



**ANNEX 8**  
**TO MINUTES OF THE JAKARTA MEETING**

**WORK PROGRAMMES**  
**(WCED/85/5,6,7,8,9,10)**

WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

SECOND MEETING  
Jakarta, 27-29 March 1985

WCED/85/5

Item 6.1 of the Provisional Agenda

PROPOSED PROGRAMME OF WORK ON  
ENERGY, ENVIRONMENT AND DEVELOPMENT

DRAFT WORK PROGRAMME:

ENERGY, ENVIRONMENT AND DEVELOPMENT

Note by the Secretary General

1. The Commission's report on its "Mandate, Key Issues, Strategy and Workplan" clearly recognizes the central role played by energy in acting as an intermediate good in sustaining human and environmental survival and health, and in promoting societal development worldwide.
2. Paragraphs 59-63 (pp. 24-25) succinctly couple prevailing energy consumption practices and policies with the generation of many problems relating to human health, environment and development, such as, for example (i) the transport and combustion of carbon fuels with air pollution, environmental acidification, marine oil pollution, potential climate warming, balance of payments and external debt crisis; or (ii) the predominant use of wood fuels by rapidly growing Third World populations with woodland degeneration and loss, land and soil degradation, agricultural shortages, accelerated human migration to rapidly growing cities. The Mandate document also emphasizes that it is much better to anticipate and reduce these problems rather than relying exclusively on curative responses once they have become prevalent.
3. Strategies for prevention or reduction of these problems and for more sustainable energy futures include: changes or modifications in energy usage practices and policies, improving energy end-use efficiency (conservation), and switching to more suitable, preferably indigenous and renewable energy sources (this may mean concentrating on such options as solar, hydropower, wind, biomass, nuclear, etc.).
4. Most of the technical analyses of these problems carried out so far have tended to examine single issues in isolation as 'environmental problems' and how to 'cure their effects' (e.g., the Standard Agenda). The approach adopted by the Commission in the Alternative Agenda suggested that a single policy action may well reduce more than one problem at a time. For example, conservation may reduce acidification, air pollution, and potential climate warming at the same time.

## QUESTIONS TO WHICH THE COMMISSION WILL NEED ANSWERS

5. The above approach adopted by the Commission requires answers to a series of questions concerning the supply and demand situation of conventional energy sources and the potential contribution of alternative sources, as well as the environmental, economic and developmental consequences of each of these. In addition to these, other more interdisciplinary questions also have to be raised, which will cut across not only different categories of energy sources, but also disciplines, such as social and physical sciences, politics and sometimes even philosophy. The secretariat is proposing to deal with these questions in the following way:

### FOSSIL FUELS

6. Fossil fuels are presently the most important sources of energy in the industrialized countries, and the most important commercial sources of energy in the developing countries. The use of these fuels, however, is responsible for a great deal of air pollution and environmental degradation. In order to be in a position to recommend changes, the Commission must find answers to a number of important questions.

- What are present levels of demand (for different purposes) and supply of oil, gas and coal in the different regions of the world, and how are these levels most likely going to change in the future?
- What are the bases of these forecasts, and how accurate are they?
- What are the implications of these forecasts for the fossil-fuel related environment and development issues of Climate Change, Acid Rain, Air Pollution and Marine Pollution: by region, selected country and urban area?
- What will be the implications for environment and development of higher/lower fossil fuel prices in the future in both industrialized and developing countries?
- What are the strategic options, policies and instruments available to address these issues, either through preventive measures (e.g., reducing demand for fossil fuels through greater energy efficiency), or through the use of low polluting technologies, internalizing the costs of environmental measures, or promoting lifestyle changes, etc.)?
- What are the principal existing forms of international co-operation on these issues and how can and should they be strengthened?
- What are the needs and opportunities for new forms of international co-operation on these issues?

## NUCLEAR ENERGY

7. Nuclear Energy could serve as an important source of energy and may be an alternative to fossil fuels, but it raises significant environment and development issues of its own: e.g., waste management, safety and proliferation.

- What are the present and expected future levels of nuclear energy capacity, globally and by region?
- Does the state-of-the-art now provide the technology and know-how to design and operate nuclear reactors and to manage low- and high-level radioactive wastes in environmentally responsible and economically viable manner?
- What are the sources of the widespread public anxiety about nuclear power and how can or should they be dealt with? In particular, how can one deal with the question of how safe is safe enough?
- What are the implications for environment and development of providing large numbers of small, reactors on a turnkey basis?
- What are the principal existing forms of international co-operation on these issues, and how can and should they be strengthened?
- What are the needs and opportunities for new forms of international co-operation on these issues?

## RENEWABLE ENERGY

8. Renewable energy, especially biomass provides fuel for the majority of humankind. Its exploitation, however, is becoming unsustainable in many parts of the world, particularly in the tropics. At the same time, along with nuclear power, renewable energy sources are the only long-term alternatives to conventional energy sources.

- What are the present and expected future levels of consumption of renewable energy sources in different regions and countries?
- What are the main causes of the deterioration of the biomass base, and especially forests, in some developing countries?
- How can the deterioration of the biomass base in the developing countries be stopped and reversed?
- Once achieved, how can bioenergy conversion methods be modernized to increase energy supplies at rates higher than population growth in environmentally sustainable ways?
- What are the main constraints on, and opportunities for the increased use of renewable energy sources in various countries, and how can they be modified?
- What are the implications of larger scale use of renewable energy sources, in terms of land requirements, competition with food production, soil quality, etc.?

- What are the available technical and institutional options to increase the production of food and biomass-based energy at the same time?
- Is there a need for fundamental changes in the attitudes toward, and policies governing renewables in order to achieve a significant increase in their sustainable use?
- What forms of international co-operation, other than scientific and technical exchange, could effectively promote the development and use of renewable energies on a sustainable basis?

#### MANAGING THE ENERGY TRANSITION

9. If a change is desired in the way energy is consumed and supplied, the change will have to be initiated, helped along and monitored - in other words managed. Economic policies of various kinds are considered to be effective tools for the management of both energy supply and demand.

- What are the available fiscal and other economic policies for the management of energy demand and supply in environmentally favourable ways?
- How effective are they, and how predictable are their impacts?
- What are the implications of their use on the rest of the economy? In particular, of subsidizing an energy source or an energy system?
- What measures are available for demand management in areas with partially- or non-monetized economies, such as most rural areas of developing countries?
- Is there any role for energy demand management on a global basis, and if so, how could it be done?

10. Higher energy conversion efficiencies imply less energy demand and lower environmental impacts. Recent trends indicate the possibility of decoupling economic growth and growth in energy consumption.

- Under what conditions can such decoupling take place, and how far can it go?
- What are the sectors where the greatest impacts can be achieved?
- What are the technical, economic and institutional constraints to higher energy efficiency, particularly in the lower income countries?

11. In developing countries energy planning is particularly difficult due to a number of constraints, including the acute need for crisis management, the multitude of energy sources being used, the existence of non-monetized sectors, etc.

- What are the main technical, economic and institutional constraints to more effective accounting of available resources and to longer term planning?

- How can partially- or non-monetized sectors be included in the planning process?

12. Transportation is major consumer of energy in the industrialized countries, and is responsible for much of commercial energy consumption in developing countries. It is also a major polluter.

- What are the available national, regional and international means to set and enforce automotive exhaust levels? How effective are they? Do they need strengthening? Is there need for new forms of cooperation on this issue?
- What short- and long-term technical and institutional strategies are available to comply with such emission standards?
- Is there need for a radical rethinking of transportation, in the context of human settlements?

13. International aid, scientific and technical exchange, technology transfer and other forms of international cooperation play an important role in assisting the energy transition, particularly in developing countries.

- What are the existing forms of international cooperation on energy development?
- What are their financial, political and institutional limitations?
- How can they be strengthened, and is there need for radically new forms of international cooperation on these issues?
- How can multilateral and bilateral aid be made more responsive to local needs?

#### DRAFT PROGRAMME OF WORK

14. These questions will be developed via a number of synoptic Issue Papers, grouped under four headings: Fossil fuels, Nuclear Energy, Renewable Energy, and Managing the Energy Transition. Finally the Energy Advisory Panel will synthesize its thinking in a paper under the heading Energy Strategies for Sustainable Development (See the attached chart).

#### 1. Fossil Fuels

15. This work will examine the range of demand vis à vis the continuing need for oil in the industrialized and developing countries. Coal and natural gas substitution prospects will be considered. This will provide a framework in which to discuss carbon fuel problems: CO<sub>2</sub> and potential climatic change; acid precipitation; air pollution. Ranging through policy measures at the global and regional to local levels, this work will have to examine the main strategic options and policy instruments available to address these issues.

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## 2. Nuclear Energy

16. This work will cover the technical and socio-political questions that have arisen over the siting, licensing and operating of nuclear power stations in the last 20 years. It will also deal with the development of small reactors, often available on a turnkey basis for either electricity production or as a source of district heating. The arrangements currently being made for the disposal of civilian high-level radioactive waste will also be addressed. The work should put energy risk management problems in a clearer perspective and raise policy proposals for improving accurate public perception of risks of nuclear plant operation and nuclear waste disposal.

