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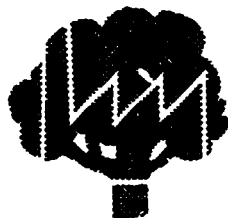
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**BLUEPRINT
FOR
CLEAN INDUSTRY**

Conclusions and recommendations
of the ESID Conference



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Progress in international development is not always marked by milestones. But in the efforts of UNIDO to address global environmental challenges I think the Conference on Ecologically Sustainable Industrial Development - ESID - constitutes a lasting focus.

Organized and funded with the generous assistance of the Government of Denmark, the Conference took place in Copenhagen 14-18 October 1991. It brought together representatives of governments, industry and international organizations for a week of deliberations on the role of industrial development in creating a sustainable future for this planet.

The proceedings of the Conference with the full documentation have been published separately. I hope that this booklet, containing the conclusions and recommendations of ESID in extenso, will serve as a useful reference for those who want to familiarize themselves with the broad strokes of the strategy taking shape. For UNIDO, it will remain one of the main seminal documents setting the course for our future environmental activities.



Domingo L. Slazon, Jr.
Director-General of UNIDO

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A. GENERAL CONSIDERATIONS

1. The Ministers noted with concern that, although successes had occurred in the 1970s, the gap between developed and developing countries in terms of per capita income and per capita industrial output narrowed slightly between 1970 and 1990. Industrialization, the well-trodden path to the achievement of higher standards of living and expanded economic development, remained a distant goal for many developing countries.
2. The Ministers noted that threats to the environment were a common concern. They stated that all countries should take effective action to protect and enhance the environment in accordance with their responsibilities and respective capacities. In this regard, the Ministers confirmed that in developing strategies to secure agreement on, and commitments by, Governments on major environmental issues, it has been recognized that:
 - (a) Because the greater part of current emission of pollution into the environment originates in developed countries, these countries bear the main responsibility for combating such pollution;
 - (b) International cooperation between all countries, and in particular between de-



veloped and developing countries, is essential to acquiring and using relevant scientific information and environmentally sound technologies. Industrialized countries with significant experience in pollution prevention, cleaner production methods and pollution control technologies are encouraged to promote industrial pollution prevention and management world wide. Economic well-being is essential for achieving sustainable development and minimizing the degradation of the environment concomitant with such growth. Ministers called on Governments and industry to cooperate at the local, national and regional levels in using existing and, where necessary, establishing new mechanisms that promote pollution prevention, waste minimization, cleaner production, energy efficiency and rational use of natural resources and in making these techniques and technologies available, particularly to developing countries. This would entail the mobilization of financial resources and enhanced technical cooperation in particular with developing countries, at the bilateral and multilateral levels. However, it was also recognized that new and additional financial resources will have to be channelled to developing countries in order to ensure their full participation in global efforts for environmental protection.

3. Ministers recognized that economic, social and environmental elements of the decision-making process should be fully integrated, and that there was a fundamental mutual dependence between economic growth



and environmental protection. Ministers noted that sustained economic growth and effective environmental protection are closely interlinked and should not be looked upon as competitive policy objectives.

4. The continuing deterioration of the global environment is closely related to the unsustainable pattern of production and consumption in particular in industrialized countries. In developing countries, environmental degradation is closely related to poverty and underdevelopment, as well as demographic patterns and pressures. Promotion of economic and social development is therefore essential for the protection of the environment.

5. The Ministers noted with concern the financial and technological constraints facing the developing countries in realizing the desired ecologically sustainable industrial development.

6. The Conference was held at the time when economic reforms to strengthen the private sector and harness market forces in support of economic development were being carried out in a number of countries. The need was recognized for economic instruments to supplement public re-



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gulations. Ministers stressed that market-oriented instruments could play an increasing role in achieving ESID, in particular by internalizing environment considerations. Assistance should be provided upon request, by donors and international organizations, to countries that needed to develop such instruments and to administer them.

7. The Ministers called for new approaches to industrialization that would allow industry to contribute to economic and social benefits for present generations without compromising the ability of future generations to meet their own needs, and without impairing basic ecological processes. These new approaches do not imply in any way encroachment upon national sovereignty. States have, in accordance with the Charter of the United Nations and the applicable principles of international law, the sovereign right to exploit their own resources pursuant to their environmental policies. This also reaffirms their responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States. Those new approaches would enhance economic development over time through the efficient and rational management of both renew-



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able and non-renewable resources while aiming at minimizing waste. They would differ from country to country, depending on the resource endowments, the stage of development and other economic and social characteristics as well as the assimilative capacity of the ecosystem.

