TOWARDS SUSTAINABILITY

A European Community programme of policy and action in relation to the environment and sustainable development

CONTENTS

Figures

LIST OF ABBREVIATIONS USED

Organisations, Associations etc.

ACP	African, Caribbean and Pacific countries
ALA	Asian and Latin American countries
BAT	Best available technology
CAP	European Community's Common Agricultural Policy
CEE	Central and Eastern European countries
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
EAGGF	European Agricultural Guidance and Guarantee Fund
EC	(Tables) refers to action at Community level
ECU	European Currency Unit
EEA	(Tables) European Environment Agency
EFTA	European Free Trade Association
EIA	Environmental Impact Assessment
EIB	European Investment Bank
ERDF	European Regional Development Fund
ESF	European Social Fund
FAO	Food and Agricultural Organisation
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GEF	Global Environment Facility
IIASA	International Institute for Applied Systems Analysis (Austria)
IMO	International Maritime Organisation
IPC	Integrated Pollution Control
IPCC	Intergovernmental Panel on Climate Change
LA	(Tables) refers to actions at Local and Regional Authority Level
leq dB(A)	Mean Sound level related to man
MS	(Tables) refers to actions at Member State level
NGO	Non Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
PHARE	A programme of Assistance for the restructuring of the Economies of Poland and Hungary, initially, and now extended to other Central and Eastern European countries
R & D	Research and Development
RIVM	(Maps) Rijksinstituut voor Volksgezondheid en Milieuhygiene (National Institute of Public Health and Environmental Protection, The Netherlands)
SME	Small and Medium-sized Enterprises
toe	tons of oil equivalent
UN	United Nations Organisation
UNCED	United Nations Conference on Environment and Development (Rio de Janeiro, June 1992)
UNDP	United Nations Development Programme
UNDRO	United Nations Disaster and Relief Organisation
UN-ECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
WHO	World Health Organisation

CHEMICAL FORMULAE AND REFERENCES

CO	Carbon Monoxide
CO_2	Carbon Dioxide
CFC	Chlorofluorocarbon
CH_4	Methane
GMO	Genetically Modified Organism
HC	Hydrocarbon
N_2O	Nitrous Oxide
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NH_3	Ammonia
O_3	Ozone
SO_2	Sulphur Dioxide
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

Introduction

1. Over the past two decades four Community action programmes on the environment have given rise to about 200 pieces of legislation covering pollution of the atmosphere, water and soil, waste management, safeguards in relation to chemicals and biotechnology, product standards, environmental impact assessments and protection of nature. The Community's 4th Action Programme on the Environment has not been completed — it runs up to the end of 1992 — and its impact will not be known for some years to come. While a great deal has been achieved under these programmes and measures, a combination of factors calls for a more far-reaching policy and more effective strategy at this juncture:

   (i) a new *Report on the State of the Environment* published in conjunction with this Programme (1) indicates a slow but relentless deterioration of the general state of the environment of the Community notwithstanding the measures taken over the past two decades, particularly as respects the issues referred to in para 16 below; the Report also shows up significant deficiencies in the quantity, quality and comparability of data which are crucial for environment-related policies and decisions. In this context it is of the utmost importance that the European Environment Agency become operational;

   (ii) the present approach and existing measures are not geared to deal with the expected growth in international competition and the upward trends in Community activity and development which will impose even greater burdens on natural resources, the environment and, ultimately, the quality of life;

   (iii) global concerns about the climate change/deforestation/energy crisis, the seriousness and persistence of problems of underdevelopment and the progress of political and economic change in Central and Eastern Europe add to the responsibility of the European Community in the international field.

(1) This is not published here. See COM(92) 23 final — Vol. III.

2. The new Treaty on European Union, signed by all Member States on 7 February 1992 has introducedas a principal objective the promotion of sustainable growth respecting the environment (Article 2). It includes among the activities of the Union a policy in the sphere of the environment (Article 3k), specifies that this policy must aim at a high level of protection and that environmental protection requirements must be integrated into the definition and implementation of other Community policies (Article 130r (2)). The new Treaty also attaches special value to the principle of subsidiarity (Article 3b), and states that decisions should be taken as closely as possible to the citizens (Article A). Furthermore, the Community policy on the environment is required to contribute to promoting measures at international level to deal with regional or worldwide environmental problems (Article 130r (1)). In this latter context the Community will endeavour to find solutions in the field of development and environment at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in June 1992.

3. All human activity has an impact on the biophysical world and is, in turn, affected by it. The capacity to control this interrelationship conditions the continuity, over time, of different forms of activity and the potential for economic and social development. Within the Community, the long-term success of the more important initiatives such as the Internal Market and economic and monetary union will be dependent upon the sustainability of the policies pursued in the fields of industry, energy, transport, agriculture and regional development; but each of these policies, whether viewed separately or as it interfaces with others, is dependent on the carrying capacity of the environment.

4. The achievement of the desired balance between human activity and development and protection of the environment requires a sharing of responsibilities which is both equitable and clearly defined by reference to consumption of and behaviour towards the environment and natural resources. This implies integration of environment considerations in the formulation and implementation of economic and sectoral policies, in the decisions of public authorities, in the conduct and development of production processes and in individual behaviour and choice. It also implies effective dialogue and concerted action among partners who may have differing short-term priorities; such dialogue must be supported by objective and reliable information.

5. As used in the Programme, the word 'sustainable' is intended to reflect a policy and strategy for continued economic and social development without detriment to the environment and the natural resources on the quality of which continued human activity and further development depend. The Report of the World Commission on Environment and Development (Brundtland) defined sustainable development as *'development which meets the needs of the present without compromising the ability of future generations to meet their own needs'*. It entails preserving the overall balance and value of the natural capital stock, redefinition of short, medium and long-term cost/benefit evaluation criteria and instruments to reflect the real socio-economic effects and values of consumption and conservation, and the equitable distribution and use of resources between nations and regions over the world as a whole. In the latter context, the Brundtland Report pointed out that the developed countries, with only 26 % of the world population, are responsible for about 80 % of world consumption of energy, steel and other metals, and paper and about 40 % of the food.

6. Following are some of the practical requirements for achieving sustainable development:

   — since the reservoir of raw materials is finite, the flow of substances through the various stages of processing, consumption and use should be so managed as to facilitate or encourage optimum reuse and recycling, thereby avoiding wastage and preventing depletion of the natural resource stock;

   — production and consumption of energy should be rationalized; and

   — consumption and behaviour patterns of society itself should be altered.

7. It is clear that sustainable development is not something which will be achieved over a period as short as that covered by this Programme. 'Towards Sustainability' should be seen, accordingly, as an important step only in a longer-term campaign to safeguard the environment and the quality of life of the Community and, ultimately, our planet.

The Community's rôle in the wider international arena

8. In the early stages, Community policy and action on the environment were mainly focussed on the solution of particularly acute problems within the *Community.* Later there was a clearer recognition that pollution did not stop at its frontiers and that it was necessary, therefore, to intensify co-operation with *third countries.* In recent years, the evolution has gone a step further and it is now generally accepted that issues of a *global nature* — climate change, ozone depletion, diminution of biodiversity, etc. — are seriously threatening the ecological balance of our planet as a whole.

9. These issues are to be addressed at the highest level at the United Nations Conference on Environment and Development (UNCED). Just as the 1972 UN Conference in Stockholm created a new awareness and concern about the environment at broad international level, so too can UNCED bring global political will and commitment to effective action into a new dimension. Apart from the expected adoption of framework conventions on climate change and biodiversity and of principles on conservation and development of forests, UNCED should pave the way forward by adopting:

   — an *'Earth Charter'* or Declaration of basic rights and obligations with respect to environment and development;

   — an agenda for action, *'Agenda 21'*, which will constitute an agreed work programme of the international community for the period beyond 1992 and into the 21st century.

10. In the declaration on the environment made in Dublin in June 1990 the European Council stressed the special responsibility of the Community and its constituent Member States in the wider international arena when it stated that *'the Community must use more effectively its position of moral, economic and political authority to advance international efforts to solve global problems and to promote sustainable development and respect for the global commons'*. In conformity with the said declaration, the Community and the Member States must increase their efforts to promote international action to protect the environment and to meet the specific needs and requirements of its partners in the developing world and in Central and Eastern Europe.

    The credibility of the industrialised world, including the Community, from the viewpoint of developing countries will be commensurate with the extent to which it puts its own house in order. In adopting and implementing this Programme, the Community will be in a position to offer the leadership foreseen in the Dublin Declaration.

The new strategy for environment and development

11. The approach adopted in drawing up this new policy programme differs from that which applied in previous environmental action programmes:

— it focuses on the agents and activities which deplete natural resources and otherwise damage the environment, rather than wait for problems to emerge;

— it endeavours to initiate changes in current trends and practices which are detrimental to the environment, so as to provide optimal conditions for socio-economic well-being and growth for the present and future generations;

— it aims to achieve such changes in society's patterns of behaviour through the optimum involvement of all sectors of society in a spirit of shared responsibility, including public administration, public and private enterprise, and the general public (as both individual citizens and consumers);

— responsibility will be shared through a significant broadening of the range of instruments to be applied contemporaneously to the resolution of particular issues or problems.

12. For each of the main issues, *long-term objectives* are given as an indication of the sense of direction or thrust to be applied in the pursuit of sustainable development, certain *performance targets* are indicated for the period up to the year 2000 and a representative selection of *actions* is prescribed with a view to achieving the said targets. These objectives and targets do not constitute legal commitments but, rather, performance levels or achievements to be aimed at now in the interests of attaining a sustainable development path. Neither should all the actions indicated require legislation at Community or national level. (Note: Because of substantial disparities and short-comings in both the quantity and quality of data available, it has not been possible to have homogenous levels of precision in the objectives and targets included in the Programme.)

13. The Programme takes account of the diversity of situations in various regions of the Community and, in particular, of the need for the economic and social development of the less wealthy regions of the Community. It aims to protect and enhance the inherent advantages of these latter regions and to afford protection to their more valuable natural assets as a resource-base for economic development and social improvement and prosperity. In the case of the more developed regions of the Community, the aim is to restore or maintain the quality of their environment and natural resource base for their continued economic activity and quality of life.

14. The success of this approach will rely heavily on the flow and quality of information both in relation to the environment and as between the various actors, including the general public. The rôle of the European Environment Agency is seen as crucial in relation to the evaluation and dissemination of information, distinction between real and perceived risks and provision of a scientific and rational basis for decisions and actions affecting the environment and natural resources.

15. In relation to the motivation of the general public, the main tasks will fall to levels other than the Community level. The Commission, for its part, will commit its information services to a campaign of environmental information and awareness-building.

The importance of education in the development of environmental awareness cannot be overstated and should be an integral element in school curricula from primary level onwards.

Environmental challenges and priorities

16. The Programme addresses a number of environmental *issues:* climate change, acidification and air pollution, depletion of natural resources and biodiversity, depletion and pollution of water resources, deterioration of the urban environment, deterioration of coastal zones, and waste. This list is not an exhaustive one but, pursuant to the principle of subsidiarity, it comprises matters of particular seriousness which have a Community-wide dimension, either because of Internal Market, cross-boundary, shared resource or cohesion implications and because they have a crucial bearing on environmental quality and conditions in almost all regions of the Community.

17. These issues are addressed not so much as problems, but as *symptoms* of mismanagement and abuse. The real 'problems', which cause environmental loss and damage, are the current patterns of human consumption and behaviour. With this distinction in

mind and with due respect to the principle of subsidiarity, priority will be given to the following fields of action with a view to achieving tangible improvements or changes during the period covered by the Programme:

— *Sustainable Management of Natural Resources:* soil, water, natural areas and coastal zones

— *Integrated Pollution Control and Prevention of Waste*

— *Reduction in the Consumption of Non-Renewable Energy*

— *Improved Mobility Management* including more efficient and environmentally rational location decisions and transport modes

— Coherent packages of measures to achieve improvements in *environmental quality in urban areas*

— *Improvement of Public Health and Safety,* with special emphasis on industrial risk assessment and management, nuclear safety and radiation protection.

Selected target sectors

18. Five target sectors have been selected for special attention under this Programme: Industry, Energy, Transport, Agriculture and Tourism. These are sectors where the Community as such has a unique role to play and where a Community approach is the most efficient level at which to tackle the problems these sectors cause or face. They are also chosen because of the particularly significant impacts that they have or could have on the environment as a whole and because, by their nature, they have crucial roles to play in the attempt to achieve sustainable development. The approach to the target sectors is designed not only for the protection of public health and the environment as such, but for the benefit and sustainability of the sectors themselves.

Industry:

19. Whereas previous environmental measures tended to be proscriptive in character with an emphasis on the 'thou shalt not' approach, the new strategy leans more towards a 'let's work together' approach. This reflects the growing realization in industry and in the business world that not only is industry a significant part of the (environmental) problem but it must also be part of the solution. The new approach implies, in particular, a reinforcement of the dialogue with industry and the encouragement, in appropriate circumstances, of voluntary agreements and other forms of self-regulation.

Nevertheless, Community action is and will continue to be an important element in the avoidance of distortions in conditions of competition and preservation of the integrity of the Internal Market.

20. The three pillars on which the environment/industry relationship will be based will be:

— improved resource management with a view to both rational use of resources and improvement of competitive position;

— use of information for promotion of better consumer choice and for improvement of public confidence in industrial activity and controls and in the quality of products;

— Community standards for production processes and products.

In developing measures to ensure the sustainability of the industrial sector, special consideration will be given to the position of small and medium enterprises and to the matter of international competitiveness.

In mid-1992 the Commission will publish a comprehensive Communication on international competitiveness and protection of the environment.

Energy:

21. Energy policy is a key factor in the achievement of sustainable development. While the Community's energy sector is making steady progress in dealing with local and regional environmental problems such as acidification, global issues are daily growing in importance. The challenge of the future will be to ensure that economic growth, efficient and secure energy supplies and a clean environment are compatible objectives.

22. The achievement of this balance requires a strategic perspective well beyond the period covered by this Programme. The key elements of the strategy up to 2000 will be improvement in energy efficiency and the development of strategic technology programmes moving towards a less carbon-intensive energy structure including, in particular, renewable energy options.