## 3. Renewable Energy

17. This work will explore the nature and scale of growing shortages of woodfuels in the Third World. Different strategies for increasing the resource base, and using more efficiently existing resources will be discussed. It examines modern progress with biomass based fuels, including some of the advanced bio-conversion techniques, and their implications, and it will discuss the future role of hydro, solar and other forms of renewable energy. Overall, it will examine how far we are likely to be able to promote renewable energy systems sensibly in the future and by what policies.

18. The interactions between food production and energy are many and complex and closely interact with population growth and urbanization. Hence, this work will also evaluate the trade-offs between subsistence agriculture and cash-crops for export (often needed to buy imported oil for transport) and how this affects rates of urbanization?

## 4. Managing the Energy Transition

19. This work will deal with some of the more important issues of energy management. It will discuss the role of economic policies in the management of energy supply and demand. It will evaluate the potentials of energy efficiency and conservation measures, and it will deal with problems that developing countries are facing in trying to plan energy development, examining policies designed to build indigenous capacity to handle energy management. Different energy accounting systems will be looked at, including their limitations and potentials.

20. As regards transportation, it will evaluate various technical and institutional options available to reduce automotive exhaust levels, increase engine efficiencies, as well as more radical possibilities, such as redesigning the urban-residential space, including highly efficient public transportation systems, etc.

21. Finally, the work will evaluate the present role of international cooperation in energy development, and how these could be strengthened. Particular attention will be paid to aid agencies, the process of technology transfer and various forms of technical and scientific exchange.

#### 5. Energy Strategies for Sustainable Development

22. The Panel's report will summarize the issues considered above, synthesizing them into policy conclusions and recommendations for consideration by the Commission. This substantial paper will be heavily referenced, and will represent the views and recommendations of the Advisory Panel on Energy.

#### TIMETABLE OF WORK

23. Although the Energy Advisory Panel will receive useful ideas and information from public hearings arranged largely to coincide with meetings of the Commission and from unsolicited reports, a process designed to generate the work outlined above has commenced and should be completed by November 1985. These issue papers are primarily designed to serve as a resource for the Energy Advisory Panel in their writing of the synthesis document on global energy futures, the document which will form the basis of the Commissions 'chapter' on energy. They will, however, be made available to the Commission if it so wishes, approximately one month after they have been seen by the Energy Advisory Panel.

## WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

Energy, Environment and Development

Co-ordinator: K. Kato, J. Pasztor

Special Advisor: Gordon Goodman

The Energy Programme will be guided by an advisory panel of senior officials and experts. Consultations on the Chairman and other members of the Panel are continuing and the Commission will be advised as soon as possible.

<u>ISSUE PAPERS</u>	<u>POSSIBLE ASSIGNMENT</u>	<u>CO-OPERATING INSTITUTIONS</u>	<u>COMPLETED BY</u>	<u>REPORT TO</u>
<b>1. Fossil Fuels</b>				
1.1 The Future of Oil, Coal and Gas: Opportunities and constraints.	Oystein Noreng Bekkestua, Norway M. Chadwick, Beijer M. Lönnroth, FSI, Sweden	IIASA, Beijer, IEA Institute of Gas Technology, USA. EEC, Shell UK.	October 85	AP
1.2 CO <sub>2</sub> , Trace Gases and Climatic Change	Ken Hare, Trinity College, Canada	IMI, WRI, IIASA Beijer, WMO	October 85	AP
1.3 Acid Rain	Ian Torrens, OECD	IIASA, NAS, OTA	May 85	AP
1.4 Air Pollution				
1.4.1 Regional Study	AIT, Bangkok		May 85	AP
1.4.2 Regional Study	CETESB (Sao Paulo)		May 85	AP
1.4.3 Regional Study	IIUG (FRG)		May 85	AP
1.4.4 Regional Study	Hasimoto (Japan)		May 85	AP
1.4.5 Regional Study	T. Mathew, India		May 85	AP
1.4.6 Synthesized Air Pollution Study	??		October 85	AP
1.5 Marine Pollution by Oil	Keckes, Szekely - UNEP	IMO, OCAPAC (UNEP)	October 85	AP
<b>2. Nuclear Energy</b>				
2.1 Safety of Nuclear Reactors and of the Nuclear Fuel Cycle	IAEA, ICRP ?		October 85	AP
2.2 Public Acceptance of Nuclear Power	Roger Kaspersen CENTED, USA.	IAEA, Union of Concerned Scientists	October 85	AP
2.3 Radioactive Waste Management	Janos Pasztor	IAEA, ICSU	June 85	AP
2.4 Small Nuclear Reactors	Joseph Egan Columbia U., NY.		October 85	AP

<u>ISSUE PAPERS</u>	<u>POSSIBLE ASSIGNMENT</u>	<u>CO-OPERATING INSTITUTIONS</u>	<u>COMPLETED BY</u>		<u>REPORT TO</u>
<b>3. Renewable Energy</b>					
3.1 Renewable Energy, Environment and Development (Including Fuelwood and Charcoal, Bioenergy and Others)	Janos Pasztor	Beijer, IIED, ITDG CEMAT, CATIE, WRI TATA, SERI	May	85	AP
3.2 Energy and Food Supply	Gerald Leach, IIED	Colegio de Mexico IITA, World Food Ctr.	October	85	AP
<b>4. Managing the Energy Transition</b>					
4.1 Pricing Policies, Energy and Development	Göran Ohlin, United Nations	IIED, SPRU Dakar Dev. Inst.	October	85	AP
4.2 Energy Efficiency and Societal Productivity	Gerald Leach, IIED T. Johansson, Lund U.	Princeton Univ.	October	85	AP
4.3 Energy Planning for Development	Paul Raskin ERSG, Boston, USA	Beijer, IIED World Bank	October	85	AP
4.4 Transportation Systems	???	OECD	October	85	AP
4.5 Energy and International Cooperation	Kurt Hoffman, SPRU	RFF, WRI, IIASA	October	85	AP
<b>5. Energy Strategies for Sustainable Development</b>					
5.1 Energy Advisory Panel's Report and Recommendations to the Commission	Writers from IIED		June	86	WCED

WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

SECOND MEETING  
Jakarta, 27-29 March 1985

WCED/85/6

Item 6.2 of the Provisional Agenda

PROPOSED PROGRAMME OF WORK ON  
INDUSTRY, ENVIRONMENT AND DEVELOPMENT

Item 6.2 of the Provisional Agenda

DRAFT WORK PROGRAMME:

INDUSTRY AND SUSTAINABLE DEVELOPMENT

Note by the Secretary General

1. Industry provides the material basis for the sustenance and well-being of people. It also provides increased opportunities for employment to people whose productive capacities are utilized to the benefit of both themselves and the society: it is the driving force behind economic growth and human and social development. Industry, however, is at the same time a major sector of man's activity that impacts on the natural resource base of our civilization and the environment, through the whole cycle of raw materials exploration and extraction, their transformation into products, energy use, and waste generation to the use of products by consumers. Furthermore, by the very nature of their operations on a national, international or global scale in an increasingly interdependent world, industrial policies of a country or a specific sector of industry can influence, and are influenced by, the patterns of international trade and investment, development financing, technological innovations and even life styles of the other parts of the world, thus profoundly affecting and altering the ecological basis of those countries' development potential.

2. Although far from adequate, evidence is growing in many sectors of industry that the industries concerned have acquired or are capable of developing technologies and instruments needed to deal with problems of industrial pollution and waste management or generally to improve energy efficiency and resource utilization. But much of this knowledge and experience to date has been limited to measures aimed at "pollution control" and "waste disposal"; in other words, "react and cure" type of policies and "end-of-pipe" technologies. Not enough has yet been explored of the vast potential that exists for anticipatory and preventive policies and technologies by taking a more holistic and systematic approach to the entire process of industrial decision making, management and operations, i.e. through the

adoption of new industrial processes, clean technologies, training of workers and managers, better product designs, resource recovery and recycling, siting policies, environmental impact assessment, cost-benefit analysis, environmental accounting, etc. Still greater opportunities for improved environmental and resource management exist in other sectoral policies affecting the climate and conditions under which industries operate, i.e. economic, financial and fiscal policies, tax policies, land use policies, various government programmes of incentives and subsidies, energy, water and other resource pricing, and procurement policies, in addition to the legislative and regulatory actions on the part of governments.

3. A number of profound changes are taking place in the industrial structure of the world today. Foremost among them is a changing pattern of the global distribution and redeployment of industrial capacities, particularly since the emergence of a group of developing countries with rapidly expanding industrial base (NICs). Second is the emergence of an entirely new generation of technologies whose full-scale application to industry will undoubtedly bring about radical changes not only in national and international economic systems but also in the very way human societies are organized and whose impacts, both positive and negative, on employment, education, environment and developmental potentials of the world are yet to be analysed and assessed. Related to the above two phenomena are ofcourse the rapidly changing situation as regards availability and price of natural resources, including oil, terms of trade of commodities and manufactured goods, the rise in protectionism, and the increasingly precarious situation as regards international financing and monetary policies and the snowballing foreign debt burden in a significant number of developing countries, including some NICs.

