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*Perspectives for 2000 and Beyond*

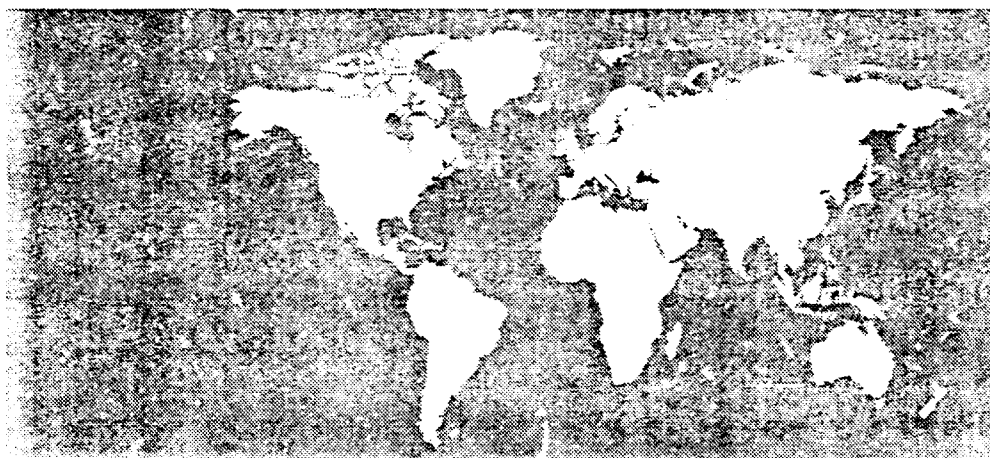
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## Panel VIII Industrial development and international cooperation: The future role of UNIDO



**Issue Paper**

## Industrial development and international cooperation: The future role of UNIDO

Prepared by  
the UNIDO Secretariat



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

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## **INTRODUCTION**

1. Development experience has shown that the transformation of agrarian societies into industrial economies is the swiftest and most powerful mechanism for generating higher productivity rates and employment levels, combating poverty and meeting pressing social needs. A vital prerequisite for socio-economic growth with multiplier effects of far-reaching consequence for all sections of society, industrialization is increasingly recognized as a key human endeavour for achieving a better quality of life, equitable social conditions and global economic stability. Accordingly, resolution 49/108, adopted by the General Assembly of the United Nations on 19 December 1994, "stresses the importance of industrialization as a dynamic instrument of growth that is essential to the rapid economic and social development of developing countries", and "reaffirms the essential role of industrialization and entrepreneurship as a means of achieving socially beneficial economic development by eradicating poverty, creating productive employment and facilitating social integration, including the integration of women into the development process."

2. The industrialization of developing countries and of economies in transition from centralized to market-oriented economies is an essential element of development cooperation and a critical prerequisite for economic growth and socio-economic transformation in these countries and for increased global economic stability. The Constitution of UNIDO, which was adopted in April 1979, describes industrialization as a dynamic instrument of growth essential to rapid economic and social development, in particular of developing countries, to the improvement of living standards and the quality of life of the peoples in all countries and to the introduction of an equitable economic and social order. This mandate is even more relevant in the 1990s, because of technological innovations, liberalization of trade and investment, and globalization, on the one hand, and the need to enhance social development, on the other.

3. The close linkage and interdependence between industrial growth and broader social goals needs to be emphasized. Peace and political stability are powerful incentives for the mobilization of investment, both domestic and foreign, and for achieving diversified industrial growth. Industrial development must also increasingly be harmonized with environmental sustainability through controls over industrial pollution and waste disposal and use of environmentally suitable technologies. Equitable socio-economic growth is also closely linked with industrialization, and increased employment in less developed regions can often be achieved most effectively through training and support for new entrepreneurs, including women entrepreneurs, and the promotion of a wide range of small and medium industries, as well as rural industrialization. The socio-political involvement and participation of the population in the development process is also best reflected in the development of a promotional environment for private-sector industrial growth and initiative. The broader socio-economic goals of a comprehensive development agenda are, therefore, closely interlinked with the needs and potential for industrialization in particular economies.

4. In recent years, increased priority has been accorded by the international community to broader social objectives, particularly poverty alleviation and the

achievement of social objectives. These are, however, not only fully consistent with the need for accelerated industrial development but are also largely dependent on the pace of industrialization for the creation of new jobs and increased income. In fact, improved living standards, poverty alleviation and increased employment and social integration can be achieved most effectively through sustained industrial growth.

5. The crucial role of industrialization in developing countries was reaffirmed at the fifth session of the UNIDO General Conference in December 1993 when Member States adopted the Yaoundé Declaration, in which they voiced their unanimous support for UNIDO as the central coordinating agency in the United Nations system for the promotion of the industrialization of developing countries. The Conference also fully endorsed the restructuring and reforms in UNIDO, which have been, and are being, implemented to make the Organization increasingly flexible and responsive to new global challenges and to meet the specific demands and needs of its constituents. While the reform process will become increasingly refined, the Organization is better able than ever to meet the present-day needs of developing countries and economies in transition.