Transport:

23. Transport is vital to the distribution of goods and services, to trade and to regional development.

Present trends in the Community's transport sector are all leading towards greater inefficiency, congestion, pollution, wastage of time and value, damage to health, danger to life and general economic loss. Transport demand and traffic are expected to increase even more rapidly with the completion of the Internal Market and the political and economic developments in Central and Eastern Europe.

24. A strategy for sustainable mobility will require a combination of measures which includes:

— improved land-use/economic development planning at local, regional, national and transnational levels;

— improved planning, management and use of transport infrastructures and facilities; incorporation of the real costs of both infrastructure and environment in investment policies and decisions and also in user costs;

— development of public transport and improvement of its competitive position;

— continued technical improvement of vehicles and fuels; encouraged use of less polluting fuels;

— promotion of a more environmentally rational use of the private car, including changes in driving rules and habits.

In conjunction with this Programme, the Commission has published a more comprehensive Communication dealing with transport and the environment and the need to aim for sustainable mobility.

Agriculture:

25. The farmer is the guardian of the soil and of the countryside. Improvements in farming efficiency, increased mechanisation levels, improved transport and marketing arrangements, increased international trade in food products and feedstuffs have all contributed to the fulfillment of the original Treaty objectives of assuring the availability of food supplies at reasonable prices, the stabilization of markets and a fair standard of living for the agricultural community. At the same time, however, changes in farming practices in many regions of the Community have led to overexploitation and degradation of the natural resources on which agriculture itself ultimately depends: soil, water and air.

26. In addition to environmental degradation, serious problems have emerged in the case of commodity overproduction and storage, rural depopulation, the Community budget and international trade (both as regards agricultural products and wider trade agreements). It is not only environmentally desirable, therefore, but also makes sound agricultural, social and economic sense to seek to strike a more sustainable balance between agricultural activity, other forms of rural development and the natural resources of the environment.

27. The Programme builds on the Commission's proposals for reform of the CAP and for development of the Community's forests so as to work towards a balanced and dynamic development of the rural areas of the Community which will meet the sector's productive, social and environmental functions.

Tourism:

28. Tourism is an important element in the social and economic life of the Community. It reflects the legitimate aspirations of the individual to enjoy new places and absorb different cultures as well as to benefit from activities or relaxation away from the normal home or work setting. It is also an important economic asset to many regions and cities of the Community and has a special contribution to make to the economic and social cohesion of the peripheral regions. Tourism represents a good example of the fundamental link which exists between economic development and environment, with all the attendant benefits, tensions and potential conflicts. If well planned and managed, tourism, regional development and environment protection can go hand in hand. Respect for nature and the environment, particularly in coastal zones and mountain areas, can make tourism both profitable and long-lasting.

29. The World Tourism Organisation predicts a significant increase in tourism activity to and within Europe during this decade. Most of this increase is likely to take place in the Mediterranean Region, and in particular types of locations such as historic towns and cities, mountain areas and coastal zones. UNEP's Blue Plan on the Mediterranean predicts a doubling, at least, of solid wastes and waste waters resulting from tourism by the year 2000, and a potential doubling in the land occupied by tourist lodgings.

30. The European Community supports tourism through its investments in necessary infrastructures; it can also serve as a 'facilitator' in relation to other interests. But, in a practical reflection of the principle of subsidiarity and the spirit of shared responsibility, it is mainly at levels other than that of the Community that the real work of reconciling tourism activity and development and the guardianship of natural and cultural assets must be brought into a sustainable balance, i.e. by Member States, regional and local authorities, the tourism industry itself and individual tourists.

The three main lines of action indicated in the Programme deal with

— diversification of tourism activities, including better management of the phenomenon of mass tourism, and encouragement of different types of tourism;

— quality of tourist services, including information and awareness-building, and visitor management and facilities;

— tourist behaviour, including media campaigns, codes of behaviour and choice of transport.

Broadening the range of instruments

31. Previous action programmes have relied almost exclusively on legislative measures. In order to bring about substantial changes in current trends and practices and to involve all sectors of society in a full sharing of responsibility, a broader mix of instruments is needed. The mix proposed can be categorised under four headings:

(i) *Legislative instruments* designed to set fundamental levels of protection for public health and the environment, particularly in cases of high risk, to implement wider international commitments and to provide Community-wide rules and standards necessary to preserve the integrity of the Internal Market.

(ii) *Market-based instruments,* designed to sensitize both producers and consumers towards responsible use of natural resources, avoidance of pollution and waste by internalising of external environmental costs (through the application of economic and fiscal incentives and disincentives, civil liability, etc.) and geared towards 'getting the prices right' so that environmentally-friendly goods and services are not at a market disadvantage vis-à-vis polluting or wasteful competitors.

(iii) *Horizontal, supporting instruments* including improved base-line and statistical data, scientific research and technological development, (as respects both new less-polluting technologies and technologies and techniques for solving current environmental problems) improved sectoral and spatial planning, public/consumer information and education and professional and vocational education and training.

(iv) *Financial support mechanisms:* besides the budgetary lines which have direct environmental objectives, such as LIFE, the Structural Funds, notably ENVIREG, contribute significant amounts to the financing of actions for the improvement of the environment. Moreover, the new Cohesion Fund decided upon at the Maastricht Summit aims at cofinancing projects which are intended to improve the environment in Spain, Greece, Portugal and Ireland. Article 130r (2) of the new Treaty provides that environment policy must aim at a high level of protection based on the precautionary principle and preventive action, taking into account the diversity of situations in the various regions of the Community, and that environment policy must be integrated into the definition and implementation of other Community policies. In this context, it will be necessary to ensure that all Community funding operations, and in particular, these involving the Structural Funds, will be as sensitive as possible to environmental considerations and in conformity with environmental legislation. By way of qualification it must be recalled here that the new Treaty provides, in Article 130s (4), that without prejudice to certain measures of a Community nature, the Member States are responsible for financing and implementing environment policy.

The principle of subsidiarity

32. The principle of subsidiarity will play an important part in ensuring that the objectives, targets and actions are given full effect by appropriate national, regional and local efforts and initiatives. In practice it should serve to take full account of the traditions and sensitivities of different regions of the Community and the cost-effectiveness of various actions and to improve the choice of actions and appropriate mixes of instruments at Community and/or other levels.

The objectives and targets put forward in the Programme and the ultimate goal of sustainable development can only be achieved by *concerted* action on the part of all the relevant actors working together in partnership. On the basis of the Treaty on the European Union (Article 3b), the Community will take action, in accordance with the principle of subsidiarity, only if and insofar as the objectives of the proposed action cannot be sufficiently achieved by the Member States and can therefore, by reason of the scale or effects of proposed action, be better achieved by the Community.

33. The Programme combines the principle of subsidiarity with the wider concept of shared responsibility; this concept involves not so much a choice of action at one level to the exclusion of others but, rather, a mixing of actors and instruments at the appropriate levels, without any calling into question of the division of competences between the Community, the Member States, regional and local authorities.

Table 18 of the document and the 'actors' column of the other tables indicate respectively the manner in which the various actors are intended to combine and the different actors considered most relevant for the implementation of specific measures.

Making the Programme work

34. Up to the present, environmental protection in the Community has mainly been based on a legislative approach ('top-down'). The new strategy advanced in this Programme implies the involvement of all economic and social partners ('bottom-up'). The complementarity and effectiveness of the two approaches together will depend, in great measure, on the level and quality of dialogue which will take place in pursuance of partnership.

35. Inevitably, it will take some considerable time for the current patterns of consumption and behaviour to turn in the direction of sustainability. In practical terms, the effectiveness of the strategy will depend, for the foreseeable future, on the inherent quality of the measures adopted and the practical arrangements for their enforcement. This will require better preparation of measures, more effective co-ordination with and integration into other policies, more systematic follow-up and stricter compliance-checking and enforcement.

36. For these reasons — but without prejudice to the Commission's right of initiative and its responsibility to ensure satisfactory implementation of Community rules — the following *ad hoc* dialogue groups will be convened by the Commission:

(i) *a General Consultative Forum* comprising representatives of enterprise, consumers, unions and professional organisations, non-governmental organisations and local and regional authorities;

(ii) *an Implementation Network* comprising representatives of relevant national authorities and of the Commission in the field of practical implementation with Community measures; it will be aimed primarily at exchange of information and experience and at the development of common approaches at practical level, under the supervision of the Commission.

(iii) *an Environmental Policy Review Group,* comprising representatives of the Commission and the Member States at Director-General level to develop mutual understanding and exchange of views on environment policy and measures.

37. These three dialogue groups will serve, in a special way, to promote greater sense of responsibility among the principal actors in the partenariat, and to ensure effective and transparent application of measures. They are not intended to duplicate the work of committees established by Community legislation for the purposes of follow-up in respect of specific measures, nor by the Commission in relation to specific fields of interest such as consumer protection, tourism development etc. nor by Member States for implementation and enforcement of policy at national level. Finally, they will not substitute the existing dialogue between industry and the Commission, which it is intended to strengthen in any event.

Review of Programme

38. While the Programme is essentially targeted towards the year 2000, it will be reviewed and 'rolled-over' at the end of 1995 in the light of improvements in relevant data, results of current research, and forthcoming reviews of other Community policies e.g. industry, energy, transport, agriculture, and the structural funds.

Conclusion

39. This Programme itself constitutes a turning point for the Community. Just as the challenge of the 1980s was completion of the Internal Market, the reconciliation of environment and development is one of the principal challenges facing the Community and the world at large in the 1990s. 'Towards Sustainability' is not a programme for the Commission alone, nor one geared towards environmentalists alone. It provides a framework for a new approach to the environment and to economic and social activity and development, and requires positive will at all levels of the political and corporate spectrums, and the involvement of all members of the public active as citizens and consumers in order to make it work.

40. The Programme does not purport to 'get everything right'. It will take a long time to change patterns of behaviour and consumption and to attain a sustainable development path. The Programme, accordingly, is intended primarily to *break the current trends.* The bottom line is that the present generation must pass the environment on to the next generation in a fit state to maintain public health and social and economic welfare at a high level. As an intermediate goal, the state of the environment, the level and quality of natural resources and the potential for further development at the end of this decade should reflect a marked improvement on the situation which obtains today. The road to sustainability may be long and difficult ... but the first steps must be taken now!

Structure of the document

41. The document is divided into three parts, the two main parts being related to internal and external actions. This distinction is made so as to reflect what can politically and legally be done within the Community itself in accordance with the powers and procedures incorporated in the Treaties, and what the Community and its constituent Member States can contribute or achieve in partnership with other developed and developing countries in relation to global or regional issues and problems.

42. Part I summarises the state of the environment in the Community and growing threats to its future health (Chapter 1) and sets out a new strategy designed to break the current trends and to set a new course for sustainable development (Chapter 2). The strategy entails active involvement of all the main actors in society (Chapter 3) using a broader range of instruments, including market-related instruments and improved information, education and training (Chapter 7) so as to achieve identifiable or quantifiable improvements in the environment or changes in consumption and behaviour (Chapter 5).

43. A special, concentrated, effort will be made in the case of five target sectors of Community-wide significance (Chapter 4) and in relation to the avoidance and management of risks and accidents (Chapter 6).

44. In an effort to be both concise and as clear as possible, the measures which together constitute the action programme are set out in a series of tables which are predominantly, though not entirely, homogenous.

These tables are structured so as to indicate:

— the long-term objectives in the various fields;

— the qualitative or quantitative targets to be attained by the year 2000;

— the specific actions required to be taken;

— the time-frame proposed for such actions;

— the actors or sectors of activity which will be called upon to play a part.

Pursuant to the principle of subsidiarity, the lead rôle is indicated by the use of an italic type-face e.g. *MS.*

45. Finally, Part I attempts to indicate how responsibility can in practice be shared (Chapter 8) and the measures proposed to ensure satisfactory implementation and enforcement (Chapter 9).

46. Part II summarises the environmental threats and issues in the wider international sphere (Chapter 10) and what will or can be done by the Community and its constituent Member States in the context of both general international and bilateral co-operation (Chapter 11 and 12, resp.) in relation to global and regional issues and to environment and development issues in developing countries and Central and Eastern Europe. Chapter 13 deals with the United Nations Conference on Environment and Devel-

opment which will take place in June 1992. It also refers to the correlation between the internal and external dimensions of the Community's policy on the environment.

47. Part III is quite short and very general, dealing with the selection of priorities (Chapter 14), the question of costs (Chapter 15) and the intention to carry out a mid-term review of the Programme in 1995 (Chapter 16). While in a document which puts forward a policy and strategy aimed at breaking trends there is less a question of selecting priority actions than defining a *'critical path'*, nevertheless, the Programme does include a listing of horizontal measures and fields of action which require to be accorded priority. On the question of costs the document points to the difficulties of undertaking such exercise (partly because of the traditional practice of treating the environment as an infinite source of free raw materials and waste sinks, and partly because not enough has been done to determine the real costs of *'non-action'*) and puts forward a 5-point plan to devise appropriate costing mechanisms for the future.

INTRODUCTION

THE CHALLENGE OF THE 1990s

As far back as 1972, when the Communities first became involved in environmental protection, the Heads of State and Government of the Member States declared that:

'Economic expansion is not an end in itself ... it should result in an improvement in the quality of life as well as the standard of living'

Just as in the 1980s the principal challenge faced by the European Communities was the completion of the Internal Market, so now in the 1990s the challenge is to graduate to a development path which will be sustainable.

Community Heads of State and Government recognised this challenge during their Summit in Dublin in June 1990 where they stated:

'We recognise our special responsibility for the environment both to our own citizens and to the wider world. We undertake to intensify our efforts to protect and enhance the natural environment of the Community itself and the world of which it is part. We intend that action by the Community and its Member States will be developed on a coordinated basis and on the principles of sustainable development and preventive and precautionary action ... The objective of such action must be to guarantee citizens the right to a clean and healthy environment ... The full achievement of this objective must be a shared responsibility.'

The Heads of State and Government went on to ask the Commission to take account of this approach in its preparation of the Fifth Action Programme on the Environment. This document is the response to that request and is designed to spell out a strategy and programme for environmental action to the end of the present century and beyond.

Developments within the Community

Within the time-frame of this Programme great changes are envisaged. Development of the Internal Market in Europe and the need to achieve economic and social cohesion have major implications in relation to environment policy as indeed was recognised in the Single European Act: the increased economic growth expected will be unsustainable unless environmental considerations are taken into account, not so much as a potential limiting factor, but rather as an incentive to greater efficiency and competitivity, with particular reference to the wider international market-place.