8. The Ministers agreed that the reduction of pollution intensity across all media within industry, through cleaner production, was the key to achieving ESID. Thus, the development of technology to promote cleaner production should be enhanced. The objective of cleaner production, with its focus on source reduction, waste minimization, energy efficiency and low-waste and non-waste technology, is to prevent or minimize, in the most cost-efficient manner, the short- and long-term risks to humans and the environment. Cleaner production would require a management approach that, *inter alia*:

- (a) Assigned priority to the efficient use of resources, materials substitution and product reformulation, process modification and equipment redesign to lower waste technologies, and recycling and reuse as the primary options for pollution prevention and increased profitability;



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- (b) Utilized safe and environmentally sound processes, technologies and substances combined with efficient operating procedures;
- (c) Assigned clear responsibility and incentives for pollution prevention and control, in the context of a regulatory framework that establishes achievable environmental goals and that provides industry with flexibility in the choice of response actions.

9. Ministers recognized the importance of providing women with knowledge on ESID, as well as access to the necessary measures to promote it.

10. The Ministers agreed to support action to overcome barriers to the achievement of ESID. Among those barriers are the difficulties of implementing policies both in the North and the South that would bring about a transition to ESID. Industry everywhere needed to re-examine its attitudes on pollution prevention, cleaner production and environmentally friendly products.

B. INDUSTRY INITIATIVES IN ACHIEVING ESID

11. The Ministers recognized that industry and industrial institutions had to play a central role in the transition



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to ESID. While Governments can assist, regulate and control that transition, it is essential that industry acts in accordance with the principles implied by ESID. The relevant organizations and institutions should promote managerial practices and technologies based on the principles of sustainability.

12. The Ministers agreed that, in order to achieve ESID, industry initiatives should include the following objectives:

- (a) Adoption of pollution prevention, the approach that prevents pollution at the source in products and manufacturing processes rather than removing it after it has been created;
- (b) Integration of environmental awareness and responsibility at all management levels, taking into account careful analysis of relative risks, introduction of waste minimization and environmental compliance auditing, establishment of emergency, risk and safety management systems, as well as training programmes;
- (c) Adherence to environmental codes of conduct, including voluntary ones, for industrial investment and production;
- (d) Increase of R and D activities with emphasis on cleaner production technologies, giving priority to technologies that offer potential for improved efficiency and reduced pollution; and provide training facilities to developing countries for this purpose;



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- (e) Consideration, where feasible, of the use of substitute materials and product reformulations, process modifications and equipment redesigns, renewable sources of energy and raw materials, recycling and reuse of waste and scrap materials;
- (f) Assumption of a "cradle-to-grave" assessment approach to industrial products and projects;
- (g) Application of cleaner industrial production processes and more rational use of natural resources;
- (h) Development, transfer and adaptation of environmentally sound technologies, know-how and skills to meet the needs of other countries, in particular developing countries, and mobilization of financial resources and provision of human resources for this purpose;
- (i) Encouragement of industry to provide information on environmentally sound management and energy conservation.

The foregoing objectives could be facilitated by regular exchanges of experiences in the context of long-term programmes developed by industry.

13. The Ministers recognized that the Economic and Social Council, at its second regular session of 1991, had addressed ways to encourage and mobilize industrial enterprises, including transnational corporations, to cooperate in efforts to protect and enhance the environment in all countries. In that regard, the Council



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adopted resolution E/1991/55, requesting, *inter alia*, the preparation of action-oriented and practicable recommendations for consideration by the Commission on Transnational Corporations and by the Preparatory Committee of the United Nations Conference on Environment and Development.

14. The Ministers recognized that many transnational companies and investors involved in international joint ventures or in the export of manufacturing processes implement ESID and apply general standards of environmental responsibility to their foreign operations which are fully consistent with those used in their home countries and in compliance with the laws and regulations of host countries. These standards should not be applied on a discriminatory basis. Ministers encouraged all companies to adopt this policy and subscribe to a rational and precautionary approach to anticipating and preventing the causes of serious or irreversible environmental degradation consistent with scientific and technical understanding and the economical use of resources.

15. The Ministers encouraged non-governmental organizations represent-



ing all the parties involved in the industrial process, including industrial federations, trade unions, and consumers and environmental groups, to carry out and participate in activities relevant to ESID.

16. UNIDO undertook five case studies for the preparation of the Conference to illustrate the scope for ESID. These case studies covered pulp and paper, leather industry, alumina industry, plastics and plastics waste recycling, and phosphate fertilizers. The studies presented a number of problems related to unsustainable production processes and suggested measures to solve them. Ministers emphasized the importance of ensuring close cooperation between industry, Governments and international organizations in solving those problems.