6. The competitive structure of global industry within the framework of a free market economy during the next decade will necessitate major changes in international industrial cooperation and in the role of UNIDO. Increased privatization, globalization and liberalization of trade and investment will add to the complexities of global industry and will also inevitably necessitate the provision of increased specialized assistance for developing countries and transition economies from UNIDO with a sharper focus on enhancing private sector participation, market orientation and competitiveness as well as industrial partnership and interdependence as outlined in the Main Paper entitled: "Perspectives on industrialization: Global industrial partnerships, interdependence and competitiveness" (UNIDO ID/WG.542/1 (SPEC)).

#### **Assessment of trends and issues in industrial growth**

7. The issues to be considered in the Global Forum on Industry highlight the wide range of critical aspects pertaining to industrialization in developing countries. The rapid pace of technological change and its impact on globalization and the emerging pattern of global industry emphasizes the need for periodical assessments of industrial growth trends and the impact of various key elements. Such periodical assessments, on an annual or biannual basis, must necessarily be undertaken by UNIDO, and its role as a regular forum for industry will be of growing importance in order to catalyse the socio-economic integration of developing countries and transition economies into the mainstream of global trade and industry. Such a role will also be useful in resolving common problems, facilitating the exchange of experience on alternative policies and strategies and developing appropriate measures as benchmarks of industrial progress and activities, besides strengthening measures for the promotion of enterprise-level linkages, partnerships or strategic business alliances.

#### **Comprehensive services in industrial subsectors**

8. The major role of UNIDO is to provide comprehensive services in specific industrial subsectors to Governments and institutions in developing countries and

economies in transition. These services include policy advice, technology management and transfer, industrial partnerships and investment, development of human resources, and support for compliance with international standards and conventions. Such assistance can range from advisory services with respect to policies and selective governmental assistance to correct market failures, to the development of institutional facilities and the provision of specialized industrial services for local industrial enterprises.

### **Industrial strategies and policies**

9. Strategies and policies impacting on industrial development cover several macroeconomic issues as well as those specifically related to industrial growth, and involving varying degrees of support. While industrial strategies are closely interlinked with macroeconomic factors and situations, it is important that policies and institutional measures are developed that relate specifically to industrial and technological development. It is with respect to such measures that UNIDO can, and needs to, play a key role as a catalyst, promoter and facilitator of industrial development.

10. The emerging pattern of global industry necessitates more complex industrialization strategies, particularly for countries that are at a disadvantage. In addition to market reform and liberalization, appropriate policies and measures for implementing industrial strategies are required in order to ensure the right market environment for a competitive industrial sector, mainly based on private enterprise. The desirable extent of government support - whether functional or selective - through a proactive industrial policy has to be assessed in the context of each country. However, in most of the smaller developing economies, policies must be formulated and implemented with the participation of the main actors involved. This requires creating or building up an adequate capacity for analysis, dialogue and negotiation both in the government and in the private sector, mainly through institutions. UNIDO's long experience in this field and its unique network encompassing government departments and agencies, private-sector institutions and public and private enterprises enables the Organization to transfer experience and know-how for industrial policy-making and strategy formulation across borders.

11. Most industrialized countries have regions - often rural or geographically peripheral areas - where development has not kept up with the pace elsewhere. In order to spread the benefits of industrialization, policies with a specific regional dimension may be required. This has been done successfully in many countries. UNIDO has this expertise and experience and is able to transmit it to its clients.

12. Advisory services on industrial policies include the determination of the nature of the promotional or regulatory measures that may be necessary, in order to correct market shortcomings in particular country situations. These may relate to: (a) legislation and regulations relating to foreign direct investment, technology, intellectual property rights, environmental norms and other factors impacting on industrialization; (b) guidelines and procedures for investment approval, incentives for industrial investment, fiscal and taxation measures, inflow of foreign technology, and compliance with and harmonization of environmental and industrial objectives and standards; and

(c) policies and measures on enterprise restructuring and privatization of state-owned enterprises, including the exercise of selectivity in determining the extent for enterprise restructuring and privatization, principles governing the valuation of assets and viability, assessment of likely investors, and determination of modalities, besides regulatory measures for privatized monopolies and absorption of surplus labour.