At the same time, the Community is moving towards closer economic and monetary union and will probably have to face up to the challenges of further enlargement. It will have to take account of political and economic changes which are occurring in Central and Eastern Europe and of the need to develop the European Economic Area. The Community is also committed to reviewing its approach to the Structural Funds, the Common Agricultural Policy, Transport Policy and Energy Policy.

Developments at global level

There is growing worldwide concern at the continuing deterioration of the state of the environment and the serious degradation of global life-support systems. A crucial element of the Community's strategy for the 1990s, developed in more detail in this document, is to promote policies and programmes that will improve the quality of human life worldwide through a more equitable distribution of natural resources.

The drive to raise living standards, alleviate poverty, increase life expectancy and improve food security places a considerable burden on the world's natural resource base. The Community is conscious of the fact that, along with other industrialised countries, its own 340 million inhabitants currently consume a disproportionate share of the world's resources. Per capita consumption of energy in the Community for example, although half that of the USA and Canada, is over 10 times greater than that of many developing countries. A child born in the Community will consume over 20 times as much of natural resources over its lifetime as a child born in the majority of developing countries (although still half that of an American child).

Many of the measures foreseen in this Programme are designed to reduce wasteful consumption of resources and to increase productivity within the Community. It will nevertheless require great ingenuity and creativity to service the additional needs of both the developed and

developing world whilst at the same time conserving the often fragile and non-renewable resource base. This will imply in some instances profound changes in consumption patterns and lifestyles.

Towards sustainable development

All human activity, economic and socio-cultural, either prospers or founders on the quality of the relationship between society and the natural world. Development is 'real' only if it improves the quality of life. The 1987 Report of the World Commission on Environment and Development — generally referred to as the Brundtland Report — urged that human activity should follow a path which sustains human activity progress for the entire planet into the distant future. In this context sustainable development was defined as *'development which meets the needs of the present without compromising the ability of future generations to meet their own needs'*. It entails preserving the overall balance and value of the natural capital stock, redefinition of short, medium and long-term cost/benefit evaluation criteria and instruments to reflect the real socio-economic effects and values of consumption and conservation, and the equitable distribution and use of resources between nations and regions over the world as a whole. In the latter context, the Brundtland Report pointed out that the developed countries, with only 26 % of the world population, are responsible for about 80 % of world consumption of energy, steel and other metals, and paper and about 40 % of the food.

The following characteristics of sustainable development were identified:

— it maintains the overall quality of life;

— it maintains continuing access to natural resources;

— it avoids lasting environmental damage.

In more prosaic terms it has been defined by the admonition: *'Don't eat the seed corn which is needed to sow next year's crop.'* Such a definition is useful in injecting an important dose of realism into the debate on sustainability. In practical terms, therefore, the concept of sustainability is ultimately linked very closely to a society's or region's prospects of continued development and success and, in the case of individual enterprises, even their profit and loss accounts.

Building on solid foundations

It is important to bear in mind that in moving towards sustainable development the Community is not starting from zero. The strategy and programme set out in this document have been built on what has already been achieved both at the Community level and in the Member States. The Community has had an environment policy for almost twenty years, despite the fact that the environment was not mentioned in the original Treaties. In that time, significant advances have been made in terms of both elaboration of an extensive legislative framework in the Member States and actual improvements in environmental protection and quality.

Since 1972 there have been four Community action programmes (1) on the environment which have given rise to about 200 pieces of legislation covering pollution of the atmosphere, water and soil, waste management, safeguards in relation to chemicals and biotechnology, product standards, environmental impact assessments and protection of nature. Much has been achieved over this period but the current pace of change and the additional pressures which are being or will be imposed on the environment and the natural resource stocks as a result of completion of the Internal Market and political and economic developments in Central and Eastern Europe and further afield call for even more effective measures.

Institutional developments

At institutional level, the extraordinary growth in public awareness, scientific perception and political importance of environment issues was reflected in the Treaties by the insertion through the Single European Act, of a separate Chapter on the environment and the inclusion of a significant environment element in the key article relating to the completion of the internal market. These modifications provided, for the first time, a statutory mandate, objectives and criteria for Community policy and action in the field of the environment.

The new Treaty on European Union, which was signed by all the Member States on 7 February 1992, contains a number of provisions which will bring care for the environment into a new dimension:

— among the Principles, *Article 2* refers to the promotion of *'a harmonious and balanced development of economic activities, sustainable and non-inflationary growth respecting the environment'*;

(1) OJ No C 112, 20. 12. 1973; OJ No C 139, 13. 6. 1977; OJ No C 46, 17. 2. 1983; OJ No 328, 7. 12. 1987.

— *Article 3k* provides that the activities of the Community shall include a policy in the sphere of the environment; *Article 130r (2)* provides, inter alia, that this policy shall aim at a high level of protection and that it shall be based on the precautionary principle;

— *Article 130r (2)* goes on to stipulate that environmental protection requirements must be integrated into the definition and implementation of other Community policies;

— *Article 3b* attaches special value to the principle of subsidiarity while *Article A* states the objective of having decisions taken as closely as possible to the citizens.

Moreover Article 130s (5) addresses the case of measures involving disproportionate costs for the public authorities of a Member State. This article reflects the need to take into account economic and social cohesion in the formulation of environmental policy. This need is also recalled in Article 130r (3) according to which, in preparing its policy on the environment, the Community shall take account of the economic and social development of the Community as a whole and the balanced development of its regions.

In addition, the agreed changes in the Community's decision-making procedures providing for majority voting by the Council of Ministers on most environment issues and the strengthening of the role of the European Parliament in this sector through the co-decision procedure should improve the efficiency and the quality of the legislative process in the future.

What is new about this Programme?

In facing up to the environmental challenges in this final decade of the millenium and in endeavouring to move towards a sustainable development path it is necessary to focus on the agents and activities which damage the environment and deplete the natural resource stock rather than wait, as has been the tendency in the past, for problems to emerge. As previously stated, this will require significant changes in current patterns of human consumption and behaviour. These objectives cannot be met by action at Community level alone, but rather on the basis of a sharing of responsibility at all levels of society including governments, regional and local authorities, non-governmental organisations, financial institutions, production, distribution and retail enterprises and individual citizens.

While it is appropriate that the strategy and programme should be prepared at Community level, since it is the sole point at which all the required measures and actions can be brought together, the practical implementation thereof will fall to be carried out at the appropriate levels in a complementary manner and in accordance with the ability to act. The basic strategy therefore is to achieve full integration of environmental and other relevant policies through the active participation of all the main actors in society (administrations, enterprises, general public) through a broadening and deepening of the instruments for control and behavioural change including, in particular, greater use of market forces.

The challenge of the 1990s

The attainment of sustainable development calls for a far-sighted, cohesive and effective approach. It will demand considerable political and practical commitment over an extended time-frame. The Community, as the largest economic/trading partner in a world where it is increasingly seen that growth has to be environmentally sustainable, must exercise its responsibility to both present and future generations. To this end it must put its own house in order and provide an example to developed and developing countries alike in relation to the protection of public health and the environment and the sustainable use of natural resources.

The Dublin Declaration states that 'the environment is dependent on our collective actions; tomorrow's environment depends on how we act today'. There is now a perceptible feeling throughout the Community and further afield that many of the great environmental struggles will be won or lost during this decade; and that by the next century it could be too late.

We cannot afford to wait ... and be wrong!

PART I

A POLICY AND STRATEGY FOR THE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT WITHIN THE EUROPEAN COMMUNITY

CHAPTER 1

THE STATE OF THE ENVIRONMENT: PROGRESS AND PROSPECTS

A strategy for the future cannot be constructed without analysing what the present situation is and what has occurred in the past. In conjunction with the publication of the 5th Programme, and underpinning its essential strategy, an up-dated Report on the State of the Environment is being published. Among the main conclusions which can be drawn from that Report are the following:

— *Atmospheric Pollution:* Some progress has been made in reducing emissions of sulphur dioxide and suspended particulates, lead and CFCs, but serious problems continue to exist or are emerging as respects on one hand, a number of 'greenhouse' gases such as, carbon dioxide, nitrous oxides, ozone and methane, and on the other hand, air quality problems, especially in urban areas.

— *Aquatic Pollution:* Some progress has been achieved with point sources of inland water pollution, but this is being more than offset by increased pollution from non-point sources, notably agriculture. The quality of waters is under threat and there is growing eutrophication of both fresh waters and marine waters. The Directive on groundwater is not achieving its objectives and these resources are under growing threat from both overexploitation and pollution. In the case of marine waters, there have been reductions in pollution from certain organic wastes, heavy metals and radioactive discharges, but severe pressures persist, particularly in the Mediterranean Region, the North Sea and the Baltic Sea.

— *Soil Degradation:* The Directives on waste management, on the use of sewage sludge in agriculture and on use of nitrates on land and certain aspects of the 'Seveso' Directive on major accident hazards of certain industrial activities have made or will make relatively good contributions to the protection of soils. However, over-intensified use of land and excessive application of chemical fertilizers, pesticides and herbicides, and ground drainage and clearance activities are causing deterioration of soils, including contamination, acidification, desertification and erosion, in many areas.

— *Nature Conservation:* Despite the Directive on Wild Birds and the Conventions of Bonn and Berne, the pressures on unique or endangered biota and their habitats are increasing. Intensified agriculture is one of the most important causes of reductions in biological diversity. Economic developments and erosion are causing a steady deterioration of the coastal environment. Forest fires have devastated many parts of the Mediterranean Region, with severe outbreaks now occurring annually. Further pressure from recreational and associated second-home development is giving rise to deterioration in upland and mountain regions.

— *The Urban Environment:* The difficulties in reconciling the need to meet the demands of modern commerce and transport with the desire to provide a good quality living environment are steadily growing with resulting congestion, pollution, noise, deterioration of streets, public places and architectural heritage and general loss of amenity.

— *Waste Management:* Despite Directives going back to 1975 on waste in general, on toxic and hazardous wastes and on transfrontier shipment of wastes, management of the Community's enormous waste stream is far from being under control. Recycling and reuse options have not been developed beyond the infancy stage in most areas. Deficiencies in waste handling arrangements pose a threat not only to the environment but could have undesirable implications in the context of completion of the Internal Market.

Some disquieting trends

The Report on the State of the Environment also clearly indicates some trends which, if not satisfactorily contained, could have significant negative consequences for the quality of the environment as a whole. For example,

— *Energy:* a 25 % increase by 2010 if there is no change in current energy demand growth rates, resulting, in turn, in a 20 % increase in EC carbon emissions (reference year 1987);

— *Transport:* a 25 % increase in car ownership and a 17 % increase in mileage by 2000 (reference year 1990);

— *Agriculture:* a 63 % increase in fertilizer use between 1970 and 1988;

— *Waste:* a 13 % increase in municipal waste over the last 5 years, despite increased recycling of paper, glass, plastics;

— *Water:* a 35 % increase in the Community's average water withdrawal rate between 1970 and 1985;

— *Tourism:* a 60 % increase in Mediterranean tourism projected by 2000 (reference year 1990).

Need for a new impetus

The previous four Community action programmes and the measures taken to implement them have had considerable merit in formal or legal terms and have achieved certain environmental improvements in objective terms. Furthermore, many of the actions decided upon to date still have some time to run before they show their full effects on the general state of the environment.

Nevertheless, whether because they have not had sufficient time to show full results or because they are not being fully implemented throughout the Community, many of the existing instruments are not satisfactorily coping with current levels of environmental degradation. Moreover, most of them have not been designed to meet the additional burden expected to emanate from the upsurge of economic activity following on completion of the Internal Market and concomitant energy, transport and other demands, and the changes which are occurring in Central and Eastern Europe.

The time has come for Community environmental policy to move into a new gear!

CHAPTER 2

THE FIFTH PROGRAMME: A NEW STRATEGY FOR THE ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

The overall objective of the Community is the improved and continued welfare of all its citizens. Together with political, economic and monetary union the Internal Market is designed to hold constituent Member States and their peoples together and to motivate and provide the framework for their socio-economic growth. The long-term success of the Internal Market will be dependent upon the relative contributions of the industrial, energy, regional development and agricultural policies and the ability of the transport policy literally to deliver the goods. All of these policies are inter-dependent; the ultimate limiting factor for continued efficiency and growth as they interface with one another is the tolerance level of the natural environment.

Behind the strategy set out in this Programme is the ultimate aim of transforming the patterns of growth in the Community in such a way as to reach a sustainable development path. Among other things this implies that

— it be recognized that continued human activity and further economic and social development depend on the quality of the environment and its natural resources and on their satisfactory guardianship;

— since the reservoir of raw materials is finite, the flow of substances through the various stages of processing, consumption and use should be so managed as to facilitate or encourage optimum reuse and recycling, thereby avoiding wastage and preventing depletion of the natural resource stock;

— the behavioural trends of citizens within the Community should reflect an appreciation that natural resources are finite and that one individual's consumption or use of these resources must not be at the expense of another's; and that neither should one generation's consumption be at the expense of those following.

The implementation of such a strategy of sustainable development will require a considerable change in almost all major policy areas in which the Community is involved. It requires that environmental protection requirements be integrated into the definition and implementation of other Community policies, not just for the sake of the environment, but also for the sake of the continued efficiency of the other policy areas themselves. The interdependence of the various policy areas, resources and sectors is depicted in *Figure 1.*

In accordance with the European Council's Declaration 'The Environmental Imperative' the guiding principles for policy decisions under this Programme derive from the precautionary approach and the concept of shared responsibility, including effective implementation of the 'Polluter Pays Principle'.