C. GOVERNMENT INITIATIVES IN ACHIEVING ESID

17. The Ministers agreed that Governments could:

- (a) Review the environmental impact of current and planned policies, regulations and institutional infrastructure that affect industry and environment with a view to contributing to the transition to ESID through appropriate policies and measures;



- (b) Review the environmental impact of current and planned policies and build in the environmental concerns as an integrated part in such policies and strategies;
- (c) Design suitable methods and tools for quantification and valuation of natural and environmental resources used by industry;
- (d) Establish new, or strengthen existing procedures for reviewing industrial projects with potentially significant environmental effects. Similar procedures should be applied for reviewing risks associated with products. The evaluation and assessment procedures should be based on a cradle-to-grave approach and continue during and after completion of projects. The evaluation and assessment procedures should be supported by internationally recognized ecological guidelines and indicators where these exist;
- (e) Apply, with due consideration for the economic and social conditions in specific countries, a balanced mix of regulatory and economic instruments, including the internalization of externalities in price calculations, to reach the objectives of industrial development and environmental protection;
- (f) Design policies based on the "polluter pays" principle, bearing in mind the need to internalize the cost of environment protection in price calculations, and to apply a precautionary approach and the principle of economic efficiency when undertaking or promoting investments. Inclusion of the cost for pollution abatement in entrepreneurial calculations would thus be a useful approach governing the use of economic instruments and help to achieve a better allocation of resources in



the pursuit of environmentally sustainable industrial development;

- (g) Implement schemes for increasing public awareness, particularly in the younger generation, of the necessity for ESID and the responsibility of individual enterprises, managers, engineers, workers and other members of staff in that respect;
- (h) Give active encouragement to ESID through research, development, acquisition and transfer of techniques and technologies, as well as efficient utilization of existing relevant technologies in the public and private sectors, and through public and private partnerships while ensuring occupational health and safety;
- (i) Promote technical and managerial training and education that incorporate ESID in both informal and formal sectors;
- (j) Create an adequate institutional framework to stimulate environmental policies such as regulations, standardization, monitoring and control of the industrial environment;
- (k) Promote ESID through environmental education and the participation by the general public and non-governmental organizations, such as industrial federations, employees associations, community-based groups, consumers, women's, environmental and developmental organizations;
- (l) Support exchanges of information and experience on ESID among all countries in particular between industrialized and developing countries;
- (m) Provide access, on preferential conditions, to financing sources to small- and medium-scale enterprises in support of ESID-oriented restructuring and modernization;
- (n) Incorporate the principal elements of their



policy in programmes that extend over several years. These programmes should be made public.

D. INTERNATIONAL CO-OPERATION IN ACHIEVING ESID

18. The Ministers called upon Governments to enhance international co-operation in mobilizing financial resources for achieving ESID. The mobilization of financial resources is of vital importance to ESID, as well as to alleviating environmental problems in general. International sources of financing, particularly the development assistance programmes of developed countries, play a key role in this respect.

19. Noting that the transfer of techniques and technologies is one of the keys to the adaptation and absorption of pollution prevention techniques and the cleaner production processes by industrial firms, the Ministers agreed to encourage international cooperation in the transfer of those techniques, technologies and processes, and the requisite information, skills and know-how from industrialized to other countries, in particular developing coun-



tries, as well as the means necessary to develop infrastructure and policies to support them. The Ministers recalled United Nations General Assembly resolution 44/228, section I, paragraph 15 (m), which decided that UNCED should have as an objective the examining of effective modalities for favourable access to, and transfer of, environmentally sound technologies, in particular to the developing countries, including on concessional and preferential terms. The Ministers look forward to the results of that examination.

20. The Ministers invited Governments to seek international cooperation in addressing concerns about linkages between the environment and trade in manufactured goods. While the pursuit of the objectives of trade liberalization and environmental protection are in principle compatible, some trade practices may give rise to certain environmental concerns, and some environmental actions may adversely affect international trade flows. The Ministers also noted that improved access to markets in general - through reduction and possible elimination of tariffs and elimination of non-tariff barriers to trade - would improve the possibilities of all countries, particularly of developing countries, to fi-



nance the introduction of ESID-related technologies, and could have important foreign exchange implications.

21. Noting that financial and technological constraints are among the key obstacles facing many countries, in particular developing countries, in achieving ESID, the Ministers acknowledged that the industrialized countries should create a climate conducive to enabling those countries to have access to appropriate ESID techniques and technologies and to financial resources on concessional and non-concessional terms, as appropriate.