### **Technological upgrading and management**

13. UNIDO has a crucial role to play in technology management and technological upgrading in developing countries, including the least developed countries, as it is well placed to facilitate the cross-border flow of ideas, information and technologies. This is one area where market failure is endemic. It is also an area where developing countries are exposed to a severe competitive disadvantage, highlighting the need for UNIDO to facilitate technology transfer and assist in technology upgrading and human capital investment. The provision of institutional assistance through UNIDO for technological development and new technological applications, including informatics and biotechnology, will continue to be of crucial importance in most developing countries. Support facilities with respect to industrial technology can also be provided by UNIDO at various levels. First, information can be provided on alternative technologies including environmentally suitable technologies and development of cleaner production centres. Second, assistance can be given for technology selection and in the operationalization of new and modern technologies, particularly for small and medium enterprises. Guidance in the use of computer-aided design for traditional industries, such as textiles, footwear and other consumer goods is illustrative of this approach. Third, technical support can be provided for the development of an applied research capability in selected industrial subsectors and in local R&D institutions. For the operationalization of new technological applications and management techniques, UNIDO can provide a package of technological support in selected priority sectors which can be disseminated to local enterprises, through national institutions. UNIDO can play an important role in defining emerging technological trends and assessing the likely impact of technological change in different country situations. It will also be necessary to strengthen the international infrastructure for industry, including the development of codes, norms and good practices, and to promote the harmonized adoption of new technologies in developing countries.

### **Promotion of foreign investment and technology inflow**

14. Given the growing importance of foreign direct investment (FDI) in the global economy, UNIDO's experience in investment promotion is of great value, especially for least developed countries seeking to attract foreign investment and technology inflow. UNIDO's investment programme and its Techmart and Invesmart forums have already had a considerable impact in several developing countries and regions and in transition economies. This programme is playing a key role in the promoting both FDI and non-equity linkages for enterprises in developing countries. UNIDO is developing a network, where industrial enterprises can request linkages with potential partners on identified projects, which are processed by UNIDO with various foreign companies from both industrialized and developing countries. No international institution is providing such a facility and UNIDO is the most appropriate agency to do so.



### **Small, medium and micro enterprises**

15. The role of small, medium and micro enterprises (SMEs) is likely to assume growing importance in most developing countries, as well as in transition economies. UNIDO has a long and proven record with respect to the promotion of SMEs and can draw extensively from its global experience. Its advisory and support functions for SMEs include:

(a) Promotional policies for the development of SMEs, including tax and financial incentives; procurement preference; and provision of physical facilities;

(b) Development of specialized institutional facilities for securing industrial finance for SMEs;

(c) Programmes for entrepreneurial and managerial training for local entrepreneurs;

(d) Development of institutional facilities and guidance in metrology, standards and quality control;

(e) Institutional support through effective industrial information systems; linkages with industrial databases, and development of clusters of SMEs in various subsectors;

(f) Promotion of contacts and linkages with large-scale industries and foreign enterprises for the development of joint ventures, technology licensing, buyback and marketing arrangements, distribution facilities and franchises, and subcontracting arrangements;

(g) Development of institutional capability in applied industrial research in selected subsectors;

(h) Creating a favourable climate for the growth of local SMEs.

### **Strengthening of private-sector organizations and associations**

16. UNIDO can play an important role in the strengthening of private-sector organizations dealing with industrial development. While chambers of commerce and industry bodies and associations exist in several developing countries, they are of various levels of competence and representation. UNIDO needs to develop new initiatives for forging linkages with such institutions and private-sector associations. The strengthening of such bodies could take place through: supply of equipment, including computers; development of information systems, marketing intelligence and foreign technology linkages through such associations; training programmes for the staff of such bodies; and the increased participation of the representatives of such bodies in local institution-building. It is also essential that national authorities recognize the need for the greater involvement of private-sector associations as vital intermediaries for private-sector development.

### Assistance to enterprises for enhanced competitiveness

17. While enterprise-level assistance is generally channelled through national institutions, closer linkages need to be established by UNIDO for the development of competitiveness amongst developing-country enterprises. Assistance can relate to the mobilization of investment; measures for local entrepreneurial development; industrial information; linkages with foreign companies; promotion of SMEs; promotional incentives and tax concessions etc. for new investments and exports and, in general, developing the right environment and climate for new industrial investment including in less developed areas. Such an exercise must be largely country-specific and can only be based on detailed knowledge of a particular economy and in close consultation and dialogue with national Governments and representatives of industrial private-sector interests.

18. It is, however, at the level of small and medium industrial enterprises that UNIDO's role is likely to be the most crucial, firstly, with respect to the clusters and linkages that it can generate with other SMEs, including foreign enterprises; secondly, with respect to the development of both institutions and human resources, particularly new entrepreneurs and managers; and thirdly, with respect to the operationalization of new technological applications and managerial techniques in various fields, which would improve the competitive capacity of such enterprises.

### Priority development objectives and programmes

19. The role of UNIDO will be increasingly crucial for enhancing the role of the private sector and privatization in the changing global pattern of industrial development. Assistance of the kind proposed by UNIDO will strengthen market forces and private enterprise. Fundamentally, these will aim at improving the efficiency of markets through the dissemination of information, diffusion of technology, upgrading of skills, enhancement of competitiveness, twinning of potential partners, facilitation of SME development and rural industrialization, and promotion of investment in industry. UNIDO has major competitive advantages and capabilities which can ensure that integrated industrial programmes can be developed and that institutional support systems can be efficiently implemented.