4. It should perhaps be emphasized here that much practical experience with various techniques and policy instruments for better environmental and resource management already exists and is being accumulated in various industrial sectors as well as in governments, trade associations and international organizations. Promoting further exchange of this experience and pursuing new forms and fora of international cooperation in this regard would certainly be one of the more obvious courses of action to be followed. In this connection, the Commission may wish to note that as recently as in November last year (1984), a World Industry Conference on Environmental Management (WICEM) was organized by a group of world's leading industries and UNEP in cooperation with the International Chamber of Commerce, with its main objective being "to identify

procedures for strengthening international cooperation between industry and government in order to operate more efficiently and effectively in the management of the environment". (The Conference declaration and recommendations are attached hereto as Annex 2.)

SOME QUESTIONS TO WHICH THE COMMISSION WILL NEED ANSWERS

5. In its consideration of industry and sustainable development, the Commission will need to address a number of critical questions:

Global Trends and Environmental and Resource Management in Industry

- What is meant by "sustainable development" in the context of industry?
- Which of the current patterns of industrial activities, including the global distribution of productive capacities, trade and investment flows in manufactured goods, are of greatest significance in terms of providing both opportunities for and constraints to achieving an environmentally sound and sustainable pattern of industrial development?
- Which of the projected trends concerning progress in industrialization of the Third World countries, including the worldwide redeployment of industries, present the greatest obstacles to or provide the greatest opportunities for achieving more sustainable bases of development?
- Which of the newly emerging technologies (e.g. computer and microelectronics, new materials, fiber optics, biotechnology, robotics, satellite communications, other space technologies and remote sensing) are likely to cause significant changes in the impact of the industrial system on resources and environment?
- How should and can the development of these newly emerging technologies be guided so that they may serve as instruments of sustainable development on a long-term basis?

Industry and Sustainable Development:  
Possibilities for Action

- What characteristics of the industrial system and of industrial activities and practices are most compatible/incompatible with sustainable development?



- Given these characteristics and the global changes taking place today, what alternative patterns of industrialization and industrial practice are desirable?
- What types of policies and instruments are available to industry itself to incorporate environmental and sustainable resource practices into their decision-making, management and operations at every level?
- What policies and measures can industry adopt to help reconcile longer term societal goals, including sustainable development, with their requirements for productivity, profitability and efficiency in the short term?
- How can these policies and instruments be reinforced and supported by public policy, local, national and international?
- How can small and medium-scale industries be encouraged to adopt environmental and resource conservation measures and technologies?

#### Requirements for Change

- How and to what extent do such other sectoral policies as economic, monetary, fiscal, tax, procurement, employment and land use policies affect and discourage or encourage environmental and resource conservation in industrial corporate decision-making and management?
- How can these policies be improved to promote pollution prevention, economic efficiency, productivity and employment by industry?
- How can policy instruments such as environmental impact assessment, technology assessment, risk assessment, cost-benefit and cost-effectiveness analyses be incorporated and improved in decision making in relation to industrial policies?
- What can be done to promote intra- and inter-industry exchange of information and experience relating to sound environmental management and technologies?
- What and how can developing countries gain from the experience and knowledge of developed countries in environmental problem-solving in various industries, and vice versa?

- What should be done to promote international transfer of technologies which are environmentally sound and which contribute to the long term sustainable development of the global community?
- What are the specific roles of governments, industry associations, multinational corporations and other NGOs in promoting international co-operation for the above-mentioned purposes and how can and should the general public be mobilized in this process?

#### Chemicals and Hazardous Waste

The problems of chemicals and hazardous waste management are so closely linked to all the sectors of industrial activities that they deserve a separate and special treatment in the Commission's programme on industry and sustainable development. Questions include:

- What actions are being taken or should be taken both at national and international levels to improve the capacity to deal with acute, short-term as well as chronic, long-term effects on human health and the environment brought about by 70,000 - 80,000 chemicals now on the market and the introduction of approximately 2,000 new chemicals each year?
- What is the current state of affairs regarding pre-market testing and assessment of new chemicals?
- What forms and mechanisms of international co-operation are available to enable the international community to share the information and data generated on new and existing chemicals, as well as the technical and financial burden needed for generating them, and to take concerted action against environmental risks presented by chemicals?
- What are the principal trends concerning the amounts and kinds of hazardous wastes generated, and the amounts and kinds of wastes transported across international boundaries by region, country and sector?
- What are the principal factors underlying the projected increases in the generation of hazardous waste and the shifts in the global distribution of waste generated?

- What approaches have been or might be taken by industry and government to better manage hazardous wastes?
- What kinds and forms of international co-operation are or would be effective in facilitating the management of hazardous wastes in developing and developed countries?

#### DRAFT PROGRAMME OF WORK

6. The generic questions as described above will be developed and dealt with in a number of issue papers. Consideration of several questions may be grouped together and consolidated into a single issue paper for the Advisory Panel on Industry and Sustainable Development. It will in turn carry through a further integration for its recommendations for consideration by the Commission. Each of the main elements in the proposed work programme on industry and sustainable development are briefly described below.

#### 7. Global Trends and Environmental and Resource Management in Industry

7.1 Changing Patterns and Structure of Industrial Activity - This paper will examine current and emerging patterns of industrial activity; trends in the global distribution of industrial capacities, trade and investment flows; and the role of industrialization in development strategies. The focus of attention will be on assessing the obstacles and opportunities presented by current policies for achieving more environmentally sound and sustainable forms of industrialization and industrial practices and to offer suggestions concerning new or modified policies and forms of international co-operation.

7.2 Environmental and Resources Implications of Technological Trends and Industrial Activity - This paper will examine recent trends in the development of industrial technology, including technological innovation, diffusion of existing and new technologies, and creation of new industrial sectors, in order to assess their influence on changing industrial patterns and their environmental and resource implications. Special attention will be paid to opportunities for the application of new technologies to achieving sustainable development.

#### 8. Industry and Sustainable Development: Possibilities for Action

8.1 Alternatives to Existing Patterns of Industrialization - This study will examine the general characteristics of industrial activity compatible with

sustainable development. The focus of attention will be on promoting self-reliance, on the creation/expansion of industrial sectors to fulfill the basic needs of the masses of people in developing countries (e.g., production of public goods and infrastructure: shelter, sanitation, energy, transportation, communication, etc.) and also on identifying complementarities amongst industrial sectors and other economic sectors (e.g., use of agricultural wastes for producing energy for industry, and vice versa.)

**8.2 Technological Choices and Sustainable Development** - This paper will deal with the possibilities of development, choice and diffusion of existing and new technologies. Strategies and instruments will be identified in order to explore the opportunities for changes in industrial processes, plant design and operation (e.g., low and non-waste technology, resource recovery and recycling, add-on/end-of pipe technology, conservation and new uses of energy and raw materials, waste management. project appraisal, etc.)

**8.3 Products and Product Design** - This paper will identify and assess strategic approaches available to industry and government, and policies and instruments to induce the design, production and marketing of improved products, taking into consideration the economic as well as the social advantages of practices reflecting greater resource and environmental efficiency (e.g. substituting low for highly toxic inputs, extending the useful life of products, improving quality assessment and control, reducing the amount of waste in production processes, inducing recycling after use, etc.). It will also identify policies and instruments for inducing more environmentally sound consumption patterns (e.g. education, advertising, taxes, subsidies, etc.).

**8.4 Carrying Capacity and Industrial Siting** - This paper will examine the strategic options, policies and instruments available for achieving more environmentally sound location of industry, respecting the carrying capacity of the ecosystem in question and improving complementarities with other sectors (e.g., emissions trading, marketable pollution rights, zoning, permits, etc.)

## **9. Chemicals and Hazardous Waste Management**

**9.1 Management of Chemicals** - This work will assess the state of knowledge concerning existing chemicals; assess trends in the generation of new chemicals; assess the state of law and practice in the management of chemicals; identify options for strengthening international co-operation on pre-and post-marketing testing and assessment procedures, burden sharing, trade

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in chemicals banned or severely restricted in the country of origin, information exchange, training, etc.

9.2 Management of Hazardous Waste - This paper will assess trends in the generation of hazardous waste and trade therein; assess the state of law and practice concerning the management of hazardous waste; identify strategic options regarding transport, handling and disposal of hazardous waste; and explore possibilities for international co-operation in the management of hazardous waste.

#### 10. Requirements for Change

Several summary reports will be prepared on the characteristics of policies and policy instruments for improving industrial decision-making and on enhancing opportunities for co-operation and participation in the various levels of decision-making processes, including industrial policies (e.g., to promote pollution prevention, productivity, employment, etc.); economic incentives and regulations (e.g., trade, investments, funding specific activities, etc.); other sectoral policies (e.g., economic, monetary, fiscal, tax, procurement, employment, energy, land use, etc.); instruments for appraisal (environmental impact assessment, technology assessment, risk assessment, cost-benefit analysis); information exchange; training in industrial planning, management and operations; transfer of technology.

#### 11. New forms of co-operation

This paper will examine new forms of co-operation concerning industry and sustainable development, including industry/government co-operation; the role of multinational companies; the role of governments; NGOs and public participation, etc.

#### TIMETABLE OF WORK

12. Although the Advisory Panel on Industry will receive useful ideas and information from public hearings arranged largely to coincide with meetings of the Commission, and from unsolicited reports, work on the issue papers will commence by March 1985. These issue papers are primarily designed to serve as a resource for the Advisory Panel in their writing of their synthesis report and recommendations to the Commission. Some of them, however, will be submitted to the Commission as they become available, even before the Advisory Panel has had time to review them and formulate their own views on the issues involved. (See Summary Chart attached - Annex 1).