22. Ministers called for the need to coordinate efforts between UNIDO and all other United Nations institutions and organizations that deal with environmental issues, in order to be more efficient and effective, and avoid duplication in the pursuit of ESID.

23. Ministers recognized the critical situation prevailing in least developed countries and called for special measures in favour of those countries in support of their ESID policies and programmes.



E. FUTURE ACTIVITIES OF UNIDO

24. Ministers recognized that ESID can both reduce environmental problems and enhance industrial efficiency, and invited the fourth session of the General Conference of UNIDO to express its support for UNIDO to continue working on the best options to achieve ESID, in order to present them as a valuable contribution to be taken into account at the Fourth Preparatory Committee of the United Nations Conference on Environment and Development, which will take place in March 1992, and for submission at the UNCED conference in June 1992.

25. Ministers invited UNIDO to submit proposals incorporating the views expressed at the meeting in Copenhagen, and to make concrete suggestions to harmonize its activities, in the short, medium and long term, with the concept of ESID. These suggestions should be submitted for consideration to the policy-making bodies of the Organization, taking into account the mandates, recommendations and guidelines of UNCED. In order to improve UNIDO's capabilities to implement the conclusions and recommendations of the ESID Con-



ference, the Ministers further call upon Member countries to continue to make resources available for sustainable industrial development through the UNIDO Environment Programme.

26. Action by UNIDO, within available regular budget resources and additional voluntary contributions, if any, could make a significant contribution to the implementation of ESID. Because environmental management often involves complex issues and requires specialized skills, UNIDO would need to work in cooperation with other organs, organizations and programmes of the United Nations system to ensure the broadest possible effort. In particular, UNIDO should work closely with the United Nations Environment Programme, especially with its Industry and Environment Office, in such activities as information exchange and training.

27. UNIDO should lend its support, on a coordinated basis, to the activities of other organizations active in this field, in particular United Nations regional commissions, in implementing ESID at the regional level. Further, UNIDO should promote the establishment and support of the necessary institutional framework and should



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work in close cooperation with national institutions in implementing ESID.

28. The following were some major directions for possible UNIDO action in achieving ESID:

- (a) Assisting developing countries, upon request, in building the technical and scientific institutional capacity to develop, absorb and diffuse pollution prevention techniques and cleaner production processes essential to making the transition to ESID. This could be done by:

(i) Demonstrating the financial and economic advantages and environmental benefits of ESID by working cooperatively with industry and other technical experts, and with Governments, to undertake a programme of site-specific, country case studies;

(ii) Providing technical support for the design, establishment, operation, evaluation and monitoring of pollution prevention techniques and cleaner production processes and technologies;

(iii) Assisting demonstration and training centres of new or existing industrial facilities, and providing support to centres of excellence;

- (b) Assisting developing countries in the implementation of international environmental conventions and protocols related to industrial activities by:

(i) Providing technical assistance to those countries to identify and implement the actions needed;



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(ii) Helping those countries to locate expertise and funding for projects that contribute to the implementation of those conventions and protocols;

- (c) Assisting developing countries in determining the environmental soundness of industrial technologies by:

(i) Preparing guidelines on environmentally sound industrial practice for selected sectors;

(ii) Promoting, in selected sectors, technical procedures to evaluate and to test processes, products and services;

(iii) Providing assistance for the development of assessment techniques for the identification and measurement of environmental impact;

- (d) Assisting developing countries in integrating environmental considerations into their industrial strategies and policies by:

(i) Identifying sectoral and subsectoral priorities for environmentally sound industrial activities;

(ii) Specifying the techniques available to rehabilitate existing industries so that they could operate in an ecologically sustainable manner, assessing the costs of such a transition and estimating a timeframe for achieving it;

- (e) Assisting developing countries in identifying appropriate, including new, financial resources, where possible on concessional terms, that would enable them to take necessary steps to achieve ESID;



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- (f) Assisting other countries, upon request, in achieving ESID in accordance with the provisions of the UNIDO Constitution and relevant decisions of the General Conference and Industrial Development Board;
- (g) Strengthening its existing database and its capacity to coordinate the dissemination of technical and policy information on ESID, *inter alia*, by cooperating with the United Nations Environment Programme in its work on the International Cleaner Production Clearinghouse (ICPIC).

In implementing its programmes and projects UNIDO should establish and/or strengthen internal procedures for appraisal and approval of activities that ensure compatibility with the concept of ESID.



Text printed on recycled paper

Printed in Austria
V.92-50968-February 1992-3,000
V.92-53748-May 1992-4,500

PI/111