20. As part of its reforms, UNIDO has set up five development objectives for its programmes:

- \* The first objective, *Industrial and technological growth and competitiveness*, includes the following services: creation of an enabling policy environment; enhancement of productivity and competitiveness; restructuring of industrial enterprises; support in quality control, standardization and metrology; enhancement of technological innovation capabilities; support to agro-based industries, chemical industries, engineering and metallurgical industries; and provision of information for and on industry.
- \* The second objective, *Development of human resources for industry*, focuses on the provision of services regarding policies to promote human resource development

for industry; strengthening institutional capabilities for creating and upgrading skills; and enhancing the role of women in industrial development.

- \* The third objective, *Equitable development through industrial development*, addresses the need for assistance in promoting and strengthening small and medium enterprises (SMEs), developing entrepreneurship and supporting rural industrial development.
- \* The fourth objective, *Environmentally sustainable industrial development*, entails integrating environmental considerations into industrial strategies and programmes; providing advice on cleaner production techniques and technologies; and enhancing energy efficiency and conservation.
- \* The fifth objective, *International cooperation in industrial investment and technology*, covers services relating to investment and technology promotion and cooperation, and the use of the UNIDO network of Investment Promotion Service offices; a particular dimension of these services concerns economic and technical cooperation between developing countries (ECDC/TCDC).

21. These five objectives provide the rationale and conceptual framework for the services of the Organization and establish its developmental activities in relation to those of other United Nations bodies and specialized agencies. Above all, they establish a close link with the developmental concerns and endeavours of the developing countries in the various regions in the current decade.

22. In this context, UNIDO will launch seven major programmatic themes during 1996-1997 covering:

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

23. The coverage of the seven major programmatic themes is described in the annex. The items covered are of immediate, topical importance and relevance to most developing countries. They are also likely to be of growing importance and significance during the next decade. While the demand for UNIDO services under the various programmes is likely to be much greater from less industrialized developing countries

and LDCs, several specialized services such as technology upgrading, quality standardization and external alliances and linkages will also be of major importance for the industrially more advanced developing countries and economies in transition.

#### **Cooperation with other international organizations**

24. UNIDO's Constitution stipulates that the Organization should promote industrial development and cooperation on global, regional and national as well as sectoral levels. While this mandate entrusts UNIDO with the central coordinating role in the United Nations system on issues related to industrialization, it is recognized that other organizations may address certain issues that have implications for industry related to their mandates and specific fields of competence. An important objective of UNIDO's activities is to ensure close cooperation and coordination with other international agencies in providing assistance for industrialization. Close cooperation is also necessary with the international financial institutions, particularly the World Bank. At the same time, it must be recognized that the services required for industry are becoming increasingly complex and specialized and will become all the more so during the next decade. It is this increased specialization that necessitates that UNIDO must assume the key role in assisting industry with respect to such highly complex functions as technology upgrading and technological support in various industrial subsectors; selection and use of environmentally suitable technologies through cleaner production centres; technology management at the enterprise level; networking between international R&D centres; enterprise restructuring and privatization; and developing benchmarks and industrial performance indicators, besides providing advisory services on industrial and technology policies.

25. International assistance to developing countries and transition economies must be considered at the three levels of strategies and policies, institutional development, and enterprise-level assistance. UNIDO is in a uniquely advantageous position to provide a comprehensive programme of assistance and services in all these three fields, and is among the few organizations equipped with multi-disciplinary personnel, and technical experts in different fields. UNIDO also has an important field presence, both in developing countries through its country directors, and in several industrialized countries where investment promotion offices have been established. Through its field network, it is possible for UNIDO to ensure that its programmes are effectively tailored to specific country needs and priorities.

#### **An outlook**

26. With a narrow resource base and a sharper focus, the future priorities of UNIDO will need to be concentrated on the evolving demand for services as determined by the rapidly changing global trends that significantly influence the determinants of industrial competitiveness. More flexible personnel policies and a lean and decentralized management structure will be required to ensure efficiency and up-to-date knowledge in the fields of evolving specialization. A stronger field representation is envisaged in order to cater to the growing need for UNIDO to pursue its programming and marketing functions and to respond to the increasing demand for specialized industrial services. A networking approach is emerging as a general feature of UNIDO programmes. The

UNIDO international technical and information networks that have been built up over the years are also being significantly enhanced. Specific activities such as industrial information, investment promotion, technology development and transfer, advisory information services, industrial standards and quality control, and human resource development are also being subjected to increased networking. The experience, know-how, capabilities and resources that have been accumulated in the field of industry over the years will be systematically utilized by UNIDO to this end. UNIDO's status will be important for supporting the development of international standards and guidelines as part of the Organization's "normative" function. Faced with new challenges, UNIDO is ready to adapt its role, functions and programmes to serve developing countries in their continued and complex industrialization process, which is the prime road leading to their sustainable socio-economic development.