UNEP

# **WORLD INDUSTRY CONFERENCE ON ENVIRONMENTAL MANAGEMENT**

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WICEM

10 December 1984

**World Industry Conference on Environmental Management  
Versailles, 14-16 November 1984**

## **DECLARATION OF THE WORLD INDUSTRY CONFERENCE ON ENVIRONMENTAL MANAGEMENT**

1. The World Industry Conference on Environmental Management (WICEM) met at Versailles from 14-16 November, 1984. 514 delegates from 71 countries attended, including representatives of government, industry, labour, parliaments, the scientific community, intergovernmental and non-governmental organizations. WICEM was sponsored by world industry and the United Nations Environment Programme (UNEP), in co-operation with the International Chamber of Commerce (ICC).

WICEM expresses its gratitude to the French Government for hosting the Conference and extending to it its generous support.

2. The Conference addressed itself to three major subjects:

- I. Industry experience with environmental problem-solving;
- II. Environmental management: opportunities and constraints;
- III. Towards more effective environmental management.

The Conference concluded its discussions by considering follow-up processes for co-operation and collaboration.

3. During the last 15 years and particularly since the 1972 United Nations Conference on the Human Environment in Stockholm,

— the world industrial sector has made considerable contributions to solving environmental problems and gained an immense amount of practical and technical experience in the field;

-- co-operation between industry and government has grown during this period in many countries;

-- the role of non-governmental and labour organizations has been important in the creation of greater awareness of the need for environmental protection.

4. There was full agreement at the Conference that the time of confrontation over environmental matters was behind us, and the dominant theme was that we should further build on co-operation between all parties concerned. At WICEM participants from the various societal groups dealt successfully with each other in identifying priority areas for such co-operation. It is essential to take back this fruitful dialogue to the regional, national and local levels. The broadly-representative national environmental councils existing in some countries could serve as models for such dialogue.

5. The Conference recognized the common responsibility of all partners for protecting the environment. This responsibility should be taken fully into consideration in all development activities, including industrial activities. As a consequence, the Conference stressed the importance of the need to continue improving environmental management throughout the world including appropriate environmental education and training for all concerned.

Based on its deliberations, the Conference subscribed to the following principles:

1. Sustainable economic development is an essential international goal. Environmental management should be an integral part of economic development. Environmental issues should be addressed in the earliest stages of the economic planning and development process. Special recognition should be given to the environmental problems created in urban areas by unchecked migration from rural areas.

2. Economic growth can be made compatible with environmental protection.

3. Cost/benefit analysis is, despite its limitations, an essential element of environmental decision making. The cost/benefit system should be improved to attempt to quantify the value of critical elements in our cultural heritage.

4. There is not only the direct cost of environmental protection that has to be considered, but also the cost of damage to society as a whole.

5. An anticipatory and preventive approach to the threat of environmental degradation is preferable to correcting environmental problems after they have occurred.

## MAJOR RECOMMENDATIONS

1. Greater industry participation in environmental management insofar as international policies are concerned can be fostered through the International Chamber of Commerce and the United Nations Environment Programme, with whatever modifications may be required to their existing structures and procedures. There is also an important role to play in this process for more specialized organizations including trade, labour, and non-governmental associations.

2. The information base that industry and governments require to address environmental questions must be clearly defined. International organizations and trade associations are logical candidates to serve as delivery mechanisms for information at the national, regional and world-wide levels. UNEP should continue its clearing house functions in establishing links between developed and developing countries, and particularly to ensure access to technological information and data bases. The ICC should co-operate in this effort.

3. Developing countries need additional financial help to obtain the necessary technical know-how for environmental management, and to protect scarce resources valued by the global community.

4. Industry associations as well as individual industrial enterprises should be urged to continue and expand from within their organizations the support and expert staff required for policy contributions and technological assistance to world-wide environmental efforts. This should include training and professional advice for the benefit of developing countries upon their request and taking into account regional requirements.

5. Mechanisms should be established to improve co-operation between industry and government on environmental management issues. For this purpose, the ICC should convene a small group of chief executive officers which should be representative both of geographical areas and industrial sectors. These representatives, from different regions, will serve as advisers and not as final policy representatives for all industry.

The Executive Director of UNEP is requested to initiate discussions between high-level, geographically balanced UNEP governmental representatives and the ICC Group, and, where deemed necessary, with other organizations. The overall objective will be consultation over the effective implementation of mutually agreed environmental programmes and a discussion of proposals for action. This process does not exclude other groups from communication with UNEP or governments on environmental issues.

6. Case studies on companies' experience in environmental management in both North and South should be prepared under the auspices of UNEP and industrial associations and be widely disseminated.

12.10.84



7. Mechanisms must be found for bridging the gap between large industrial corporations' environmental expertise and that of medium and small corporations.

8. AS a matter of principle, the use of the best of appropriate technical means should be aimed at in all projects of development, co-operation and investment.

9. Multinational companies should be urged to participate in local environmental protection efforts and, when necessary, take the lead in raising the level of awareness and sophistication in dealing with these problems.

10. The establishment of international environmental impact principles and guidelines should be accelerated to allow early international agreement that provides the basis for sound co-operation between countries.

11. There is also a need for some form of world-wide environmental protection goals. Ideally such goals should reflect local conditions, while seeking to avoid distortions of competition.

12. Mismanagement of toxic and hazardous wastes poses a serious threat to public health. Special efforts are needed to control the safe handling of such wastes.

13. To encourage more innovative and cost-effective approaches by industry, the national environmental regulatory framework should be improved through a) more systematic and early consultations with industry and other social partners, b) the setting of clear environmental control objectives, c) better emphasis on the use of appropriate economic instruments (incentives and disincentives), d) simplifying existing mechanisms without reducing efficiency, e) setting reasonable time limits within which procedures should be completed, and f) stimulating different forms of self-regulation.

14. To strengthen the anticipatory and preventive approach to environmental management within industry, each line manager from the chief executive down should also think of him or herself as an environmental manager. Clear accountability for environmental performance should accompany managerial responsibility in each case.

15. To improve relations on environmental matters with local and more broadly-based communities and to establish a climate of confidence, industry should be encouraged to supply information to the public and labour force on a continuing, objective basis on the impacts of the companies' activities on the environment.

WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

Annex 1 to WCED 85/6

Industry and Sustainable Development

WCED/85/6

Co-ordinator: K. Kato

Special Advisor:

Advisory Panel

The Industry Programme will be guided by a panel of senior people drawn from industry, government, NGOs, etc. Its chairman will be Dr. Alexander C. Helfrich (Netherlands), President of Shell Nederland BV. Consultations on the other members of the Panel are continuing and the Commission will be advised as soon as possible.

<u>ISSUE PAPERS</u>	<u>POSSIBLE ASSIGNMENTS</u>	<u>POSSIBLE CO-OPERATING INSTITUTIONS</u>	<u>COMPLETED BY</u>	<u>REPORT TO</u>
1. <u>Global Trends and Environmental and Resource Management in Industry</u>				
1.1 <u>Changing Patterns and Structure of Industrial Activity</u>	R. Balance R. Lawrence Y. Kogane	UNIDO UNCTAD UNCSTD UNCTC CMEA OECD IEO (UNEP) UNU ILO IMI NAS/NSF SPRU, Sussex U.	Oct. 85.	AP
1.2 <u>Environmental and Resource Implications of Technological Trends</u>	R. Andreasson Heden M. Bown J. Rada		Oct. 85	AP
2. <u>Industry and Sustainable Development: Possibilities for Action</u>				
2.1 <u>Alternatives to Existing Patterns of Industrialization</u>	A. Khosla T. Farvar	UNIDO UNCTAD ECE ICC IEO IMI UCSIB	Oct. 85	AP

2.2 <u>Technological Choices and Sustainable Development</u>	V. Hartje M. Royston	CF FEEMA CETESB NIRA CIRED	Nov. 85 March 86	AP WCED
2.3 <u>Products and Product Designs</u>	D. Huysingh I. Sachs		Nov. 85 March 86	AP WCED
2.4 <u>Carrying Capacity and Industrial Siting</u>	E. Monosowski		Nov. 85 March 86	AP WCED
3. <u>Chemicals and Hazardous Waste Management</u>				
3.1 <u>Management of Chemicals</u>	W. Reilly	CEC OECD CMEA IRPTC (UNEP) IPCS (WHO/ILO)	Oct. 85 March 86	AP WCED
3.2 <u>Management of Hazardous Waste</u>	H. Yakowitz		April 85 June 85	AP WCED
4. <u>Requirements for Change</u>				
4.1 <u>Industrial Policy and Economic and Other Sectoral Policies Affecting Industrial Policy</u>	C. Flavin W. Mathews	ICC RFF WRI NRDC	Feb. 86 March 86	AP WCED
4.2 <u>Instruments for Appraisal</u>	W. Kennedy E. Monosowski	CF WWI CEED	Feb. 86 March 86	AP WCED
4.3 <u>Information Exchange, Training and Transfer of Technology</u>	M. Bown M. Royston L. Sallada	East-West Center IIED CEMP (Scotland)	Feb. 86 March 86	AP WCED
5. <u>New Forms of Co-operation</u>	J. Elkington J. Leonard L. Sallada		mid 86	AP

WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

SECOND MEETING

WCED/85/7

Jakarta, 27-29 March 1985

Item 6.3 of the Provisional Agenda

PROPOSED PROGRAMME OF WORK ON

FOOD SECURITY, AGRICULTURE, FORESTRY AND ENVIRONMENT

## WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

Second Meeting

Jakarta, 27-29 March 1985

Item 6.3 of the Provisional Agenda

WCED/85/7

### DRAFT WORK PROGRAMME

#### FOOD SECURITY, AGRICULTURE, FORESTRY AND ENVIRONMENT:

Note by the Secretary General

1. Problems of food security, agriculture, forestry, industrialization and environment have their roots in human, land and water resources and their utilization on one hand and in the policies that guide their development on the other, including social, economic, pricing and fiscal policies. The human factor is particularly important since in the ultimate analysis, enduring food security will depend upon the efforts of farming and fishing families. Hence, policies designed to promote their welfare are vital to the success of food security measures.
2. The success of agricultural development is commonly judged on the basis of the increased productivity that accrues. Yet other indicators, relating to ecological, economic, energy utilization, employment generation and equity issues are equally important.
3. The concept of food security needs to be enlarged into one of nutrition security embracing not only policies for food availability but also for safe drinking water, minimum purchasing power and appropriate nutrition intervention and education programmes.
4. After considering the linkages between agriculture and forestry, it was found that a more coherent programme on food security, agriculture, forestry and environment would emerge if the two issues were dealt with in an integrated manner. It is now proposed, therefore, to merge section 74.4 of the Mandate on Agriculture, Environment and Food Security with section 74.5 on Forestry, Agriculture and Environment.

5. There are several critical issues and questions that have to be raised and addressed in order to arrive at a more practical analysis and at possible solutions to food security through sustainable agriculture and forestry. Some of the overriding questions are:

- Looking to the year 2000 and beyond, what are the critical trends in demand for and supply of food and forest products in various regions, countries and systems?
- What are the principal constraints in, and the opportunities for, sustainable increases in forestry and food production in various regions, countries and systems?

#### Food Security, Agriculture and Environment

- What is sustainable agriculture?
- What forms of land tenure and land management have clearly contributed to an increase/decline in sustainable food and agricultural production?
- What types of policy measures can be deployed to prevent fragmentation of land holdings beyond a minimum required for viable agriculture?
- What has been the contribution of fertilizers and related chemicals to increased food production? What is their long-term effect on the soil and water basis of food security?
- What contribution can Integrated Pest Management (IPM) make to sustainable food production and what changes in institutions and policy are needed to make feasible the widespread adoption of IPM producers?
- What practices are giving rise to the loss of genetic resources of crops and farm animals and what are the long-term effects of genetic erosion in them on agricultural stability and productivity?
- What are the opportunities and constraints in improving water management and irrigation on a cost effective and sustainable basis?
- What are the current trends in salinization and in crop losses from existing irrigation schemes? How may water, land, economic and other policies induce practices that enhance/reduce salinization?
- What are the current trends in desertification and in actual and potential crop losses therefrom?

- What measures are available for preventing or arresting desertification that are acceptable and sustainable?
- How may land, livestock, forestry, and water conservation and other policies induce practices that enhance/reduce desertification?
- What is the role of organic matter in the maintenance of soil productivity and what are the potential crop losses resulting from lack of a balanced nutrient supply?
- Is there any evidence of serious damage to soil quality arising from the use of inorganic fertilizers as such?
- What are the constraints to introducing or maintaining agricultural systems that provide sufficient organic material to the soil to conserve soil quality?
- What are the actual and potential hazards from pesticide and nitrate pollution?
- What is the actual and potential damage to fisheries from fertilizer induced eutrophication?
- What are the implications of the traditional sexual division of labour within agriculture for food security?

#### Food Security, Forestry and Environment

- What is the relationship between forestry and sustainable agricultural development?
- To what extent can forestry programmes boost agricultural productivity - thus securing food supplies - and rural incomes?
- How can land reforms be implemented to ensure higher productivity of existing forest lands?
- What policies have been successful in maintaining a balance between native and exotic forestry species to integrate commercial and ecological requirements?
- What are the effects of receding forests on fuel and fodder availability and time-use by poor rural people, especially women and children?
- What policies are needed to promote the harmonious development of forestry and animal husbandry?

- To what extent have forests been depleted in order to make charcoal for urban centres and for export?
- What are the linkages between timber exports and forest depletion?

#### Food Security, Economic Policies, Environment and Development

- What types of economic incentives (eg. grants, subsidies, tax concessions, price controls, tariffs, etc.) have been successful/unsuccessful in inducing agricultural practices that enhance productivity while simultaneously conserving the resource base?
- Does the existing complex of market interventions in agriculture/forestry/water in developed and developing countries induce practices that result in more/less environmental damage and deterioration of the resource base than would result from more selective or neutral interventions?
- Given urban bias and other factors, what possibilities exist in developed and developing countries to modify current incentive policies in order to stimulate productivity and efficiency, while conserving/enhancing the resource base, reducing inequities and easing fiscal burdens on governments?
- What types of economic, investment and other government policies are essential to promote rural/urban harmony in development?

#### 6. Food Security, Science and Technology

Science and technology constitute the major components of the wall dividing prosperity and poverty. The development of location-specific technologies which are in harmony with the ecological, economic and cultural traditions of a human habitat is essential for promoting development without destruction of basic agricultural assets. Also, emerging and traditional technologies need to be blended in an appropriate manner for increasing efficiency and income. The whole area of agricultural residue utilization needs attention for generating diversification of employment opportunities and for preparing value-added products in rural areas. All this will call for dynamic national agricultural and environmental research systems. What government policies are needed to attract and retain good scientific talent? What are the steps essential for bridging the gap between scientific know-how and its application at the field level? How can a critical mass of inter-disciplinary



effort be generated so as to speedily solve emerging problems in areas such as soil fertility maintenance and plant and animal health care? These and other related issues can be addressed satisfactorily only by promoting the growth of strong national research systems.

#### 7. Climate Variability and Food Security

Climate affects food production and environmental assets in different time dimensions. Issues like the cause of acid rains and the potential impact of the increase of CO<sub>2</sub> concentration in the atmosphere need careful study. At the same time, the available agro-meteorological data need to be utilized for designing more stable farming systems. A clear understanding of the extent of climate-induced variability in food production is also essential for determining the optimum size of the grain reserves that may have to be maintained. Further, data from weather forecasts can help in designing alternative cropping strategies and contingency plans to suit different weather probabilities. In chronically drought prone areas, it is essential that anticipatory action is taken to derive full advantage from a good rainfall season for building the ecological infrastructure essential for agricultural rehabilitation. For example, such action is immediately relevant to the drought-ravaged countries in Africa. Therefore, all aspects of climate studies in relation to agriculture and environment need greater attention.

#### 8. Food Security, Education, Training and Human Resource Development

Poverty persists as long as the human resource is undervalued and underutilized. Human resource development in the context of food security and environmental enrichment needs to encompass a wide array of approaches. At the level of farming families, "learning by doing" and demonstrations will be the most effective method of knowledge and skill transfer. At the school and university levels, relevance of the curriculum in relation to the needs of development will need constant re-appraisal. Particular attention should be paid to the special educational needs of "first generation learners" (i.e. children born to illiterate parents). Female literacy often tends to be lower in many developing countries due to economic compulsion. Hence, an economic stake needs to be created in attending schools, by introducing "Food for Learning" and similar programmes. Within a decade all unskilled workers should be helped to upgrade their skills.

The existing educational infrastructure is in different stages of decay in many developing countries due to inadequate resource back-up. The highest priority should hence go to the strengthening of existing infrastructure and to enlarging educational programmes with concurrent attention to the qualitative and quantitative aspects of knowledge and skill transfer.

#### DRAFT PROGRAMME OF WORK

The questions raised above will be developed through a number of issue papers commissioned directly or undertaken in co-operation with institutions. The papers will be reviewed by a select group of qualified persons. The Advisory Panel will then review the papers - and others from public hearings etc. and will synthesize them with its own thinking in a report and recommendations to the Commission.

### 9. Food Security, Agriculture and Environment

#### 9.1 Land Tenure Systems and Land Use

This work will examine land tenure systems and land use practices. It will analyse how they have helped/hindered increased food production in various parts of the world. It will also suggest ways and means whereby countries can learn from the experiences of those who have been successful in evolving practical and profitable systems.

#### 9.2 Agrarian Change

This section will examine pertinent aspects of agrarian change, and in particular the influence of organic and inorganic fertilizer on increased food production. The influence of integrated pest management and other agrobiological inputs in the improvement of food production will be examined. The influence of irrigation and other science and technology inputs will be assessed.

#### 9.3 Land Degradation

Given the fact that several publications on desertification and soil erosion have appeared in the literature, the work will synthesise the combination of factors (including population pressure, insensitive agricultural practices and climatic adversity) that have caused the loss of land to many populations and threatened to foreclose the options.

#### 9.4 Women and Food Production

In many developing countries, rural poverty has led to out migrations by young males in search of wage employment. This has re-inforced the traditional sexual division of labour within the agricultural cycle in which women's roles have been significant. It is probable that inappropriate use of women's talents and skills have contributed to the food deficit, particularly in Africa. On the other hand, their predominance in agriculture without the necessary technical skills and know-how has led to over-cropping and erosion in some regions. This section will highlight these issues and indicate ways of further utilization of women's capacities.