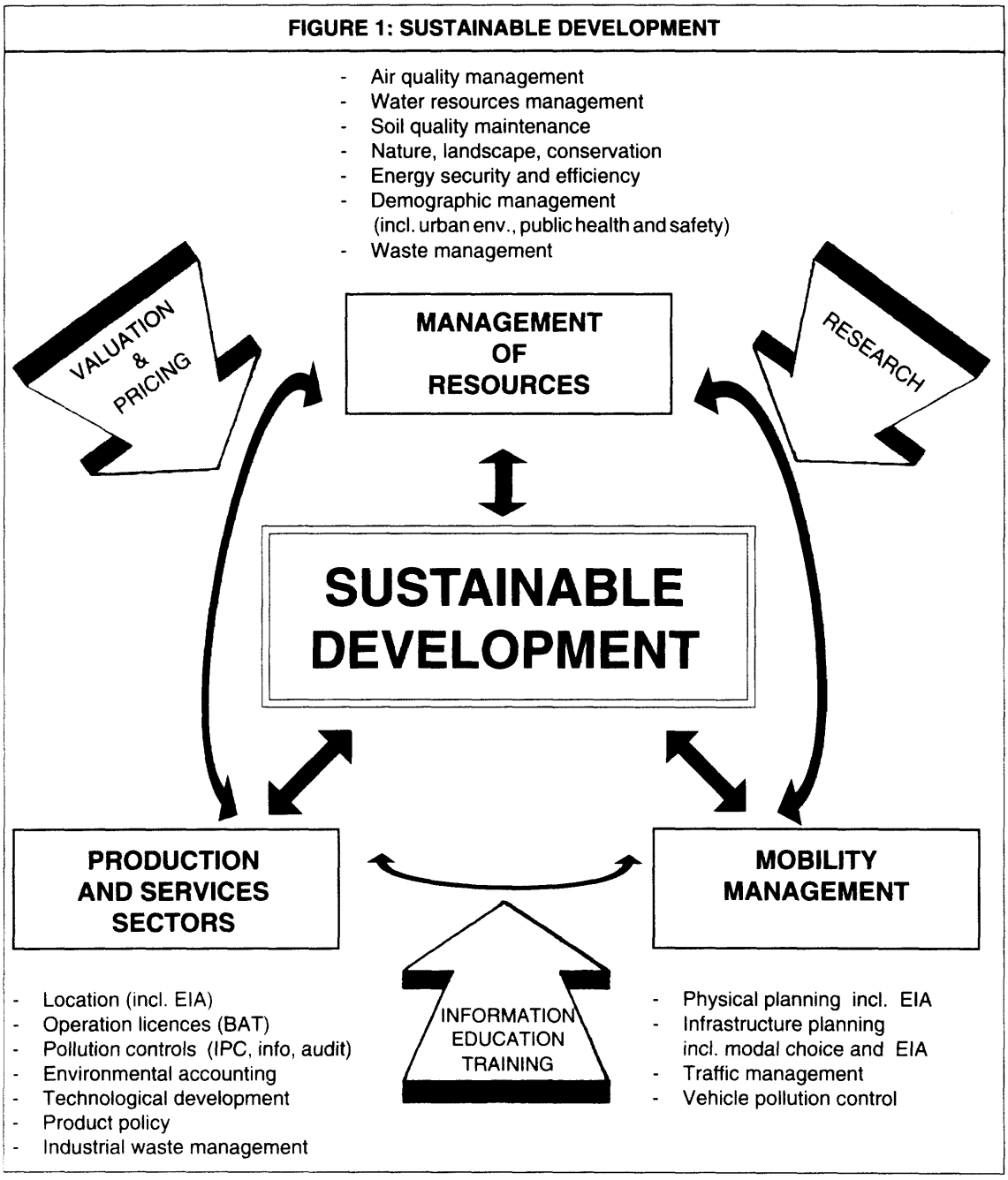
This Programme continues to address major environmental issues such as climate change, acidification, water pollution, soil degradation and erosion, waste management, etc. However, rather than be directed solely at these issues, the strategy of the Programme is to create a new interplay between the main groups of Actors (government, enterprise, public) and the principal economic sectors (industry, energy, transport, agriculture and tourism) through the use of an extended, and integrated, range of instruments. This can best be done effi-

ciently within the Community framework. Without an overall Community framework within which all these activities can be integrated and coordinated there is a danger that the actions carried out by individual Member States or regions, or by other actors will not have their full impact, or that the integrity of Community achievements or actions in other policy areas, notably the Internal Market, could be called into question.

For each of the main issues, *long-term objectives* are given as an indication of the sense of direction or thrust to be applied in the pursuit of sustainable development, certain *performance targets* are indicated for the period up to the year 2000 and a representative selection of *actions* is prescribed with a view to achieving the said targets. These objectives and targets do not constitute legal commitments but, rather, performance levels or achievements to be aimed at now in the interests of attaining a sustainable development path. Neither should all the actions indicated require legislation at Community or national level.

Sustainable development is a goal which will not be achieved over this Programme alone, but if effectively implemented, the Programme should mark a significant step on the way towards it.

FIGURE 1: SUSTAINABLE DEVELOPMENT



CHAPTER 3

THE ACTORS

Up to now, Community action programmes on the environment have largely been based on legislation and controls involving government and manufacturing industry. The concept of shared responsibility requires a much more broadly-based and active involvement of all economic players including public authorities, public and private enterprise in all its forms, and, above all, the general public, both as citizens and consumers. The ultimate objective in the involvement of and interplay between these economic players (and in the employment of a broader range of instruments which will include, in particular, market-related incentives) is to strike a new balance between the short-term benefit of individual persons, companies and administrations and the longer-term benefits of society as a whole. The principle of subsidiarity and the concept of shared responsibility, which will be applied in the endeavour to strike this new balance, are discussed in Chapter 8 below.

3.1. Public authorities

The rôle of government is a determinant not only in relation to legislation. It is equally important in economic planning and in setting conditions for economic development, land use management, accessibility of information, education and training, market influence through taxation policies on products (e.g. tobacco and fuels), etc. Further, while there are substantial differencies in the system of public administrations in the Community, in most member states the public authorities also act as operators of public enterprises, such as road networks, railways, airports, and the electricity production sector. In the general endeavour to achieve sustainable development, Governments have particularly onerous responsibilities both in respect of state owned and controlled activities and also in creating the necessary framework and conditions, in providing incentives and in removing obstacles so as to enable the individual and private enterprise to play their respective roles.

Local and regional authorities have a particularly important part to play in ensuring the sustainability of development through the exercise of their statutory functions as 'competent authorities' for many of the existing Directives and Regulations and in the context of practical application of the principle of subsidiarity. Some fields where local and regional authorities can play a decisive role are:

— *Spatial planning:* application of sound planning principles so as to safeguard areas of value, including nature reserves and landscapes, to improve urban fabric and circulation, and to optimise energy and transport efficiency;

— *Economic development:* most authorities have some function in stimulating economic development in their areas. An appropriate degree of prudence can ensure sustainable use of the resources necessary for that economic development to take place and to prosper;

— *Infrastructural development:* local and regional authorities are primarily responsible for the planning, provision and management of roads, water supplies, waste water treatment etc. and, accordingly, are particularly well placed to influence the location, type and impact of physical development;

— *Control of industrial pollution:* through responsible use of planning permissions, emission, discharge and operating licenses, clean technologies, right of access to environmental information etc.;

— *Waste management:* strict application of the recognised ranking order in waste management — prevention, re-use and recycling, combustion as fuel, disposal by incineration and landfill — would serve both to reduce waste disposal problems and to save energy and raw materials;

— *Transport:* transport and traffic plans should be fully integrated into the overall planning process;

— *Public information, education and training:* local and regional authorities, on the basis of existing Community legislation on public access to environmental information, can facilitate greater public involvement in environmental protection and in the improvement of public confidence; those which have direct responsibilities in the field of education have particular opportunities and responsibilities in respect of public awareness and behaviour;

— *Internal auditing:* administrations need to critically analyse their own operations, e.g. public services, siting of offices, purchasing policies, choice of vehicles and equipment, energy conservation, environmental auditing and communication of information to the public.

Where applicable, Central Government should apply the above principles and measures to their own administrations and decisions (e.g. planning, information, education, training, internal auditing). Finally, it will be imperative to commit the necessary resources at central, regional and local levels to ensure practical implementation.

3.2. Public and private enterprise

Depending on their nature, virtually all enterprises use natural resources for their processes and products, create various types and quantities of waste, and contribute to the pollution of air, water and soil. In limited cases only have the long term costs of these resources and of the pollution so far been internalized in the costs of operating a plant or in the price of the final product or service. It is clear that the perpetuation of this situation is not viable on either economic or environmental grounds. There is a growing awareness that industry's own interest is at stake: increasing demand for clean technologies and products will create new market opportunities, with particular advantages for innovational companies; industry also sees the advantages in terms of savings on resources and energy, where environmental considerations are integrated into management policy. Nevertheless it remains for the Community and the Member States to determine the framework and conditions for sustainable development.

In this Programme five areas of activity are singled out as target sectors. These sectors represent a large share of the overall economic activity; their co-operation and attitude is vital to paving the way towards sustainability. Notwithstanding the choice of certain key sectors, it should be clear that all enterprise will be expected to participate in the effort to move towards sustainability. The instruments to be developed and put in place will be designed to generate the broadest possible response.

A comprehensive policy relating to consumer products will be important if market mechanisms are to help change human behaviour towards the environment. In particular, it is essential that enterprises become more conscious of the extent to which their products and packaging become waste, and that they accept responsibility for such waste. The proposed Community-wide eco-label should encourage industry to design and manufacture products which have reduced environmental impacts. Policies should be developed in a way which will also serve to facilitate consumers in making informed choices on the basis of safety, quality, durability and general environmental implications. In this context the retail sector will have to take up its part of the responsibility.

Financial institutions which assume the risk of companies and plants can exercise considerable influence — in some cases, control — over investment and management decisions which could be brought into play to the benefit of the environment.

3.3. The general public

Each member of the general public has a number of crucial roles to play:

— as an individual who may be concerned about the quality of the general environment, personal health and the quality of life of succeeding generations, and as a responsible citizen having the possibility of influencing policies and decisions;

— as a direct producer of pollution and waste within the home, as an employer or employee, as a commuter and in the pursuit of leisure interests;

— as a consumer of goods and services, since the causes of and solutions to environmental problems are often a function of consumer choice.

Before the individual can play his/her full potential role in practice, a number of conditions have to be met: good knowledge and information is essential to relate an individual's activities to environmental pollution or protection as the case may be; awareness campaigns will be needed to remedy this situation. Good intentions will not produce the desired results unless alternatives exist, for example, separate collections of waste, reliable public transport systems, etc.

With respect to the choice of products and services, certain practical obstacles will have to be overcome: the more ecological friendly product may not be available where one normally does the shopping, or, if available, the price may be higher than the more polluting ones. (It is clear from the example on the differential pricing of unleaded and leaded fuel that, if the price is attractive, the consumer has incentive to make a choice in favour of the environment). And, in order to gain and retain the confidence of consumers, environmental claims must be well founded and be accompanied by neutral information regarding the characteristics of products.

The active involvement and participation of non-governmental organisations (NGOs), both environment and consumer oriented, as well as trades unions and professional associations will be crucial to the general process of awareness-building, to the representation of public interest and concern, and to the motivation and engagement of the members of the general public themselves.

CHAPTER 4

SELECTED TARGET SECTORS

As indicated in the Chapter on Actors above (see Public and Private Enterprise) five target sectors are selected for special attention under this Programme. These sectors have been chosen because they are sectors where the Community as such has a unique role to play and where a Community approach is the most efficient way to tackle in an overall way the problems these sectors face. They are also chosen because of the particularly significant impacts that they have or could have on the environment as a whole and because, by their nature, they have crucial rôles to play in the attempt to achieve sustainable development. These factors are more fully dealt with in Chapter 5 and in the material which follows immediately below on the target sectors themselves.

4.1. Manufacturing industry

The industrial sector accounts for approximately 25 % of the Community's wealth and industrialization is a key element of development strategy both within the Community and at wider international level. But in its exploitation of natural resources, consumption of energy, production processes and generation of both pollution and wastes, the industrial sector is among the principal causes of environmental deterioration. Insofar as the environmental consequences of industrial activity may exceed the tolerance level of the natural resource base it can limit or block further industrial development in a locality or region.

One of the primary goals of the Community's industrial policy is to create the framework and conditions for a strong, innovative and competitive industrial sector thereby ensuring the competitivity and sustainability of Europe's industries in the global market-place. It is not in the overall interest of the Community to sacrifice long-term economic and social rewards for the sake of short-term financial gains.

Previous environment measures have tended to be proscriptive in character, with an emphasis on the 'thou shall not' rather than the 'let's work together' approach. As a consequence, there has been a tendency to view industrialization or economic development and environmental concern as being mutually hostile. Against the background of deepening concern for the environment and natural resources, and realisation of the negative economic effects of environmental degradation, it is now clear that environmentally sound industry is no longer a matter of luxury but rather a matter of necessity. It is equally clear that many sectors of industry are themselves becoming more appreciative of their relationship with and responsibility for the environment and the natural resource base. One of the key messages of this Programme is that in the field of environment, industry must not only be part of the problem but also part of the solution.

In order to ensure that optimum conditions exist for continued economic growth within the Community and that Community industry can identify the necessary long-term strategies to remain economically competitive it is essential to view environmental quality and economic growth as mutually dependent. For industry, a soundly based, comprehensive environment policy can contribute to optimisation of resource management, public confidence building and development of market opportunities. Many of the new clean and low-waste technologies not only reduce pollution substantially, but economize on the consumption of raw materials and energy to such extent that cost savings can more than offset initial, higher, investment costs and thereby reduce unit production costs. A case in point is represented in the development and use of new techniques in the field of genetic engineering and biotechnology: these offer considerable potential for useful applications in agriculture, food processing, chemicals and pharmaceuticals, environmental clean-up and the development of new material and energy sources. In recognition of the importance of this particular sector, the Commission published a Communication in 1991 promoting a competitive environment for industrial activities based on biotechnology within the Community [1].

The combination of an advanced technological society with a vigorous, creative and adaptive manufacturing base which lies at the core of the European Community's economic well-being and underpins its political stability, can bring about better distribution, better communications, greater personal choices and should ultimately guarantee better health and an improved quality of life.

Under this Programme the dual approach of high environmental standards combined with positive incentives to even better performance should be applied in a coordinated manner to the different points in the *research-process-production-marketing-use-disposal chain* where industry, and industrial products, may impact

[1] SEC(91) 629, 19. 4. 1991.

upon the Community's environmental resource base. For successful translation of this sequence into a sustainable one, the environment has to be part of education and vocational training for all the actors involved in the chain, with special emphasis on researchers and production engineers.