27. UNIDO is uniquely positioned to provide a comprehensive programme of services and support for accelerated industrial development in developing countries and transition economies. With the emerging complex pattern of global industry in the next decade and thereafter, the demand for UNIDO's specialized services for industry is expected to be greatly increased. These services will extend not only to policy advice but also to institutional support functions and the development of an increased technological and competitive capability for developing-country industrial enterprises to compete in international markets.

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**Annex****SEVEN MAJOR PROGRAMMATIC THEMES, 1996-1997****Theme 1: Strategies, policies and institution-building for global economic integration**

This theme is addressed through two component programmes:

- (a) Industrial strategy and policy advice;
- (b) Advisory and institutional support services addressing the industrial implications of global and regional economic agreements.

Industrial strategy and policy advice. UNIDO supports developing countries in elaborating and implementing industrial strategies and policies conducive to creating an enabling environment for industrial growth and overall socio-economic development. This takes into account the need to integrate a number of related policy domains such as trade (with regard to manufactured goods), competition, investment promotion (with emphasis on foreign direct investment as one mechanism of global economic integration), technology and location of industry. Special emphasis is placed on building institutional capacities aimed at fostering private sector development, including capacities to design and implement effective privatization policies and programmes. The target group for this is, above all, countries with weak private sectors, including economies in transition.

Advisory and institutional support services addressing the industrial implications of global and regional economic agreements. UNIDO offers services for analysing the impact of trade liberalization trends on the development prospects of industry in various developing countries. UNIDO is currently elaborating programmes for industrial restructuring, with a view to enhancing competitiveness. Special emphasis is given to African countries and to those industrial sectors with the potential to develop an export capability.

At the regional and subregional level, economic integration and cooperation between developing countries is being pursued with renewed vigour. The Member States of the Association of South-East Asian Nations (ASEAN), the Common Market of the Southern Cone (MERCOSUR) in Latin America and the Common Market for Eastern and Southern Africa (COMESA) are cases in point. In forging and strengthening their economic ties through harmonization of industrial policies and institutional measures, these and other subregional groups seek support from UNIDO, whose neutral position is highly valued.

UNIDO thus places special emphasis on assisting subregional cooperation groups, *inter alia*, through:

- (a) Subsectoral studies on the impact of trade liberalization on patterns of competitiveness;
- (b) Advisory services on institutional requirements and mechanisms to enhance industrial cooperation and complementarities in industrial production; and

(c) Operational advice on the harmonization of industrial and environmental policies, laws and standards.

### **Theme 2: Environment and energy**

This theme addresses four component programmes:

- (a) Environmentally sustainable industrial development (ESID) strategies;
- (b) Cleaner and safe production;
- (c) Implementation of international conventions;
- (d) Environmentally sound use of energy.

Environmentally sustainable industrial development. UNIDO supports developing countries in their endeavours in the following areas:

- (a) Collection and analysis of data and information;
- (b) Formulation of ESID strategies to establish environmental goals and action plans, in close consultation with the government agencies responsible and based on a review of existing industrial and environmental policies;
- (c) Determination of the appropriate mix of specific policy instruments, such as regulatory measures, economic incentives and policies related to industrial location;
- (d) Development of institutional structures for integrated industrial and environmental decision-making and policy implementation, involving Governments, non-governmental organizations (NGOs) and industry associations;
- (e) Development of monitoring and enforcement mechanisms;
- (f) Training in environmental management tools such as environmental auditing, environmental impact assessment, information systems design and public awareness campaigns.

An increasing number of developing countries are embarking upon the elaboration of national Agenda 21 strategies and programmes. UNIDO supports these initiatives at both the conceptual and implementation stages through strategy advice and operational support.

Cleaner and safe production. The key issue is how to improve the efficiency of industrial production by reducing waste and redesigning products to make them less polluting and easier to recycle. The need is particularly great in small- and medium-sized enterprises.

UNIDO supports cleaner and safe production both through sector-wide programmes addressing industry at large and through subsectoral-specific programmes.

A new programme has been launched to support national cleaner production centres, hosted by such existing institutions, in approximately 20 countries for a five-year period. Such centres will play a coordinating and catalytic role in cleaner production by improving awareness of pollution prevention requirements, providing technical information and advice, demonstrating cleaner production techniques and technologies at the enterprise level, and training industry and government professionals.

UNIDO assists developing countries to minimize the generation of hazardous waste and to develop environmentally safe and sound management systems for such wastes when they arise.

Special emphasis is placed on those categories of hazardous substances where UNIDO has acquired recognized special expertise, such as waste oils used in various manufacturing processes (used engine oils, solvents, degreasing agents, cutting fluids and polychlorinated biphenyls-based transformer oils) and sulphate and chlorine used in conventional pulping and bleaching technologies. Working with a network of international and bilateral organizations as well as NGOs, UNIDO focuses on environmental impact assessments for hazardous waste management programmes and on human resource development.