### 10. Food Security, Forestry and Environment

#### 10.1 Tropical Forest Ecosystems

The work will examine the different and representative ecosystems and review various options for intensifying the management of these areas. It will examine inter alia the prospects of channeling future development projects - especially those concerning population resettlements - into non-forest lands, rather than into areas of high conservation priority.

#### 10.2 Rehabilitation of Upland Watersheds

The work will examine ways and means to rehabilitate degraded upland watersheds. This will include the consideration of the upland and lowland flood - and drought - prone areas that are related to degraded mountain watersheds. Attention will be called to the effects on the total population affected in these areas.

#### 10.3 Fuelwood and Social Forestry

The work will examine the effectiveness of supplying plantlets to farmers, communities and NGO's who want to participate in growing their own fuelwood crops, as well as obtaining financial rewards for participating in such tree growing projects. Scarcity of fuelwood and fodder has led to the scarcity of certain food items and caused irregular supplies of food. Such a situation has also created hardships in food processing. The paper will document these processes and analyze their impact on the local people's welfare and productive capacities, especially the women.

#### 10.4 Industrial Forestry Management

The work will develop a strategy for more intensive natural forest management and/or compensatory plantation development for developing countries that are either highly dependent on imported forest products, or highly dependent on time-derived foreign exchange revenues for their economic development. Emphasis would be placed on management of forests for industrial as well as fuelwood production.

#### 10.5 Policies to Sustain Biological Diversity

The paper will examine the relationship between biological diversity and economic activity. It will address fundamental questions: what will become of the diversity, and therefore its utility, if tropical forests are fragmented into relatively small patches? Can strategies be devised to preserve a moderately high level of genetic and life-form diversity under conditions of extreme forest fragmentation? These and other questions relating to the real value of maintaining biological diversity will be posed.

#### 11. Alternative Agricultural Systems

The above areas of enquiry will highlight some of the major constraints to agricultural productivity, particularly of food crops and suggest ways and means of combatting them. This work will emphasize alternative means of gaining access to the physical means of production: land, technology, communications, markets on equitable terms. It will offer new forms of land and other resource utilization; and new forms of labour organization and crop preferences.

#### 12. Food Security, Economic Policies, Environment and Development

##### 12.1 Economic, Fiscal and Pricing Policies and Sustainable Agriculture

An essential challenge to policy makers in achieving sustainable development patterns is establishing market and fiscal incentives that induce households, farmers, fisherman and others to take decisions and observe practices that enhance productivity efficiency and equity and simultaneously conserve the resource base. Taking several cases in developing and

developed countries, this this work will examine the role of economic and agricultural policies which undermine agricultural productivity and will examine opportunities to ameliorate these through the modification of removal of inappropriate subsidies and fiscal incentives.

12.2 Investment, Aid Policies and Sustainable Agriculture, Forestry

The work will examine the current priorities, policies and processes governing multilateral investment and bilateral aid in the agricultural and forestry fields and it will consider options to modify and strengthen them.

13. Institutional Capacity Building

The need to strengthen and in some cases establish new institutions to enable the necessary manpower building to take place will be discussed. Recommendations made to national as well as donor institutions to consider long-term financing of institutions to ensure their viability will be reviewed in the light of institutions that have benefited from such sustained support and those that have not. Special emphasis will be placed on the fact that while emergency aid is acknowledged, the best solution to eliminate the problem of developing the necessary manpower and expertise will depend mostly on the establishment of national and regional institutions.

14. Food Security, Agriculture, Forestry and Environment

All the above issue papers will be synthesized into one paper by the Advisory Panel and submitted to the Commission for consideration in the context of its final report. The chapter will highlight the opportunities and constraints, suggest possible solutions and the pertinent policies to be adopted and implemented if food security is to be assured for the world's present and future population.

15. Work Timetable

Work on the issue papers listed above will be undertaken in two phases.

15.1 March 1985 to November 1985

During this period the Secretariat will collect as many relevant papers as possible on the

issues. These will in turn be summarized for the Advisory Panel. In addition, individuals and organizations will be commissioned to write the papers. The Advisory Panel will meet to review the papers. Independent reviewers will also be asked to comment on the papers. Some of the papers which cover key and sensitive issues will be sent to the Commissioners at the WCED meetings for their early comments.

#### 15.2 November 1985 to June 1986

During this period a synthesis paper will be prepared. The Advisory Panel will be asked to comment on the draft chapter. Commissioners will also have the opportunity to review it. The Commissioners' and Panelists' reactions will be reflected in the final draft. This will go to the Commission as the chapter on "Food Security, Agriculture, Forestry and Environment" for incorporation in their Final Report.

The attached Summary Chart shows the proposed plans. Some individuals and institutions to carry out the primary assignment have been identified and contacted. A preliminary list of possible co-operating institutions (to be expanded as more are identified), have been identified. Expected completion date for the assignment and the body(ie) to whom the study will be submitted for review is noted.

WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

SECOND MEETING  
Jakarta, 27-29 March 1985

WCED/85/8

Item 6.4 of the Provisional Agenda

PROPOSED PROGRAMME OF WORK ON  
HUMAN SETTLEMENTS, ENVIRONMENT AND DEVELOPMENT

## WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

### SECOND MEETING

Jakarta, 27-29 March 1985

WCED/85/8

Item 6.4 of the provisional agenda

### PROPOSED WORK PROGRAMME HUMAN SETTLEMENTS, ENVIRONMENT AND DEVELOPMENT

1. A dramatic transformation is taking place in the form and distribution of human settlements. In those regions of the world where total population is growing most rapidly, cities are growing much more rapidly. In short, the developing world is becoming a world of cities.
2. This is not entirely a new phenomenon. But the pace of change and the sheer size of the new mega-cities being created are new. According to the UN estimates, about 25 per cent of the population of the less developed regions of the world lived in cities in 1975. By the year 2000, it will reach 40 per cent. In absolute numbers, the urban population of the less developed regions is expected to increase from 775 million to 1,996 million in 25 years, much of the growth taking place in cities of one million people or more.
3. Consider for a moment how this translates into the task of city building. In 25 years, the world's stock of housing, transport facilities, water supply and sanitation systems, factories, offices and commercial establishments will have to be more than doubled. The same applies to employment, productive capacity, education and health services. While the doubling is taking place, much of the existing stock must be replaced because it is outworn and inadequate to serve the needs of those who depend upon it. It is a herculean task by any standards. If it can be achieved, there will be still much more to do after the year 2000. The proportion of urban population in developing countries may eventually grow to 80 per cent if the pattern of the more developed regions is repeated. An urbanization strategy to accommodate so many people in cities will require policies, management, technology and investment well beyond anything yet seen or perhaps even contemplated.
4. Despite the massive scale of the problems and their complexity, urbanization, even mega-urbanization need



not be looked upon as a bad phenomenon in the context of rapidly growing population and development. Cities can and should be positive contributors to environment and development. The problem is not to stop urbanization, but to bring about a pattern of effective, efficient, wealth-creating cities that can be ecologically sustainable and economically viable in the present, and the medium and long term.

5. Two basic themes have been selected under which to organize the main issues to be addressed in the Commission's work.

- 5.1. Human Settlements, Urbanization, Environment and Development: an Alternative Diagnosis

An alternative approach requires an improved and dynamic diagnosis of the city as a centre of the development process and raises a number of questions that the Commission will wish to address:

- What are the dominant present and future trends in urbanization, settlement growth, shelter, provision of land and basic services, including investment needs for shelter, land and basic services, by region and in selected countries?
- What proportion of future national development does settlement creation, shelter and urban-based activities represent?
- How do the prevalent and emerging patterns of urbanization and the establishment of human settlements affect natural and social systems, as well as the quality of life?
- How do economic, financial, science and technology, regional development, energy, agricultural, industrial policies impact on human settlements development?
- What are the key linkages between these policy domains, and how do they differ in different systems?
- How does the process of policy formulation in these domains now take account of the forces of urbanization and settlement creation, and how could it be modified to enable those policies to guide and/or take advantage of these forces?
- How can urbanization and settlement creation be approached as a dynamic tool for viable development: an opportunity rather than a threat?

**5.2. Rethinking the Cities of the Future:** Given the current characteristics of the urbanization process, particularly in developing countries and the need to find appropriate solutions to the problems it poses, a number of questions may be raised that the Commission will wish to address:



- How can the processes of city development and expansion be changed to make them less expensive in money, time, land, energy and other resources as well as easier and cheaper to administer and maintain?
- How can these processes be made to facilitate social exchanges, promote real community involvement and guarantee certain basic standards (in terms of housing conditions and basic services) are accessible to all?
- How can urban development patterns be changed to include resource saving and conservation mechanisms?
- What changes in education, training and information may be necessary to adjust urbanization within a sustainable economic development process?
- What are the key interventions and institutions which must be put in place to manage rapid urban growth, make cities more responsive to the needs of their inhabitants and help to ensure that the cities of the future are more viable, economically, socially and culturally?