A new sense of direction and thrust will be given to the environment/industrial policy interface by the institution of a comprehensive, integrated 'package' of measures, including existing provisions, comprising the following elements:

— a strengthening of the dialogue with industry;

— improvement of physical and strategic planning including assessment of environmental implications of plans and programmes;

— improved management and control of production processes including a system of licensing linked to integrated pollution prevention and control, environmental auditing, effective environment valuation and accounting, use of best available technology, and introduction of market-based pricing systems for consumption and use of natural resources. In setting standards and conditions, due account will be taken of the lead-time needed to facilitate investment decisions;

— higher, more reliable product standards designed to ensure that the environmental impact of products during their whole life cycle is minimised using, inter alia, a Community-wide ecological labelling system;

— encouragement of voluntary agreements and other forms of self-regulation;

— effective waste management ideally should commence with the control of production processes; in this respect it is to be expected that the package of measures indicated for the production aspects will have a significant impact on both quantities and types of waste generated; other elements in the strategy will include reclamation of waste products by original producers or importers (which would also improve waste handling), continued research into recycling and reuse technology, with pilot projects in these areas; and norms for industrial waste incinerators and landfill sites to deal with threats posed by final disposal of wastes;

— finally, it is essential that the general public and the social partners are enabled to become more actively involved in the development and practical implementation of policy: this means that individuals be given all the relevant information necessary to enable them to exercise informed choices as consumers; they must also have access to environmentally relevant data (e.g. inventory of emissions, environmental audits, disclosure of environmental issues in the accounts of enterprises) to enable them to monitor the performance of industry and regulations alike.

Figures 2a and *2b* overleaf indicate how manufacturing industry will be required or encouraged by two different, but complementary forces to move towards environmentally-responsible production processes and products.

Figure 2a shows how various legislatively-based rules, standards and procedures will be applied to the different stages of the authorisation — production — appraisal chain so as to create a self-perpetuating inducement to progressively apply ever-improving standards.

Figure 2b has consumer awareness and choice as its central strength. The cycle is market-driven, self-regulatory and self-perpetuating. As indicated it would serve not only the private consumer but also other companies wishing to gain or enhance their own eco-rating. The potential effectiveness of this model depends on the availability of choice and of objective appraisal and information.

In considering this package to ensure the sustainability of the industrial sector and to provide for continued industrial and economic growth, special consideration will be given to the position of small and medium enterprises and the matter of international competitiveness.

Small and medium enterprises

In relation to small and medium enterprises discrimination in respect of the measures outlined may not be either desirable or necessary on the grounds, inter alia, that

— pollution is not the prerogative of large installations; in aggregate, small plants also cause their share of pollution and waste;

— many survive on the demand created by large firms which will be obliged to tighten up their processes and meet the overall criteria of the ecological labelling system;

— in competition for investment finances, small and medium enterprises cannot afford to be at a disadvantage vis-à-vis their larger rivals.

Nevertheless as far as possible a special effort will need to be made to avoid disproportionately burdensome administrative, financial or legal constraints which might impede the creation or development of SMEs. As far as

FIGURE 2a: Regulatory Process to Promote Environmentally - friendly and Competitive Industry

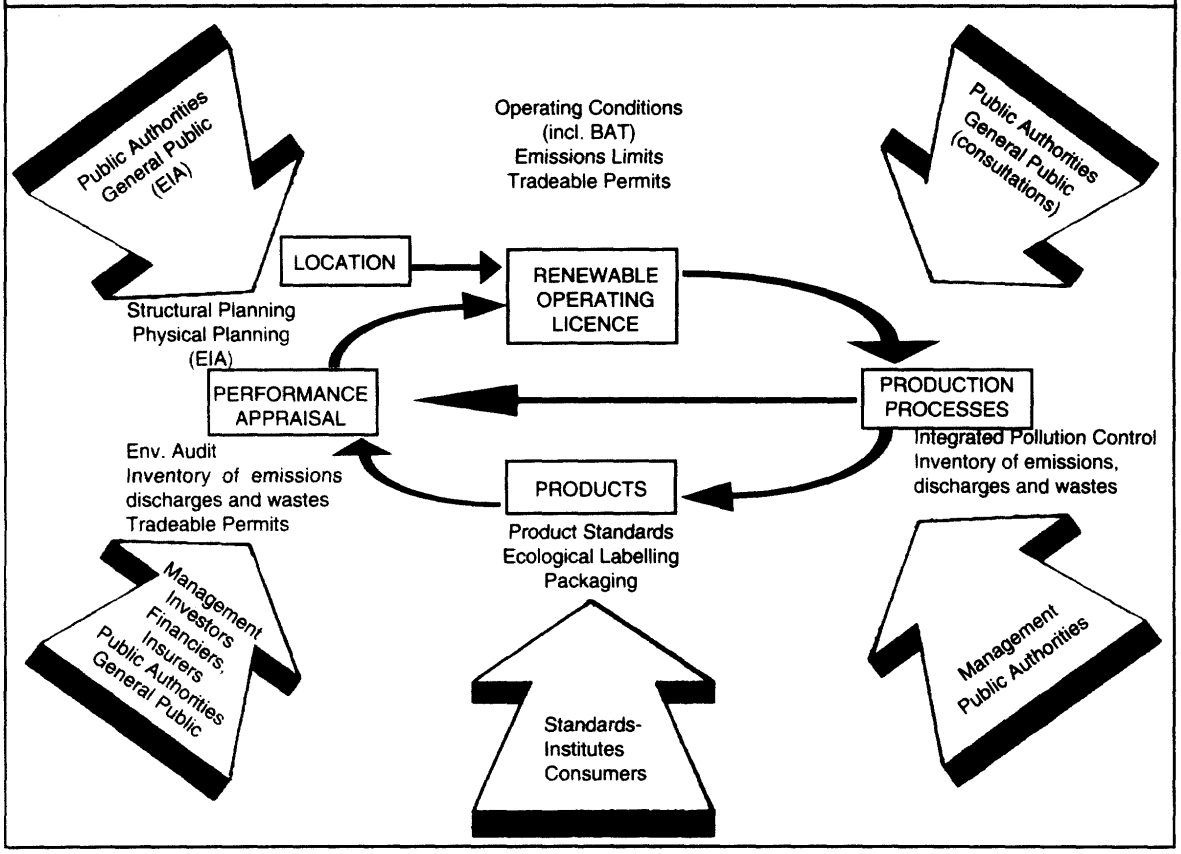
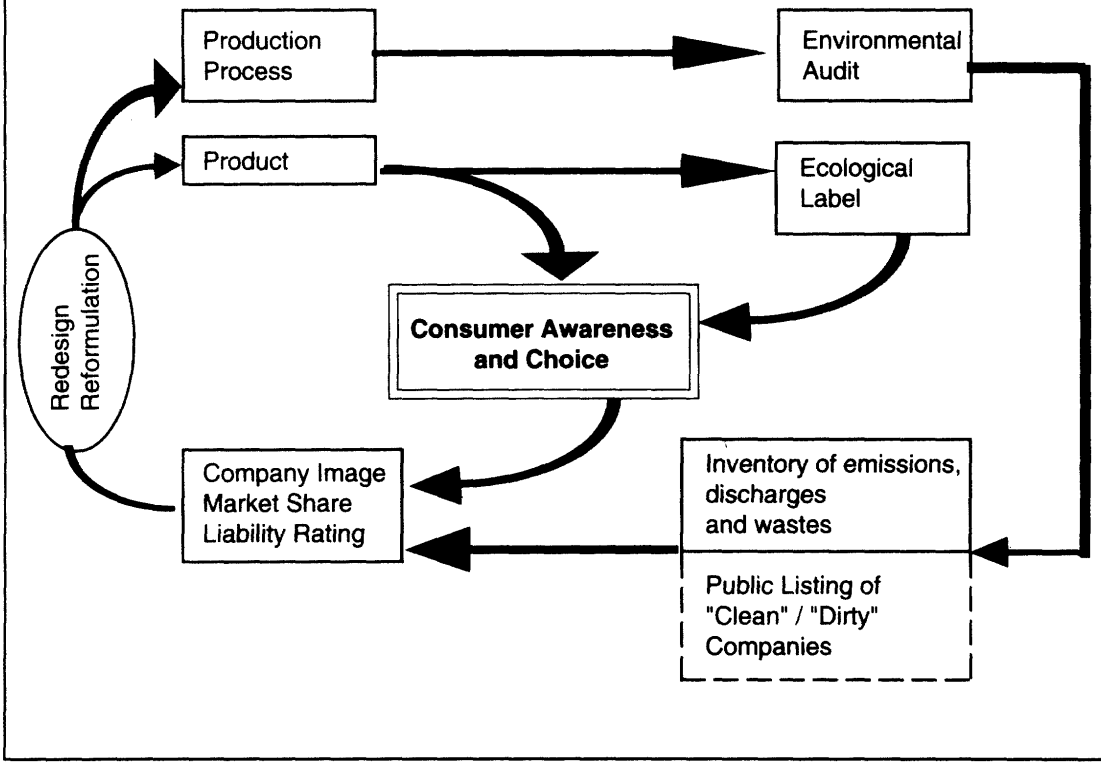


FIGURE 2b: The Potential of Consumer Power to Promote Ecologically-Sound Manufacturing Processes and Products



ongoing control measures are concerned, for example, it may be possible in appropriate instances to provide for some variations in the timeframes for adaptation or implementation (subject to normal Treaty requirements). In other cases, it may be possible to provide direct practical assistance, including provision of expert services, training programmes, etc. However, it should be borne in mind that their very size generally gives SMEs a greater level of flexibility and adaptability; adherence to the state of the art would, in many cases, give them an edge in highly competitive markets or, indeed, open new markets.

International competitiveness

On the question of international competitiveness, the perceived conflict between environmental protection and economic competitiveness stems from a narrow view of the sources of prosperity and a static view of competition. Rather than reduce competitive advantage, stringent environmental requirements can actually enhance it by triggering upgrading and innovation. Those countries which have the most rigorous requirements mostly lead in exports of the affected products and technologies. With particular reference to the issue of global competitiveness, the decision by Japan's Ministry of International Trade and Industry (MITI) to launch an action programme for the 21st Century entitled 'The new Earth 21' requires a firm response from the Community if our competitive position in the global market-place is to be maintained.

Turning environmental concern into competitive advantage is one of the objectives of 'Towards Sustainability'. By aiming at reduction and elimination of pollution and at prevention, recycling and reuse of waste rather than just abatement or clean-up and by creating a broader mix of instruments, including market incentives, thereby avoiding constraints on the technologies used to achieve higher standards, environment policy can stimulate investment, innovation and competitiveness rather than stifle them.

In mid-1992 the Commission will submit a comprehensive Communication to the Council of Ministers on industrial competitiveness and protection of the environment which will further develop this theme and propose areas for action in the industrial field.

4.2. The energy sector

The Community's energy sector continues to be confronted with local and regional environmental problems such as acidification. In addition, concerns about the global aspects of energy policy and their effects on the environment are growing in importance. A long-term strategy must be devised which ensures that solutions for one problem do not exacerbate another. The global challenge of the future will be to ensure that economic growth, efficient and secure energy supplies and a clean environment are compatible objectives. Energy policy, therefore, will be a key factor in the achievement of sustainable development.

Recent UN projections relating to the world population are that it will rise from 5 billion people in 1990 towards 10 billion in 2050. Consequential energy projections indicate that energy demand will increase from around 9 billion tons of oil equivalent (toe) in 1990 towards 20 billion toe in 2050 under a conventional wisdom scenario or towards 13 billion toe under a high energy efficiency scenario.

Even though there will be regional adjustments of the energy shares (1), these developments will still have a quite drastic impact on the environment at large. In both energy scenarios the projected use of coal will result in considerably increased emissions of greenhouse gases, in particular CO_2. The lower level (13 billion toe) would result in a 60 % increase of CO_2 emissions on global level.

The projected future energy growth based on the conventional wisdom scenario would create considerable stresses for security of energy supply. These would be particularly severe in those developing countries which do not have indigenous energy resources and the aim would probably be unachievable unless there is a different approach to nuclear power, to greater use of waste related energy sources or unless there is a breakthrough in the development and penetration of alternative energy technologies such as renewables (biomass, solar, wind etc.). The high efficiency scenario will require a dramatic change in attitudes to energy use and would force industrialized countries to achieve even higher efficiency gains than during the period 1975-1985.

Global energy and environmental improvements can only be realized if major improvements are also achieved in the developing countries and in Central and Eastern Europe. A critical issue in this context is the need to

(1) The developing countries will account for 46 %, the currently developed world 16 %, (41,6 % in 1990) and the Central and Eastern European countries 11 % (24 % in 1990).

transfer finance, technology and know-how to those countries to help them to control the evolution in their energy demand whilst safeguarding their right to sustainable development. The Community has already indicated its commitment in these areas in the conclusions of the Council of Ministers (Environment) of 12 December 1991 relating to the United Nations' Conference on Environment and Development. The European Energy Charter which expresses inter-dependence in the energy field and awareness of the shared responsibility for supply and for the environment, can also make an important contribution. The countries of Central and Eastern Europe would obtain the assistance they need for economic recovery and for obtaining energy supplies under conditions allowing a cleaner environment, a better balance between different energy sources, and a more efficient use of energy.

On the EC level, the Commission in 1990 presented four scenarios identifying the range of influences at work which could affect the direction of energy demand and supply over the longer term (1). Of these four scenarios, the two most contrasting paths along which our energy future may develop are of immediate importance for strategy formulation: a conventional wisdom scenario and a high prices scenario. These scenarios do not yet take account of the unification of Germany. For a number of reasons induding this, the scenarios are at present being updated. The results of this revision will be available by mid-1992.

(1) Energy in Europe, Energy for a new century: the European perspective, July 1990.

EXPLANATION OF SCENARIOS AND THEIR IMPLICATIONS

Scenario 1, otherwise referred to as the 'business as usual' scenario with low economic growth and no new major environmental and energy policy initiatives.

Scenario 4, otherwise referred to as the 'high prices' scenario with same growth as under scenario 1, but with rapid increase of energy efficiency, a significant increase in nuclear power, gas-fired plants replacing coal-fired units plus an increased energy price to consumers through for example, an energy/carbon tax.