The problems related to water pollution and industrial water management are of a complex nature and often involve the pollution of entire rivers and coastlines as well as the contamination of soils and groundwater. UNIDO focuses its support on two levels, viz. the overall management of water pollution for industry affecting larger areas and the efficient utilization of water in industrial operations. The UNIDO response to the first level includes monitoring and analysis of industrial sources of water pollution, drawing up pollution reduction/prevention strategies, and helping government agencies in formulating and enforcing regulations. On the second level, industry itself is supported in efficiency-enhancing programmes that reduce water consumption and water-borne pollution, treat residual waste water, and improve the quality of process water through environmentally sound treatment methods. The contribution of engineering industries to water management is specifically studied.

Environmentally sound management of toxic chemicals. UNIDO supports both Governments and industry in monitoring and controlling the handling of toxic chemicals, particularly in the fields of pesticides and their formulation, pharmaceuticals, petrochemicals and polymers, and dyes and dye intermediaries.

Environmentally sound management of biotechnology. Together with other United Nations entities, UNIDO concentrates on developing guidelines on biosafety and industrial bioresource development and on capacity-building for biotechnology research and its application. It also facilitates, *inter alia*, through its specialized technology centres, cooperative research programmes and global information networks in specific areas of biotechnology commercialization.

Implementation of international conventions. UNIDO has an increasingly important function in supporting developing countries in their endeavours to meet commitments resulting from international conventions, protocols and action plans for the protection of the environment. Concentration is on international environment-related policy initiatives or legislation that concerns the phasing out of ozone-depleting substances (Montreal Protocol on Substances that Deplete the Ozone Layer), the alleviation of chemical risks and enhancement of chemical safety (International Programme on Chemical Safety), the conservation of freshwater resources and the need to mitigate the effect of greenhouse gases on climate change (United Nations Framework Convention on Climate Change) partly funded under the Global Environment Facility.



A major challenge for UNIDO is the phasing-out of ozone-depleting substances under the Montreal Protocol, where the Organization is focusing on preparing subsectoral phase-out strategies and on supporting enterprises in retrofitting, maintenance, recycling and training of technical personnel. Priority application areas include refrigerants, foams, solvents and fumigants. A considerable volume of technical cooperation is expected to be approved for UNIDO implementation based on its specialized expertise.

Environmentally sound use of energy. UNIDO concentrates on the provision of adequate, environmentally sound energy supplies where lack of energy is a barrier to development and enables developing countries to address local, regional and global environmental concerns arising from the increased consumption of energy, particularly when the energy source is fossil fuels.

UNIDO concentrates on:

- (a) The development and production of new and renewable sources of energy, specifically solar energy, hydrogen energy, biomass energy and wind energy;
- (b) The development and promotion of clean coal technology (increasing efficiency and minimizing the environmental impacts of low-grade coal utilization); a review will be undertaken of clean coal technologies suitable for application in developing countries;
- (c) Energy auditing and increasing energy efficiency in industrial processes, with special emphasis on small and medium enterprises.

### **Theme 3: Small and medium enterprises: policies, networking and basic technical support**

This theme is addressed through four components:

- (a) Policy analysis and advice;
- (b) SME support systems and institutions;
- (c) Networking between SMEs;
- (d) Basic technical support for enterprise upgrading.

Policy analysis and advice. UNIDO assists Governments in the formulation of strategies, policies and programmes to promote and support the development and growth of SMEs. In particular, it aims at facilitating the cooperation of Governments with the private sector in order to improve the framework of incentives and regulations. Gender-related issues are addressed to ensure the promotion of the equal participation of both women and men in SME development activities, as SMEs form a major opportunity for initiatives by women.

To ensure that the advice given by UNIDO continues to be of high quality and up to date, its SME programme will be continuously reviewed and updated through an international network that exchanges information, and observes and analyses global trends, new strategies, policies and institutions.

SME support systems and institutions. UNIDO supports the organization and restructuring of SME development agencies to ensure their effectiveness. UNIDO also advises on and supports the organization of decentralized networks of technical and financial support services at the country level. The SME development agencies and other providers of services to SMEs are further supported by technological information and advice through the technology services of UNIDO including the Technological Information Exchange System and the Industrial and Technological Information Bank. These will be expanded and special attention will be paid to SMEs. SME development agencies are also assisted in the promotion of (mainly medium-scale) investment opportunities through the UNIDO investment promotion network.

Selected support organizations are approached to host training activities and to implement the thematic programme on "Women entrepreneurs for growth". Advice on training approaches, and specialized training of trainers are made available to SME development agencies and other focal points of assistance to SMEs.

Networking between SMEs. UNIDO promotes and advises on the development of mechanisms to help SMEs identify partnerships and subcontracting arrangements, as well as to organize themselves in flexible clusters.

Enterprise upgrading. Basic technical support is rendered by UNIDO in terms of enhancement of productivity, quality and competitiveness; restructuring requirements and employment generation; technological absorption and innovation; and energy efficiency and environmental protection in the SME sector. The necessary technical cooperation and advisory services are primarily channelled through sectoral and/or regional associations.