**WORKPROGRAMME AND TIMETABLE.**

Each of the two major themes will end up as a single issue paper for discussion by the Commission. They will be the culmination of a process, drawing on several activities carried out by different institutions and individuals. These will include the preparation of specific papers, peer and expert group meetings, and eventually revision by the Panel which should be established for this work programme. The specific papers may also be presented to the Commission for information. They may also be made public if considered useful and pertinent. The same is true for two theme papers and for the Panel's report and recommendations to the Commission. A summary Chart and timetable is attached.

Human Settlements, Urbanization, Environment and DevelopmentAdvisory Panel

The human settlements programme will be guided by an Advisory Panel of senior people representing different points of view and regions. Consultations on its Chairman and members are continuing and the Commission will be advised as soon as possible.

<u>THEMES</u>	<u>ASSIGNMENTS</u>	<u>POSSIBLE COOPERATING INSTITUTIONS</u>	<u>COMPLETED BY</u>	<u>REPORT TO</u>
1. <u>Human Settlements, Urbanization, Environment and Development; An Alternative Diagnosis</u>	Ian Burton	IFIAS	September 85	AP
a) Settlements trends and trends in the provision of shelter, land and basic services	?	IIED/CEUR UNCHS	June 85	
b) The urban system's role in development	?	IIED/CEUR	June 85	
c) Sectoral policies which influence the human settlements and linkages among them	?	IFIAS	June 85	
d) Illustrative case studies		UNCHS/IFIAS	June 85	
2. <u>Rethinking the cities of the future</u>	J.E. Hardoy David Satterthwaite	IIED/CEUR	January 86	AP
2.1 The Third World city				
a) Shelter and the provision of basic services	John Linn Eduardo Neira	IBRD ECLA DESCO UNCHS	September 85	
b) Financing shelter and basic services	?	IBRD IDB UNU/EHSS	September 85	
c) Resource and environmental conservation in human settlements	Ignacy Sachs et.al.	UNU/EHSS	September 85	
d) Managing human settlements: institutional mechanisms and participation	?	UNCHS	September 85	
e) Education, training and information for new and alternative settlements	John Celecia Jacques Bugnicourt	MAB/UNESCO ENDA	September 85	
2.2. The Developed World city	?	ECE	September 85	
3. <u>Advisory Panel Report on Human Settlements, Urbanization, Environment and Development</u>	-		May 86	WCED

**WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT**

**SECOND MEETING**

**WCED/85/9**

**Jakarta, 27-29 March 1985**

**Item 6.5 of the Provisional Agenda**

**DRAFT WORK PROGRAMME**

**DECISIONS SUPPORT SYSTEMS**

Second Meeting  
Jakarta, 27-29 March 1985  
Item 6.5 of the Provisional Agenda

WCED/85/9

DRAFT WORK PROGRAMME

DECISION SUPPORT SYSTEMS

Note by the Secretary General

1. The Commission will wish to explore in some detail the cross cutting management issues which underlie the ability of society to choose paths of development which are sustainable. Among these, some of the more important are the institutional and information supports (including the methodological instruments and conceptual tools) needed by decision-makers at all levels for arriving at environmentally sound choices.
2. At its first meeting, the Commission recognized the need to strengthen the capacity of governments and the international community in the area of global environmental monitoring and reporting or, more generally, in the broad area of decision support systems for environmental management. Decision-making on environmental and development issues requires information which is context-specific regarding both local resources and the needs of particular socio-cultural target groups. The new technologies of remote-sensing information processing and communication open a whole new array of possibilities for rapidly gaining both a large scale and a localized understanding of environment resource and related societal issues, and thus to facilitate improved decisions.
3. In developing the draft programme of work in this area, it has become clear that it should embrace several activities between monitoring and reporting, including, processing, analysis and assessment, as well as presentation and reporting. It should examine the potential inherent in decentralized communication networks, made possible by microprocessors, distributed data links, etc. to that inherent in the rapidly evolving related fields of satellite monitoring and

remote sensing. It should look at the policy, legal, institutional and other constraints in realizing the potential and set out recommendations that the Commission could consider.

4. In doing so, there are a number of critical questions that the Commission will need to address, including:

Decision Support Systems for Environmental and Resource Management

- What types of information relevant to environmental and resource management are used by decision-makers, scientists and the public at local, national and international levels?
- What is the potential for more effective environmental and resource management at local, national and global levels inherent in the
  - a) decentralized communication networks made possible by personal computers, data links, etc. and
  - b) rapidly evolving techniques of satellite monitoring and remote sensing?
- What are the principal legal, institutional and policy constraints in realizing this potential and how may they be overcome?

Technical Information Systems

- What are the major technical information systems relevant to environmental and resource management today at the international level, national and local levels?
- What is the potential for new and more effective means of assessing, presenting and reporting this information?
- What are the constraints, and how may they be overcome?

Accessibility and the Right to Know

- What are the more important issues of accessibility to information concerning environmental and resource management?
- Where and to what extent is the "right to know" the quality of the ambient environment built into conventions, international agreements, national laws, collective bargaining agreements, etc?

- What is the potential in current and projected technologies for monitoring and reporting to extend the "right to know" to all levels on a cost-effective basis?
- What are the principal constraints preventing an extension of the "right to know" at international, national, local and factory level?

#### Indicators, Norms and Standards

- What specific indicators can be developed to represent
  - . environmental quality
  - . status and trends of specific resources
  - . carrying capacity and resilience of specific ecosystems
  - . the capacity of institutions to respond to environmental and resource management needs
  - . the level of environmental intervention in development planning?
- What are the normative measures against which the status and trends of selected indicators can be assessed?
- How well do current norms and standards represent desirable goals and strategies for achieving sustainable development?
- What generalized methods are available or should be developed for designing norms, codes, standards etc., so as to permit adaptation of these to local needs and resource constraints?

#### Tools for Evaluation

- How effective are the various tools for assessment of environmental impact risks and hazards technology etc.?
- What additional tools exist or are needed to improve environmental decision-making?

## **5. DRAFT WORK PROGRAMME**

### **5.1. Decision Support Systems Required for Environmental and Resource Management**

This work will examine the major instruments and tools required for environmental and resource management in both developed and developing countries. In particular, it will examine the potential inherent in new information and communication technologies to increase the range and power of relevant information available to decision-makers and the public in these countries. The constraints in realizing this potential will be considered and conclusions and recommendations will be drawn on how to overcome them.

### **5.2. Technical Information Systems**

This work will identify the major information systems relevant to environmental and resource management and available at local levels. It will also identify the major gaps in the existing information systems and consider the potential for new and more effective means of assessing and reporting this information.

### **5.3. Accessibility and the "Right to Know"**

This work will identify the more important issues concerning the accessibility of governments, institutions, industry and the public to information concerning environmental and resource management. It will explore the potential in future technologies to give expression to the "Right to Know" at all levels, and draw conclusions and recommendations on how such rights may be extended.

### **5.4. Indicators, Norms and Standards**

This work will consider specific indicators, norms and standards needed for more effective environmental and resource management, the capacity to produce them and changes needed to augment that capacity.

### **5.5. Tools for Evaluation**

This work will consider the various approaches to evaluation used in different parts of the world, and draw conclusions and recommendations on their adequacy and means to improve them.



## **6. PHASED APPROACH TO THE WORK**

**The following draft programme summarizes the timetable of the Panel's activity:**

### **Phase I: March to July 85'**

**The first phase activities will include: identifying more precisely the papers to be written; scoping the subjects to be covered; preparing outlines and identifying right contributors and working group members for peer review.**

### **Phase II: June 85' to March 86'**

**The second phase activities include: drafting, re-drafting and preparation of specific reports.**

### **Phase III: August 85' to July 86'**

**Workshops, peer group reviews, preparation of visuals and diagrams, drafting of final versions of synthesis papers. Presentation of report to the Commission.**

WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

SECOND MEETING  
Jakarta, 27-29 March 1985

WCED/85/10

Item 6.6 of the Provisional Agenda

PROPOSED PROGRAMME OF WORK ON  
INTERNATIONAL COOPERATION

PROPOSED WORK PROGRAMME: INTERNATIONAL CO-OPERATION

Note by the Secretary-General

1. In its work on international co-operation, the Commission will build on experience to date with multilateral discussions and negotiations, international law and institutional arrangements. While respecting the complex ecological and geo-political realities of environment and development issues, the Commission will need to examine ways of strengthening existing forms of international co-operation. It will also consider new forms that move beyond traditional patterns and offer new possibilities to influence policies and events in the direction of needed change.

2. In doing so, there are a number of critical questions that the Commission will need to address regarding shared international problems and resources and the international legal and institutional framework.

Shared Problems and Resources

- What are the implications for national decision-making and international co-operation of increased economic and ecological interdependence within and among nations?
- What are the new problems, new possibilities, even new imperatives, that will arise as interdependence increases?
- How to better ensure the protection and sustainable and equitable use of areas outside national jurisdictions, of natural resources shared by two or more states, or of unique species, sites and eco-systems of international significance?

International Legal Framework

- What are the strengths, weaknesses and gaps in the present international legal framework regarding environmental protection and sustainable development?

- What is the status of existing multilateral conventions related to environment? What legal concepts, principles and guidelines exist or need to be developed in support of environment protection and sustainable development?
- How can existing methods and procedures for avoiding or resolving international disputes regarding resource use and environmental protection be strengthened or augmented?