On the basis of these scenarios, the estimates for total EC-12 energy consumption (in million toe) and emissions into the air (in million tons) in 2010 would be:

Table 1

	Consumption	CO_2	SO_2	NO_x
1990	1 148,33	2 738,00	12,23	10,38
2010 Scenario 1 (conv. wisd.)	1 376,59	3 143,25	6,56	7,85
2010 Scenario 4 (high prices)	975,59	2 098,37	4,32	4,35

On the bases of the predictions offered, only Scenario 4 or a similar one would meet the agreed CO_2 stabilization target for 2000 by reference to 1990 levels and could achieve further reductions of the order of 25 % by the year 2010 on the basis of present day knowledge and anticipated technology, and considerable structural and behavioural changes.

SO_2 emissions have been in decline since the beginning of the eighties and will continue to fall substantially in the future as a consequence of Community and national environmental legislation, energy efficiency improvements and the use of cleaner fuels. NO_x emissions will also be reduced up to the year 2010, though, less drastically than SO_2 emissions. However, even these reduced SO_2 and NO_x emissions are expected to cause environmental problems in many areas of the Community on national, regional and urban levels by exceeding critical acidification loads as shown under paragraph 5.2 of the Chapter on the Themes and the Targets of this Programme. Therefore even greater efforts are required to reduce emissions to sustainable levels. In the case of NO_x, some additional reductions can be realized in the power generating sector and manufacturing industry; considerably greater reductions could be achieved in the transport sector, mainly through structural and behavioural changes. For SO_2 the greatest scope for reductions on present levels lies in the power generating sector (where certain regulatory measures are already in force, but not yet fully implemented) and in the manufacturing industry sector.

The achievement of practical results in the field of energy requires a strategic perspective well beyond the year 2000. The key elements of any strategy for the short-to-medium term would be an improvement in energy efficiency and the development of strategic technology programmes, including R & D, moving towards a less carbon-intensive energy structure including, in particular, renewable energy options. These elements have already been the subject of a Communication from the Commission to the Council in November 1989 'Environment and Energy' (1). The Commission in another Communication 'A Community Strategy to limit Carbon Dioxide emission and to improve energy efficiency' (2) has made a number of proposals which have received the general support of the Council. Among the measures envisaged within an overall strategy are the introduction of economic instruments, which would require that the real costs of consuming energy are passed on to the user (for example through a CO_2/energy tax); better information, education and training for end-users; agreements with industry relating to codes of conduct (at EC level, codes of conduct have already been concluded in the electricity, coal, oil and natural gas sectors) and improvement of efficiency; energy efficiency standards for all kind of products and appliances, energy saving programmes and building insulation standards (in conformity with the already adopted SAVE and PACE Programmes); further study on the environmental aspects of nuclear energy; new energy technologies and the promotion thereof (on the basis of the THERMIE and JOULE Programmes) and further promotion of use of renewable energy (as has been proposed in the ALTENER Programme).

(1) COM(89) 369, 8. 2. 1990.
(2) SEC(91) 1744 final, 14. 10. 1991.

The task for the future is to vigorously implement the programmes mentioned and, where necessary, to review, intensify and enlarge them.

Table 2 sets out the measures necessary up to the year 2000, the instruments needed to be developed as from 1993, and the actors involved, in order to make the first important steps to the achievement of a sustainable energy policy.

4.3. The transport sector

Transport is vital to both our economic and social well-being. It is essential to the production and distribution of goods and services, as well as to trade and regional development. Transport has made a major contribution to economic growth in the Community. It has enabled the achievement of important economies of scale in production and led to increased competition. In the Community, the transport sector accounts for approximately 10 % of the Gross Domestic Product and represents 9 % of employment (these figures include transport for own account of both goods and persons as well as the production of transport means and creation and maintenance of infrastructure). Since 1970 the overall annual growth in inland transport has averaged 3,1 % for passengers and 2,3 % for goods. Both in absolute and relative terms the increase in road transport has been much higher than for the other inland transport modes. Since 1980 the increase in air passenger transport has averaged 6,2 % per annum.

Despite the crucial importance of the sector, a situation has been allowed to evolve in many parts of the Community, especially in the larger urban and industrial areas and along many of the principal traffic arteries, wherein imbalances in terms of disproportionate mobility by road, excessive traffic and congestion, uncoordinated infrastructure planning as well as inefficient use of existing transport capacity are symptomatic for the transport market and has already led in many areas to a form of *rationing by congestion.*

Present trends in road and air transport are all leading towards even greater inefficiency, congestion, pollution, wastage of time and value, damage to health, danger to life and general economic loss. Physical constraints — mainly environmental constraints — are such that it will not be possible in the future as it was in the past, to base transport policy on the demand side of the equation.

Transport is never environmentally neutral, since all modes of transport have varying degrees of impact on the environment. Emissions of transport — primarily road and air traffic — represent a very high share of the

Tabel 2: Energy

Measures up to 2000	Instruments	Time-Frame	Actors
Awareness building and incentives aimed at sustainable energy use and behavioural changes	— information to, education and training of end-users	1993 ⇒	*MS* + EC + public + *Energy sector*
	— agreements with industry on efficiency	ongoing	*MS* + Industry + EC
	— codes of conduct to be adopted by the actors concerned	ongoing	*Energy sector* + MS + Industry + EC
	— economic and fiscal instruments	ongoing	*EC* + MS
	— removal of restrictive rules	1993 ⇒	*MS* + EC
Energy efficiency programmes	Implementation of PACE, SAVE and national efficiency programmes, including:	ongoing	*EC* + MS + Industry + Energy sector
	— least cost planning		*Industry* + Energy sector
	— energy efficiency standards for appliances, products and vehicles		*EC* + MS + Industry + Transport sector
	— efficiency standards for energy technology		*EC* + Industry
	— buildings insulation standards		*MS* + Industry + EC
	— minimization of methane leakages from natural gas distribution systems		*MS* + *Energy sector*
Technology programmes	Implementation of THERMIE and JOULE programmes, including:	ongoing	*EC* + MS + Industry + Energy sector
	— R & D of new energy technologies and promotion and use thereof		idem
	— R & D on renewables (i.e. biomass)		idem
Promotional programme	ALTENER: promotion of renewable energy	1993 ⇒	idem
	— pilot projects and standardisation		
Nuclear safety programmes	Study on safety and waste aspects of neculear energy	ongoing	*EC* + MS + Energy sector

overall emissions: about 90 % of all lead emissions, about 50 % of all NO_x emissions and about 30 % of all VOC emissions. In urban areas, traffic causes almost 100 % of the CO emissions, 60 % of HC and NO_x emissions, 50 % of particulate emissions, and about 10 % of SO_2 emissions. Transport emits 22 % of all CO_2 emissions. Of this, 80 % emissions arise from road transport and more than 55 % for the private car alone. Furthermore, the transport sector — in particular, road and air traffic — is reckoned to be the biggest contributer to the problem of noise.

Recent EC legislation on exhaust emissions of cars and trucks will result in a substantial reduction of pollution by individual vehicles. However because of the projected increases in the volume of cars used, the mileages driven and increases of road freight traffic, the transport sector's share in overall emissions will increase from 22 to 24 % of CO_2, from 4 to 12 % of SO_2 and from 58 to 59 % of NO_x and thereby will offset any potential reductions attributable to the introduction of the new emission standards.

Transport demand and traffic are expected to increase significantly with the completion of the Internal Market, the political and economic developments in Central and Eastern Europe and the development of the European Economic Area. The efficacity and sustainability of transport policy itself in the future will be in direct proportion to the quality of the relationship between transport and the environment. It will be essential to pursue a strategy aimed at reducing — or at very least containing — the overall impact of transport on the environment.

In particular it will be necessary to reduce operational pollution, limit the impact of infrastructural development on land use (1), reduce traffic and congestion (especially in urban areas) and prevent or reduce risks inherent in the transport of dangerous goods and wastes. The Commission has recently published a Communication on

(1) Excluding the surface area of intersections, junctions and carparks, the road network takes up about 3,1 % of the Community's total area; excluding land used for railway stations and marshalling yards, the railway network takes up 0,1 % of land.

transport and the environment (1), which, inter alia, proposes a strategy for 'sustainable mobility' involving a combination of:

— improved land-use/economic development planning at local, regional, national and transnational levels, to reduce the need for mobility and allow for the development of alternatives to road transport;

— improved coordination in the planning of and investment in transport infrastructure networks and facilities; incorporation of the real costs of both infrastructure and environment in investment policies and decisions and in user costs and charges;

— improvement of competitive position of environment-friendly modes, such as railways, inland and sea navigation and combined transport;

— development of urban transport, which gives priority to collective transport and to adequate link-up between the different stages of journeys;

— continued technical improvement of vehicles and fuels;

— promotion of more environmentally rational use of the private car, and changes in driving rules and habits, including speed limits.

Implementation will be a matter for all levels of administration and society, right down to the individual car owner — a true sharing of responsibilities. But effective results will ultimately depend on the complementarity of measures and efforts. For instance, private driving habits are largely a function of effective choice which is dependent upon the availability of alternative modes of transport, the quality of infrastructure, the cost of parking etc. Information and education programmes alone will achieve relatively little if the effective choice is restricted. Likewise, professional road hauliers will have little option but to continue to use the road system so long as the location, delivery times and condition of cargoes cannot be guaranteed by other modes of transport. In this connection, the railway system will only play a full rôle in the servicing of the Internal Market, if a satisfactorily coherent Community-wide network can be created between the various national or semi-state railway companies and if there is some form of integrated logging and tracking system where goods, materials and waste cargoes are concerned. Optimisation of transport modes and infrastructure facilities, networks and investments can serve private, corporate, national economic, Internal Market and environmental protection interests side-by-side.

Table 3 gives an indication of measures and instruments needed, the actors involved on different levels but acting in partnership, and the time-frame envisaged.

4.4. The agriculture sector

Agriculture, together with forestry, occupies more than 80 % of the territory of the Community. Traditionally, the farmer is the guardian of the soil and the countryside. By careful husbandry, including integrated crop and livestock farming and waste management, farmlands are passed in sound condition from one generation to the next. Agriculture has shaped and indeed continues to shape the European countryside and has set much of the foundation of European culture.

Just as in the case of manufacturing industry and transport, however, the agricultural sector and farming practices have undergone significant modernisation and change during this century, and more particularly over the last forty years. Among the factors which have brought change are the drift of rural populations to cities and towns, increased mechanisation, improved transport, improvements in seed quality, crop protection and animal strains, international trade and competition in food products and feed-stuffs.

Against this background, the Community's Common Agricultural Policy (CAP) has been developed and adapted so as to fulfill the objectives of the Treaty of assuring the availability of food supplies at reasonable prices, the stabilisation of markets and a fair standard of living for the agricultural Community. However, while the achievement of these objectives has been greatly promoted by the CAP's price support mechanisms, the same instruments are now seen to be having some less positive side-effects.

One of these effects has been an over-emphasis in some areas on production levels with consequential over-intensification. This, in turn, is leading to overexploitation and degradation of the natural resources on which agriculture itself ultimately depends: soil, water and air. In crop production, systematic use of plant protection products has led to a relative resistance in parasites increasing the frequency and the cost of subsequent treatments and causing additional soil and water pollution problems. In certain areas of the Community, large quantities of fertile top soil are lost every year because of erosion due to inappropriate management of the land. In livestock farming, animal diseases have become more difficult to deal with, as genetic uniformity and concentration in space of holdings have increased. Animal wastes create more and more problems of water

(1) COM(92) 46 final, 20. 2. 1992: Green paper on the impact of Transport on the Environment, a Community strategy for 'Sustainable mobility'.

Tabel 3: Transport

	Measures up to 2000	Instruments	Time-frame	Actors
(a) Infrastructures	— Land-use planning	EIA	2000	*MS/LAs*
	— Infrastructure investments urban transport, trans-shipment facilities, rail enhancement, goods handling, inland water ways/sea traffic	Structural funds	1995	*MS/LAs* + EC
	— Infrastructure charging	Road taxes and different forms of road pricing	1993	*MS* + EC
(b) Fuels and vehicles	Progressive technical improvement of vehicles:	R & D	before 1995	*Industry* + EC
		— regulation	2000	*EC* + MS
	— exhaust and noise emissions, fuel consumption, performance, final disposal	— vehicles testing (contr. techn.)	before 1998	*MS* + EC
		— Recycling of parts	2000	*Industry*
		— Fiscal incentives	2000	*MS* + EC
	Composition and consumption of fuels:	R & D	before 1995	*Industry* + EC
		— Fiscal incentives	2000	*MS* + EC
	— alternative fuels, cleaner fuels	— regulation	1995	*EC* + MS
	— complete move to unleaded petrol by 2000			
(c) User behaviour	— driver information and education on a more rational use of the car	— campaigns in media, speed limits and other physical constraints	ongoing	*LAs/MS* + EC + NGOs
	— improved public/collective transport	— investments, land use plans	2000	*LAs/MS* + EC + Transport authorities
	— discouragement of road traffic in cities	— charges, high parking fees	before 1995	*LAs* + MS + Public
	— development of economic and fiscal incentives	— car pooling e.g. positive discrimination (lower tolls) of car poolers)	idem	*Toll operating Companies* Public
	— development of inter-active communication infrastructures	— logging and tracking systems, electronic home, video conferences	ongoing	EC + MS + *Industry*

and soil pollution. Ground clearance and drainage are causing depletion of wetlands and reducing biodiversity. Excessive use of nitrogenous and phosphate fertilisers causes eutrophication in surface waters in many regions of the Community; the resulting algal blooms disturb the oxygen levels of the water with dramatic consequences for fish, feeding matter and the ecosystem in general as well as the use of the water for drinking and recreation purposes. Even in cases where specific regional or horizontal measures are introduced for soil protection their success is often compromised under the pressure of other market or structural measures. For example, efforts to protect heatherland and combat erosion in northern countries can fail because of overgrazing as a result of the headage payment schemes, particularly in the sheep sector.

Apart from the environmental degradation incurred, the present system generates surplusses at high costs to the

Community budget without improving the income situation of the European farmers. Given all of these circumstances, it is not only environmentally desirable, but it also makes sound agricultural and economic sense to seek to strike a more sustainable balance between agricultural activity and the natural resources of the environment.