#### **Theme 4: Innovation, productivity and quality for international competitiveness**

This theme is addressed through three component programmes:

- (a) Quality management;
- (b) Enterprise restructuring and rehabilitation;
- (c) Research and development for industrial innovation.

Quality management. UNIDO has built up a widely recognized support programme in this area of vital importance for industrial competitiveness. Assistance is provided to:

- (a) Governments in the elaboration of quality control, standardization and metrology policies as well as in establishing related institutions and ISO 9000 certification bodies;
- (b) Metrology bodies in their overall rehabilitation and upgrading of existing reference standards and procedures;
- (c) Industry associations in the establishment of sectoral laboratories and capacity-building in applying various quality management tools;

(d) Groups of enterprises in setting up specialized laboratories, implementing a systems approach to continuous quality improvements, and meeting ISO 9000 certification requirements.

UNIDO develops integrated support programmes that capitalize on combining its general expertise on quality management with subsectoral-specific knowledge. A further innovative element is statistical quality control techniques on which three to five larger technical cooperation programmes are expected to be implemented in the next biennium.

Enterprise restructuring and rehabilitation. Assistance will be provided to groups of predominantly SMEs with transparency and dissemination of results ensured through the involvement of industry associations and chambers. Also, training programmes will be launched with local institutions, and local consultancy companies will be significantly involved and their capacities enhanced.

Research and development for industrial innovation. UNIDO provides advice on technological innovation policies, and support in building up the required institutional infrastructure. Special emphasis is placed on identifying innovation constraints and innovation strategies for SMEs with a view to stimulating the creation of technology-based industries.

Guidelines are to be developed on the commercialization of biotechnology in developing countries. In the field of solar energy technology (and drawing on the specialized expertise of centres of application for solar energy), opportunities for research consortiums and investment and technology partnerships will be developed. The revitalization and reorientation of existing industrial and technological research institutions in developing countries will receive special attention.

### **Theme 5: Industrial information, investment and technology promotion**

The theme is addressed through three components:

- (a) Technological and investment information;
- (b) Investment promotion;
- (c) Technology promotion.

Technological and investment information. There is a strong need to provide to Member States as well as to the United Nations system assessed information on industrial development. UNIDO will undertake special efforts in the coming biennium to ensure the integrated processing and dissemination of the wealth of industrial information generated in its various programmes and activities. The main instruments will be the further strengthening of the Industrial and Technological Information Bank (INTIB) and the Industrial Referral System on specialized sources of information.

In several developing countries, national INTIB focal points will be expanded into information networks. Training on information resource management will be provided.

Cleaner technologies will receive special attention as part of the INTIB database and through the issuance of special Technology Monitors. The Energy and Environment Information System (EEIS) will be strengthened. The database on investment opportunities and on investment project sponsors in developing countries will be expanded.

The use of modern information service technologies and electronic networking will be promoted and projects will be designed aimed at providing information services particularly to SMEs. INTIB will also act as an agent for promoting interregional cooperation in industrial information. In the preparation and implementation of Techmarts, information support on specific technology options and related investment opportunities will be essential.

Special emphasis will be placed in the biennium on upgrading and networking through the various UNIDO information services to allow the rapid transmission of multidimensional information between Headquarters and UNIDO offices abroad and, upon request, to external clients. This also involves the World Investment Network Services (WINS) for which UNIDO will develop an interactive CD-ROM.

Investment promotion. UNIDO will support these endeavours through a variety of services in an integrated approach. In addition to providing advice on investment policies and codes (which is addressed under theme 1), this includes the strengthening of investment promotion institutions in developing countries; the formulation and screening of project profiles based on feasibility studies; and the presentation of investment proposals to potential foreign investors, *inter alia*, through investment forums. Training of investment promotion staff from developing countries receive special emphasis through group training and delegates' programmes.

The investment promotion work of UNIDO pays special attention to the growing role of small- and medium-sized investment companies, to the investment potential in specific regions within countries (see also component (a) of theme 6) and, within an ECDC/TCDC perspective, to the increasing potential of investment flows between developing countries at different stages of industrial development. *Industrial Development Reviews* will continue to contribute economic analyses in support of investment promotion efforts.

The establishment of new UNIDO Investment Promotion Service offices, increasingly also in developing countries with a view to promoting both inward and outward investment, will be a key activity in the next biennium. These offices are interconnected through a communication network.

Technology promotion. UNIDO provides advisory services on the formulation of technology policies that are conducive to stimulating the absorption of new technologies in industry. The focus is on new cross-sectoral technologies, such as telecommunications, biotechnology and innovative energy technologies, with a view to ensuring their efficient industrial application.

A major activity is geared towards supporting the actual process of technology acquisition. The UNIDO training material on technology transfer and joint venture negotiations will be upgraded and applied to the training of trainers. New and innovative build-operate-transfer (BOT) schemes and strategic alliances will receive special attention.