#### International Institutional Arrangements

- As many of what were formerly called "natural" disasters are increasingly being recognised as man-induced disasters (with environmental degradation as a principle cause), how can the present disaster response capability be improved? More importantly, how can an effective political and institutional capacity best be developed for anticipating and preventing man-induced disasters?
- As many problems of environment and sustainable development have fundamental and common sources in sectoral policies and related economic and trade policies, what specific adjustments and changes are needed in existing institutional arrangements in order to deal more effectively with them?
- What are the existing and potential roles and capabilities relevant to environment and sustainable development of non-governmental organizations?
- As political support and funds are still more readily available for curative than for preventative measures, how can existing possibilities for financing international action in support of preventative measures be extended and augmented?

#### PROPOSED WORK PROGRAMME

3. The following draft work programme has been developed to address these questions. Each of the main elements are briefly described below.

##### 1. International Co-operation: Shared Problems and Resources

1.1 Implications of Increasing Interdependence: New Problems and Possibilities - A major implication of economic and ecological interdependence is that, as it inevitably increases, the ability of governments to deal unilaterally with problems on a national scale diminishes (e.g. the inter-national linkages on energy - fuelwood - deforestation - species loss - human health and agriculture, etc.). Increasing interdependence also increases the factors which can unite or divide national further (e.g. the different sources and impacts of climate change). These and other aspects will create new problems and possibilities for international co-operation which the study will attempt to identify and assess.

1.2 Global and Regional Commons, Heritage and Shared Natural Resources - Several summary reports will be prepared on the special characteristics of international co-operation now in place or needed regarding areas outside national jurisdictions (e.g., oceans and regional seas, Antarctica, Outer Space); for unique species, sites and eco-systems of international significance; and for natural resources shared by two or more states.

## 2. International Conventions, Legal Principles and Modalities

2.1 Existing and Emerging Legal Concepts, Principles and Guidelines Applicable to Environment and Sustainable Development - A major study will be carried out to identify, document and test existing and emerging legal concepts, principles and guidelines applicable to environment and sustainable development (e.g. regarding the use of shared natural resources; obligations to prevent, abate and control transfrontier pollution; etc.). An initial report will be completed by October 1985 in order to provide an early and common basis for discussions within and outside the WCED on strengthening and extending existing international law. A second and definitive report, taking into account comments and suggestions received, would be re-submitted to the Commission by mid-1986.

2.2 Existing and New Modalities for Avoiding or Resolving Environment Disputes - The study would identify and assess existing and new methods, procedures and institutions for avoiding (e.g. prior notification and consultation procedures) or resolving (e.g. arbitration; mediation; special commissions, etc.) international disputes on matters of resource use and environmental protection, and also consider the special requirements of periodic large scale disasters (e.g., Amoco Cadiz, Bhopal, etc.).

**2.3 Multilateral Conventions Related to the Environment** - The IUCN Environmental Law Centre (IUCN/ELC) has prepared a chart showing the current status of over 100 multilateral conventions related to the environment. It will be submitted to the WCED Meeting in March 1985 and be periodically updated and re-issued. The chart and related IUCN/ELC back up information will be used as a basis for identifying conventions which need to be brought into force, or reinforced, as well as gaps in the present international legal framework.

### **3. International Institutional Arrangements**

**3.1 Existing and Potential Roles and Work of Non-Governmental Organizations** - Over the past decade, non-governmental organizations have had a significant influence on public attitudes and policy regarding environmental protection and improvement in and among many countries (e.g. IUCN; WWF; Friends of the Earth; IOCU; etc.). They also undertake or support many relevant public information campaigns and practical field projects around the world (e.g. campaigns on endangered species, tropical plants and forests; fuelwood and reforestation projects; disaster relief; etc.). NGO's would be invited to contribute to a study for the Commission on their many different existing and potential roles and work relevant to environment and sustainable development.

**3.2 Proposals to Strengthen International Institutional Arrangements** - These will largely emerge as integral parts of the final reports to the Commission by the different WCED Advisory Panels and Working Groups, especially for the key issue areas. Other proposals will likely also be made by other experts and organizations which voluntarily submit reports to the Commission.

**3.3 Improving the Capacity to Anticipate and Prevent Man-Induced Disasters** - Many of what were formerly considered "natural" disasters are increasingly seen as largely man-induced disasters, with environmental degradation as a major contributing cause. While there remain many questions about the efficiency and effectiveness of disaster relief efforts themselves, the capacity to anticipate and take preventative measures is far weaker. This study would examine both aspects, but with greater attention to improving the capacity, and especially the political and institutional capacity, to anticipate and prevent man-induced disasters.

3.4 Existing and Potential Methods for Financing International Action on Environment and Sustainable Development - Over the past 15 years the number, frequency and impact of man-induced disasters have increased. For such disaster as well as for environmental pollution and degradation, the amount of money spent annually in simply responding to these problems is far greater than the funds available for putting in place the preventative measures for avoiding them or at least reducing their impacts. This study would identify and assess existing and potential methods for financing international action, particularly for anticipatory and preventative measures (e.g. assessed budgets; special trust funds; polluter or user charges for global commons; etc.).

DRAFT WORKPLAN

4. It is proposed that the work proceed in three related phases.

March to December 1985

During this phase a series of analytical overviews (on, for example, existing and emerging legal concepts, principles and guidelines) and summary reports (on, for example, the existing and potential roles and relevant work of non-governmental organizations) will be completed and submitted to the Commission. Together, these reports are intended to provide a common basis and reference point for subsequent discussions within and outside the Commission on ways of strengthening and extending international co-operation in support of environment and sustainable development.

September 1985 to June 1986

During this phase the various Advisory Panels and Working Groups established by the Commission will be examining the substantive issues in their respective key issue areas. In developing their reports, they will also be assessing the legal and institutional implications of their findings. As their reports evolve, the various proposals on legal and institutional changes will need to be reviewed and compared so that recommendations in the final reports submitted to the Commission are as consistent and complementary as possible.

June 1986 to early 1987

During this phase the Commission must discuss and agree on the main points, conclusions and recommendations to be included in its final report for strengthening and augmenting the political, legal and institutional capacity for dealing more effectively with key environment and development issues. The Commission will have as a basis for discussion a range of specific proposals developed during the first two phases by its own Advisory Panels and Working Groups, as well as other relevant proposals which other organizations and groups may have submitted for consideration.

5. A summary chart is attached showing the proposed issue papers and studies, the individual or institution which will have the primary assignment (if confirmed), a preliminary list of possible co-operating institutions, the scheduled completion date for the report, and the body to whom the report will be submitted.



**WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT**

**International Co-operation**

**Special Advisor: R.D. Munro**

**Advisory Panel**

(It is not proposed to establish an Advisory Panel at this stage as the principal discussions and work will occur in the various other Panels, Working Groups and the Commission itself)

<b><u>Issue Papers</u></b>	<b><u>Primary Assignment</u></b>	<b><u>Possible Co-operating Institutions</u></b>	<b><u>Completed by</u></b>	<b><u>Report to</u></b>
<b>1. <u>International Co-operation: Shared Problems and Resources</u></b>				
1.1 The Implications of Increasing Interdependence: New Problems and Possibilities	-	IIED OECD UNCTAD	Dec. 85	WCED
1.2 Global and Regional Commons, Heritage and Shared Natural Resources	-	UNESCO, UNEP, IUCN	Dec. 85	WCED
<b>2. <u>International Conventions, Legal Principles and Modalities</u></b>				
2.1 Existing and Emerging Legal Concepts, Principles and Guidelines	-	ECEL, ICEL, IUCN/CEPLA, FAO, UNEP, ILA, HAIL, UN/ILC, ICJ	Oct 85	WCED
- Proposals to Strengthen and Augment Existing Concepts, Principles and Guidelines	From other Panels, WG's and reports to WCED	-	Jun 86	WCED
2.2 Existing and New Modalities for Avoiding or Resolving Environmental Disputes	-	EMI, ILA, IUCN/ELC, ILC	Oct 85	WCED
- Proposals to Strengthen or Add to Existing Mechanisms and Methods	From other Panels, WG's and reports to	-	Jun 86	WCED
2.3 Status of Multilateral Conventions Related to the Environment	F.Burhenne	IUCN/ELC	Mar. 85	WCED
- Proposals to Strengthen and Augment Existing Conventions, Agreements and Codes	From other Panels WG's and reports to WCED WCED	-	Jun 86	WCED

<u>Issue Papers</u>	<u>Primary Assignment</u>	<u>Possible Co-operating Institutions</u>	<u>Completed by</u>	<u>Report to</u>
<b>3. <u>International Institutional Arrangements</u></b>				
<b>3.1 Existing and Potential Roles and Work on Environment and Sustainable Development of Non-Governmental Organizations</b>	-	ELC UIA	Oct 85	WCED
<b>3.2 Proposals to Strengthen and Augment International Institutional Arrangements (especially in Key Issue Areas)</b>	From other Panels, WG's and reports to WCED	-	Jun 86	WCED
<b>3.3 Improving the Capacity to Anticipate and Prevent Man-Induced Disasters</b>	-	LRCS/SRC UNDRO IIED	Dec 85	WCED
<b>3.4 Study of Existing and Potential Methods for Financing International Action on Environment and Sustainable Development</b>	-	-	Dec 85	WCED