This appreciation is clearly reflected in recent deliberations on the reform of the Common Agricultural Policy which, inter alia, have indicated that 'producing more' cannot be any longer considered as the central point of Community policy. The Commission's 1991 Reflection Paper on the development and future of the CAP (1) recognised the need to encourage extensification with the object of not only reducing surplus production but also of contributing to an environmentally sustainable form of agricultural production and food quality and formalising the dual role of farmers as food producers and guardians of the countryside. The Commission's subsequent proposals (2) include an agri-environmental action programme which encompasses several types of financial assistance designed to encourage farms to operate their land holding in an environmentaly-friendly way.

Forestry

In many regions of the Community, forests are not only a determinant factor for the environment, with different ecological and social functions, but are also a matter of considerable economic importance. The Community as a whole is the second greatest consumer of timber in the world. Of a total annual consumption of some 200 million m^3, Community production yields approximately 100 million m^3 i.e. it is only 50 % self-sufficient at present.

Notwithstanding this situation, the Community forests have long been neglected. Today, nearly 40 % of the total is suffering various degrees of ill-health caused mainly by acidification; IIASA studies (3) indicate EC (excluding Spain) harvest-loss attributable to air pollution of the order of 30 million m^3 per annum, with an estimated value of some 10 billion ECU. In addition, about 1 % of total forest area is destroyed each year by forest fires, the vast bulk of this being in the Mediterranean Region.

Against this background the Community, in 1989, adopted a forestry policy (4) designed to:

- protect the forest heritage against threat from acidification and fire;
- improve the productivity of forests;
- develop forest and forest-related activities, especially in rural areas;
- promote afforestation on agricultural land.

However, over the period covered by this Programme, it will be necessary to look beyond the concerns and actions referred to above and to draw a closer link between the Community's internal timber production and consumption patterns and its moral and political obligations to work towards the solution of global concerns about deforestation.

Long term objectives, medium term targets and measures needed in relation to agriculture and forestry are given in *Table 4.*

4.5. The tourism sector

Tourism is an important element in the social and economic life of the Community. It reflects the legitimate aspirations of the individual to enjoy new places and absorb different cultures as well as to benefit from activities or relaxation away from the normal home or work setting. It is also an important economic asset to many regions and cities of the Community and has a special contribution to make to the economic and social cohesion of the peripheral regions. Tourism represents a good example of the fundamental link which exists between economic development and environment, with all the attendant benefits, tensions and potential conflicts. If well planned and managed, tourism, regional development and environment protection can go hand in hand. Respect for nature and the environment, particularly in coastal zones and mountain areas, can make tourism both profitable and long-lasting.

Within the EC, tourism represents 5,5 % of GDP, around 5 % of export earnings and 6 % of total jobs, including more than 7 million full-time jobs. The development of the tourist sector is rather diverse in the Community. Over the last decade tourist activity has gone up by an average of 14 % of total nights spent. The increase is much more than average in the southern part of the EC. In the Alpine regions tourism has risen

(1) COM(91) 100 final, 1. 2. 1991.
(2) COM(91) 258 final, 11. 7. 1991.
(3) IIASA: International Institute for Applied Systems Analysis, Austria: Executive Report 17, February 1991.
(4) COM(88) 255; OJ No L 165, 15. 6. 1989.

Tabel 4: Agriculture and forestry

Objectives	Targets up to 200	Actions	Time-frame	Actors
Maintenance of the basic natural processes indispensable for a sustainable agricultural sectornotably by conservation of water, soil, and genetic resources	Standstill or reduction of nitrate levels in groundwaters.	Strict application of the nitrates directive	1994 ⇒	*MS* + AGR
	Reduced incidence of surface waters with a nitrate content exceeding 50 mg/l or giving rise to eutrophication of lakes and seas.	Setting of regional emission standards for new lifestock units (NH_3) and silos (silage)	ongoing	*MS* + LAs
		Reduction programme for phosphate use	1995	*EC* + MS
	Stabilisation or increase of organic material levels in the soil	Allocation of premiums and other compensating payments to be subject to full compliance with environmental legislation	1995 ⇒	*EC* + MS + LAs + AGR
Decrease in the input of chemicals to the point that none of these processes be affected	Significant reduction of pesticide use per unit of land under production and conversion of farmers to methods of integrated pest control, at least in all areas of importance for nature conservation	— Registration of sales and use of pesticides	ongoing	EC + *MS* + AGR
		— Control on sale and use of pesticides	1995	EC + *MS* + AGR
Equilibrium between input of nutrients and the absorption capacity of soils and plants		— Promotion of 'Integrated Control' (in particular training activities) and promotion of bioagriculture	1992 ⇒	EC + *MS* + AGR
Rural environment management permitting the meintenance of biodiversity and natural habitats and minimising natural risks (e.g. erosion, avalanches) and fires	15 % of agricultural area under management contracts	Programmes for agriculture/environment zones with premiums co-financed by FEOGA	1992 ⇒	*MS* + EC
		Protection of all endangered domestic animal races	ongoing	*MS*
	Management plans for all rural areas in danger	Re-evaluation of license conditions for irrigation and of state aids for drainage schemes	1995	*MS* + EC
		Training of farmers, promotion of exchange visits between regions with comparable environment management situations	1992 ⇒	EC + *MS* + LAs
Optimisation of forest area as to fulfill all their functions	Increase of forest plantation, including on agricultural land;	New afforestation and regeneration of existing forest, favouring the most adequate means for the environment (slow growing trees, mixed afforestation);	ongoing	EC + *MS* + LAs + *forest-oweners*
	Improved protection (health and forest-fires)	Further action against forest-fires	idem	idem

sharply to about 50 million people every year. As income levels and leisure time increase over the next decade, substantial growth is anticipated. This will have its effect over the whole of Europe with an emphasis on coastal and mountain zones, with the Mediterranean region taking a large share. Income increases are expected to trigger more second holidays, which may be short but are expected to take place in environmentally high quality surroundings.

The Mediterranean basin accounts for 35 % of the international tourist trade and is the world's leading tourist

area. According to the UNEP Blue Plan (1), the number of tourists in the Mediterranean region could grow to as many as 380—760 million per year in 2025, depending on the economic growth rates. This development would be in addition to predicted demographic changes in the area. 160 million of these tourists in the year 2000 and 260 million in the year 2025 would visit Mediterranean coastal areas, as compared to 55 million in 1984 and around 100 million in 1990. Estimates of the World Tourism Organisation confirm the projections of the Blue Plan. Both indicate that up to 90 % of any increase could accrue to Community Member States in the region. Such increases would require double the occupation of space by the year 2000 alone; the solid waste and waste water generated could more than triple by the year 2025.

These developments will have major implications for the environment, imposing tremendous pressures on habitats, transport facilities, coastal and mountain land, energy and water resources, and waste water treatment facilities, particularly at periods of peak demand. The coastal zones especially will face severe problems.

Overall environmental targets and longer term objectives directly related to tourism (other than otherwise required noise, water and air quality standards) are difficult to define since tourism can have both positive and negative effects on the environment and is very dependent on the individual consumer choice. The impact of tourism depends very much on the type of tourism, the behaviour of tourists and the quality of the tourist services. Most of the pressures on the environment stem from the mass tourism in coastal and mountain areas, which is likely to increase considerably over the next decades. It will be necessary therefore to develop national and regional integrated management plans for coastal and mountain areas.

Elements in these strategies which directly relate to the interaction of tourism and environment would be controls on land use, the setting of strict rules on new constructions, and fight against illegal housing, management of private traffic flows to and in the tourist areas, diversification of tourism, strict implementation and enforcement of environmental standards on noise, drinking water, bathing water, waste water and air emissions (including emissions in the hinterland of the tourist areas), creation of buffer zones around sensitive areas such as wetlands and dunes, better dispersion of summer holidays, awareness building and education of local people and tourists, and education and professional training of people involved in the management of the areas involved.

The realisation of such strategies will rely principally on measures to be taken by regional and local authorities, and the tourism industry. A Community Action Plan to Assist Tourism published by the Commission (2) includes a number of specific measures designed to link environmental protection and tourist development e.g.

— inventories of tourism resources in the Member States;

— improved staggering of holidays/seasonal spread of tourism;

— practical guides for the tourist industry and pilot projects in environmental tourism;

— development of a code of conduct for tourists;

— exchanges of information and experience in visitor management;

— environmental awards and prizes.

It is essential to place future growth of tourism within the framework of sustainability. If well planned and controlled, tourism, regional development and environment protection can go hand in hand. Recent examples such as the algal plague in the Adriatic Sea, which cost an estimated 1,5 billion ECUs in lost revenue from tourism and fishing in 1990, indicate clearly that the environment constitutes a very important economic resource, requiring to be well maintained and protected. Sustainable tourism, based on respect for nature and the environment can make a positive contribution to the prosperity not only of the tourist industry as such, but also of the surrounding regions and towards the economic and social cohesion of peripheral areas.

Table 5 gives an overview of the elements of a strategy on tourism, indicating which instruments need to be developed within what time-frame and by which combination of actors and target groups.

(1) UNEP'S Mediterranean Action Plan.

(2) COM(91) 97 final, 24. 4. 1991.

Table 5: Tourism

Objectives	Measures up to 2000	Instruments	Time-frame	Actors
Type of tourism	— Better management of mass tourism	— improved control on land use	1993 ⇒	*LAs*
		— strict rules for new constructions	idem	*LAs*
	— National and regional integrated management plans for costal and mountain areas	— management of traffic flows to in and from tourist areas	idem	*MS* + LAs
		— visitor management; exchange of expertise	1992/1993	idem
		— pilot models of sustainabel tourism	idem	idem
		— strict implementation and enforcement of environmental standards on noise, drinking water, bathing water, waste water treatment and air emissions	ongoing	*MS* + LAs + EC
		— creation of buffer zones around sensitive areas	1993 ⇒	*MS* + LAs
Behaviour of tourists	— building environmental awareness	— development and promotion of code of conduct	1993-1995	*MS* + *LAs* + *Tourist Industry* + EC
	— liberalisation of air and coach transport — TGV-network	— multi-media campaigns and conferences	idem	idem
		— EC transport policy and national transport policies	1993 ⇒	*EC* + MS
	— increase of marginal costs of use of private car and promotion of alternative transport modes	— economic incentives such as CO_2/energy tax and road pricing and encouraged use of public transport	1993 1993 ⇒	*EC* + MS *MS* + EC
	— better dispersion of holidays	— co-operation and exchange of information	before 1998	*MS* + EC + Tourist Industry
	— diversification of tourism (including rural and cultural tourism)	— national plan and regional plans	before 1995	*LAs* + *MS* + EC
		— EC-Regional Development Fund	idem	LAs + MS + *EC*
		— EC tourism action plan	idem	LAs + MS + *EC*
		— EC tourism Advisory Committee	idem	LAs + MS + *EC*
Quality of tourist services	— promotion new forms of tourism which care for the environment	— brochures	1993 ⇒	*Industry* + LAs
		— professional training	idem	idem
	— careful selection of accomodation	— pilot projects	idem	idem
	— building of environmental awareness of people involed in management of tourist areas	— professional training and education exchange of best practice	idem	*MS* + LAs + EC + Industry
	— building environmental awareness of local people and tourist services			

SUMMARY

It is appropriate to reiterate, at this point, that the designation of certain key target sectors is not intended to indicate an exoneration of other actors or sectors — ALL public and private enterprise is called upon to take up a due share of the responsibility for getting the new strategy under way and putting the overall programme into effect.

The strategic approach to the main target sectors is summarised in *Table 6*. The succeeding chapters of this document set out detailed objectives, targets and time-frames in respect of reductions of environmental impact and an expanded range of instruments designed to bring about the necessary changes in behaviour and trends.

Table 6: Programme framework for selected target sectors

Industry	Energy	Transport	Agriculture	Tourism	
Integrated pollution control — operating licenses — emission inventory — env. audits — env. charges — Clean and low waste technology	Reduction in pollution — specific targets for CO_2, SO_2, NO_x — econ and fiscal incentives — safe disposal of nuclear waste	Cleaner cars and fuels — emission limit values — economic and fiscal incentives — vehicle testing — reduction of evaporation	Ecologically sustainable farming — extensification — reduction of chemical inputs — organic farming — consumer information — econ and fiscal incentives	Sustainable tourism, land-use, infrastructure — drinking water — bathing water — waste management — sustainable mobility	Sectoral impacts
Reduced waste/better waste management — inventory of wastes — econ and fiscal incentives — deposit/return system — high standards for disposal — civil liability	Development of renewable sources — R & D and promotion of: — biomass, wind, wave, solar, hydro, geothermal	Rationalization of infrastructure — network planning — inter-modal choice — bottlenecks — communications	Forest development — systematic planting — fire protection — sustainable harvesting	Protection of coastal zones and natural manmade or built amenities — desertification — cultural heritage — forest fires — nature trails	Resources
Ecologically-friendly products — eco-label — product standards — consumer information — tax differentials	Reduction in energy consumption — econ. and fiscal incentives — cons. info and educ. — SAVE, THERMIE, JOULE — regulatory instruments — volunt. agreements	Improved driver behaviour — info and eduction — econ and fiscal incentives — choice of modes — traffic management	Rural development — land management control — rural tourism — inland fishing	Broader consumer choice — broader choice of options — better information — better seasonal spread of tourism	Behaviour

NB.: The instruments indicated above are not exclusive to the sectors in which they appear; they have been inserted in the sectors in respect of which they have the most obvious potential.

CHAPTER 5

THE THEMES AND TARGETS OF THE PROGRAMME

In this Chapter a number of themes are addressed. These are not intended as an exhaustive list of issues to be tackled within the Community over the period covered by the Programme. Rather, they represent matters of particular seriousness which have a Community-wide dimension, either because of Internal Market, cross-boundary, shared resource or cohesion implications and because they have a crucial bearing on environmental quality and conditions in about all regions of the Community.

Under each of the themes, long term objectives are given as an indication of the sense of direction or thrust to be applied in the pursuit of sustainable development. Given the present state of knowledge and particularly the absence of parameters for sustainability, these objectives are generally expressed in qualitative as distinct from quantitative terms.

As intermediate goals, certain targets are indicated, to be achieved within specified time-frames up to the year 2000. These do not constitute legal commitments but, as the term 'target' implies, performance levels or achievements to be aimed at now in the interests of attaining a sustainable development path.

The actions indicated for each theme represent a non-exhaustive list of measures to be taken in order to realize targets set for the period up to 2000.