The UNIDO Techmart programme will be continued as an effective mechanism to familiarize, in particular, SMEs with new technological options and to initiate and conclude business contracts. The link between Techmarts and investment forums will be strengthened.

### **Theme 6: Rural industrial development**

This theme will be addressed through three component programmes:

- (a) Regional development;
- (b) Agro-processing;
- (c) Building materials and low-cost housing.

Regional development. UNIDO will concentrate on the development of concepts and policy approaches, based on experience in different parts of the world. Based on this, UNIDO will make available advisory and technical cooperation services. It will emphasize the linkages between industry and other productive sectors of the economy as this provides key opportunities for industrial development.

In specific less developed regions UNIDO will, on request, analyse the situation, render advice on the specific policy measures to be taken and identify specific opportunities for development. Where appropriate, integrated development programmes for such regions may be developed and implemented.

In selected regions, investment forums may be organized based on identified, formulated and screened investment proposals on the lines of the successful forums carried out recently in different provinces of China. Tailor-made training activities targeted at enhancing the integration of rural population groups into industrial development will be undertaken as part of integrated development programmes, or as an ad hoc activity when justified.

Agro-processing. The emphasis evidently lies on small- and medium-scale industries where UNIDO can play a major role in making technology information more accessible, ensuring that cleaner technologies are used as well as facilitating an environment conducive to SME development.

Where appropriate, integrated programmes will be implemented in individual regions or countries comprising analysis and policy advice, technical cooperation and investment promotion for product groups or specific approaches addressing rural development issues in several countries.

Building materials and low-cost housing. UNIDO will promote the production and use of composite building materials, specifically in rural areas, which given the wide variety of locally available materials (soils and clays), need to be almost tailor-made for each locality. Raw materials include agricultural waste materials, soils and clays, and low proportions of cement and binders. These materials, and certain composites using agricultural (fibrous) wastes are very suitable for manufacture by farmers and agricultural labour, providing productive employment at times when agricultural activity is low.

The essential approach of UNIDO is working through local institutions and national experts. Basic technology is transferred from other countries with similar conditions and raw materials to such institutions along with advice on dissemination methods and equipment options. Information on materials and basic technologies is made available through the UNIDO technology database. Assistance may be given in the local application of transferred technology.

**Theme 7: Africa and least developed countries:  
linking industry with agriculture**

This theme will be addressed through four component programmes:

- (a) Analytical activities and industrial policy advice;
- (b) Agro-processing (including food, leather, wood, natural fibres etc.);
- (c) Agricultural equipment;
- (d) Fertilizers and pesticides.

Analytical activities and industrial policy advice. UNIDO supports the formulation of industrial sector policies that create an enabling environment for industrial development in general, and in the areas indicated in particular. This includes policy initiatives to enhance private sector development and the promotion of foreign direct investment, as well as the development of human resources. Special attention will be paid to ensuring that the equal participation of women in industrial development is promoted.

Studies are carried out in relation to the specific issue of industry-agriculture linkages at the subregional and national levels.

Special surveys are carried out for agro-related industry branches to identify opportunities and requirements for assistance. This analytical work is expected also to lead to integrated development programmes at the country level.

Agro-processing. UNIDO assists Governments and the private sector in analysing the situation and its potential for development, and based on this develops an integrated package of UNIDO contributions including policy advice and technical cooperation addressing such issues as choice of appropriate, cleaner and competitive technology, product design, quality management and development of human resources, as well as complementary investment promotion activities.

Agricultural equipment. Integrated programmes are developed in selected countries incorporating product design, technical cooperation in mechanical engineering and production processes, human resource development for industry, and advice on promotional policies and distribution arrangements as well as related repair and maintenance and spare part manufacture. For the simpler tools and equipment, emphasis placed on small- and medium-scale producers in smaller urban and rural areas.

Special attention will be paid to agricultural equipment and manufacturing technology in the INTIB database and the technological information exchange system network. Specifically for the southern African region, ECDC/TCDC may provide opportunities for involving industrial investment from South Africa. For more advanced machinery, international partners will be sought through the investment promotion activities of UNIDO, including an investment forum when sufficient opportunities have been identified.

Fertilizers and pesticides. The main objective for UNIDO is not primarily the production of fertilizers and pesticides but making key agrochemicals available to the agricultural sector on a cost-efficient basis. At the national level this may frequently mean that industrial activity may be limited to the blending of imported fertilizer components and/or the production of some components based on locally available raw materials, formulation of pesticides based on imported active ingredients and appropriate packaging of fertilizers and pesticides in appropriate sizes.

Special attention will be paid to the production of low-risk, low-volume chemicals and bio/botanical pesticides. Supporting information on the most advanced and state-of-the-art developments of such agrochemicals and their production will be a subject for targeted information products prepared in consultation with the Food and Agriculture Organization of the United Nations.