General Orientations on Policies for Readjustment, adopted by the OECD Council at Ministerial Level in June 1978, quoted in Textile and Clothing Industries: Structural Problems and Policies in OECD Countries (Paris, OECD, 1983), p. 9.

17/ See the report of the Research Seminar on Structural Changes in Industry in the European CMEA Countries, held at Budapest, from 22 to 26 March 1982 (ID/WG.357/11).

18/ See "The UNIDO programme on technological advances" (UNIDO/IS.411); the background paper on item 5(b) (ID/CONF.5/6); the report of the International Forum on Technological Advances and Development, held at Tbilisi, USSR, from 12 to 16 April 1983 as one of the high-level expert group meetings preparatory to the Fourth General Conference of UNIDO (ID/WG.389/6); and D. Ernst, "Industrial Redeployment and Control over Technology - Consequences for the Third World", in Vierteljahresberichte, No. 83, 1981, p. 14.

19/ See J. Rosany, Biotechnologies et bioindustries (Paris, La Documentation française, 1979). Also F. Gros and others, Sciences de la vie et société (Paris, La Documentation française, 1979).

20/ See P. Judet, "A propos du traitement des matières premières: économies d'échelle et réduction de taille", paper presented to the OECD Development Centre, 14-16 January 1980.