Finally, the tables indicated which sectors/actors are seen to be most directly responsible for the actions described. In most cases an effort on different levels will be necessary to execute the set of actions needed to tackle a problem. This aspect is dealt with in greater depth in Chapter 8.

5.1. Climate change

While global in character, the climate change predicted as a consequence of increasing atmospheric concentrations of greenhouses gases will also pose serious problems for the Community itself (frequency of extreme meteorological events, sea level rise, heat and drought spells, etc.). Carbon dioxide (CO_2), chlorofluorcarbons (CFCs) nitrous oxide (N_2O) and methane (CH_4) are the main agents of the greenhouse effect.

The level of CO_2 has risen mainly because of the burning of fossil fuels (energy sector, industry and transport) and deforestation. The rises in the amounts of CFCs are due entirely to industrial production since there are no natural sources. Methane gases mainly come from agriculture (cattle and certain crops), energy (natural gas leakages) and waste sites.

In 1990 a comprehensive report assessing the nature and the consequences of global warming was published by the Inter-Governmental Panel on Climate Change (IPCC) [1]. In it, CO_2 emissions are identified as being the main contributory factor to the green-house effect. In this respect, the Community's decision to stabilize CO_2 emissions at 1990 levels by the year 2000 is an important first step towards dealing with the problem, an approach followed by most developed countries. Recently the Commission presented to the Council of Ministers a Communication on a strategy on the reduction of CO_2 emissions and on the improvement of energy efficiency, including Community-wide carbon-cum-energy taxes designed to achieve these ends [2].

The Community has already set targets for the phasing out of CFCs and halons even ahead of those set out in the Montreal protocol.

[1] IPCC: Reports of Working Groups, 1990; Supplementary Report, 1992, WMO/UNEP.

[2] SEC(91) 1744 final, 14. 10. 1991.

In order to devise correct counteracting or adaptive measures, more has to be known about the possible impacts of climate change on various sectors of the European environment, and also about the socio-economic consequences of any measures that may be taken. The problem is particularly important since it is closely linked to some of the other themes which follow and to various Community policies (research, agriculture, energy, transport).

Against this background *Table 7* indicates overall objectives, targets for the year 2000, types of action required and the main sectors involved.

Table 7: Climate change

	Objectives	EC targets up to 2000	Actions	Time-frame	Sectors
CO_2	no exceedance of natural absorbing capacity of planet earth	— stabilization on 1990 levels #) (progressive reductions at the horizon 2005 and 2010 (1))	— Energy conservation measures e.g. — env. benign energy use — behavioural changes — economic and fiscal measures	con-tinuous	Energy Transport Industry Public
			— Improvement of energy efficiency e.g. — R & D — infrastructural changes — change in transport modes — economic and fiscal measures	idem	Energy Waste Transport Industry Consumer
			— Fuel substitution towards less or no CO_2 emitting sources (renewables, natural gas etc.) e.g. — R & D — infrastructural changes — economic and fiscal measures	idem	Energy
Methane (CH_4) Nitrous oxide (N_2O)		— measures to be identified not later than 1994 and applied (possibly reduction targets)	— Inventory of data	before 1994	Energy Agriculture Waste
CFCs + carbontetrachloride + Halons + 1,1,1-Trichlorethane	no emissions of ozone layer depleting substances	— phase out before 1 January 1996 (except for some essential uses)			Industry
HCFCs etc		— limitation of use to maximum 5 % of 1990 CFC use levels			

#) Targets altready set by the EC.

NB: The EC commits itself to help and support countries which seek for it, in their aim for stabilization and reduction measures in relation to green house gases. The following measures could be used: debt trading, technology transfer, general trade arrangements, participation in global financial mechanisms.

(1) Conclusions of the Joint Energy/Environment Council of 29 October 1990.

5.2. Acidification and air quality

Acidification is due in considerable measure to the combustion of fossil fuels and agricultural practices and has damaging effects on forest ecosystems, lakes, other surface and ground waters and soils. The main acidifying substances are sulphurdioxides (SO_2), nitrogenoxides (NO_x), volatile organic compounds (VOCs), including hydrocarbons (HCs) and ammonia (NH_3). NO_x, HCs and VOCs create products such as ozone (O_3) through photo-oxidation; these in turn contribute considerably to damage of crops and vegetation, and human health (smog-periods).

Recent studies in the framework of the UN Economic Commission for Europe have shown that it is possible to indicate for certain types of ecosystems (and through that, certain areas in Europe) the levels and loads of deposition which they can sustain without detrimental effects (critical loads, see explanatory box on page 45).

Figure 3 gives an indication of the exceedances of the critical loads in 1990 in Europe as a whole resulting from deposition of SO_2 and NO_x from Community sources alone.

Figure 4 indicates that the SO_2 and NO_x emissions resulting from scenario 1 (conventional wisdom) will exceed the critical loads in large parts of the EC. This picture does not take into account the extra load of acidifiying substances resulting from ammonia emissions. It is clear, that under scenario 1, the EC would not be heading in the direction of sustainable energy use.

The computer calculations on the basis of the IIASA-RAINS model (see explanatory box) for scenario 4 are more promising but scenario 4 would still not result in a sustainable situation by 2010 in all regions of the Community (see *Figure 5*). Here again, effects resulting from ammonia emissions are not taken into account. The message to be derived from this is that emissions and depositions in many regions of the Community require that the strictest possible measures be applied, ie. even beyond the 65 % reduction in SO_2 emissions and the 60 % reduction in NO_x emissions, which would result from development on the basis of scenario 4 (As has been indicated in the chapter on the energy sector, the Commission has presented four scenarios on the future energy demand in the EC. An update of these scenarios is in progress; the results are expected by mid-1992).

However, in the case of the less developed regions of the Community and certain regions which are in the course of economic restructuring — the so-called Objectives 1 and 2 regions for the purposes of disbursement of the Community's Regional Development Fund — the levels of acidification (by reference to their current emission and deposition levels, and relatively small impact on deposition levels in the rest of Europe) would allow for considerable extra development in these regions on the basis of the EC legislation already adopted. However, in areas within these regions where critical loads are already being exceeded or are likely to be exceeded, the same strict measures as elsewhere should be applied.

From the point of view of facilitating optimal development in these regions and greater economic cohesion, introduction of stricter measures would allow even greater scope for development in terms of both scale and continuity. Secondly, the lower energy demand and higher energy efficiency envisaged under scenario 4, would also serve to improve the competitivity of these regions both within the EC and internationally.

Table 8 gives an indication of the overall EC targets and instruments which should be aimed for by the year 2000 on the way towards a sustainable situation.

Table 9 indicates the measures needed to guarantee levels of air quality which are not detrimental to health and environment.

5.3. Protection of nature and bio-diversity

Since the Industrial revolution and more particularly over the past half-century, mankind has been whittling away steadily at the ecological base of the living world. In many instances the damage being carried out to complex living systems is irreversible.

In spite of measures taken by international agencies, the Community and individual member states, the major threats to nature conservation and maintenance of biodiversity persist and in some areas are increasing. Habitats are converted to human uses and the species that occupy them are made homeless. Much of the development which has occurred and is continuing to take place is in contradiction to mankind's fundamental desire to live in harmony with nature and to enjoy and derive pleasure from it.

The case for preserving nature and bio-diversity goes beyond this: in the first place, it is a necessary element in the overall maintenance of the ecological balance; furthermore, nature provides an invaluable genetic bank which is essential to medical, biological, agricultural and other scientific progress.

FIGURE 3: DEPOSITION OF SO_2 AND NO_x FROM EC-12 SOURCES IN EXCESS OF CRITICAL LOADS IN 1990

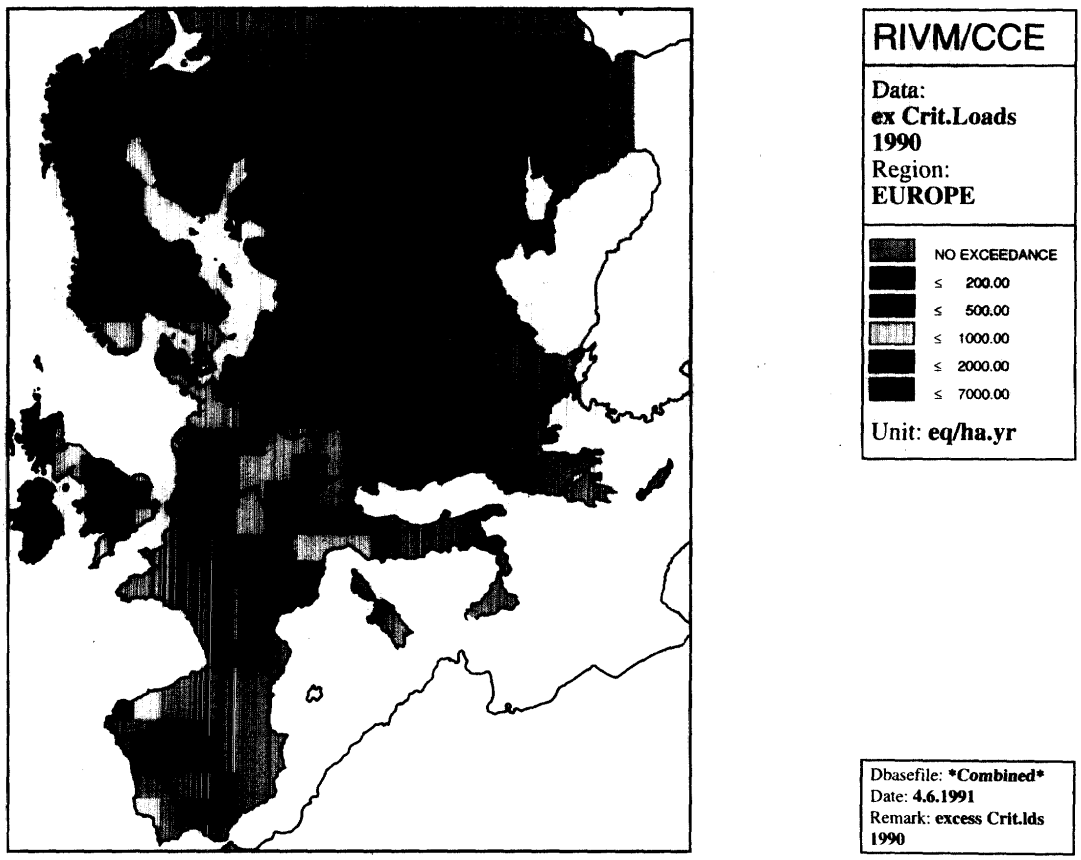


FIGURE 4: DEPOSITION OF SO_2 AND NO_x FROM EC-12 SOURCES IN EXCESS OF CRITICAL LOADS IN 2010 ON BASIS OF THE "CONVENTIONAL WISDOM" SCENARIO (see explanatory box on page 46)

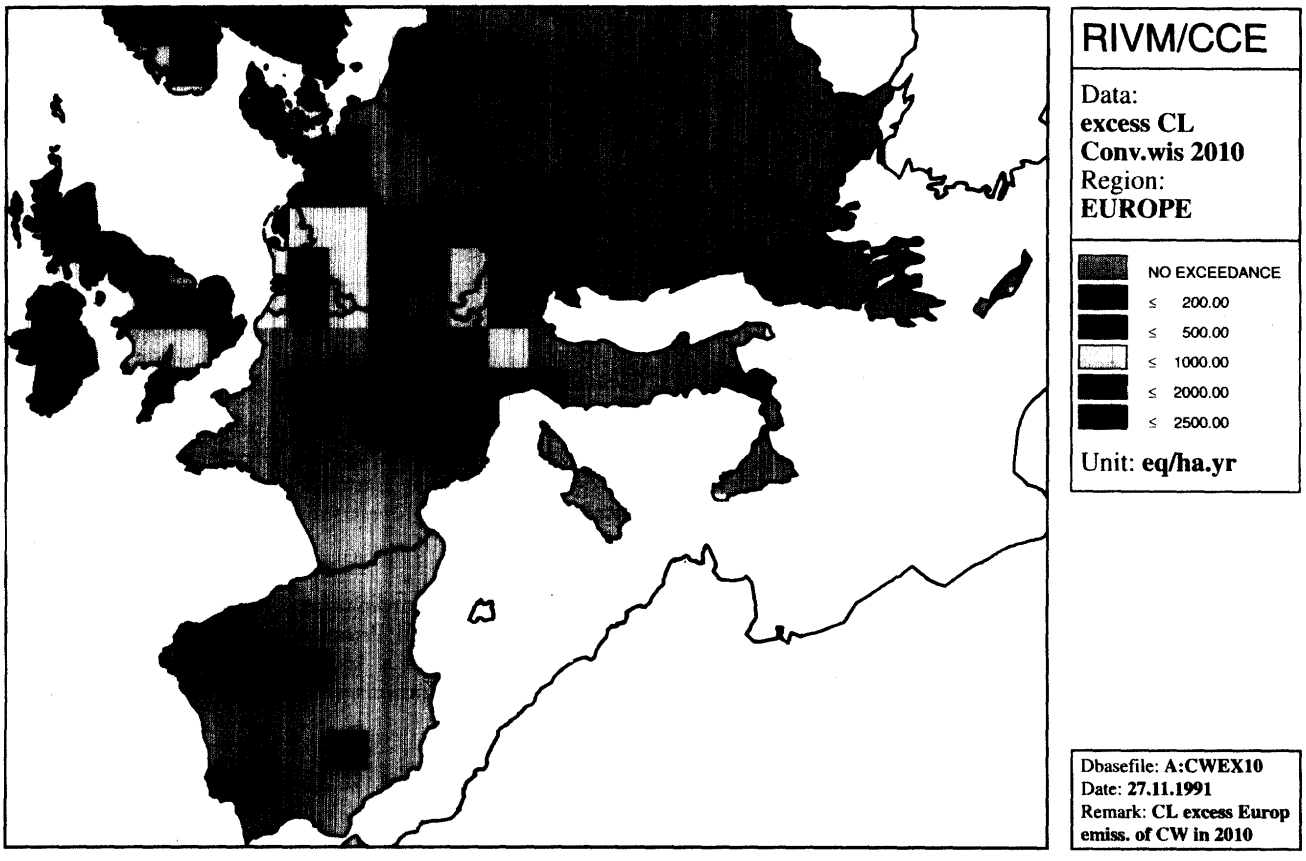
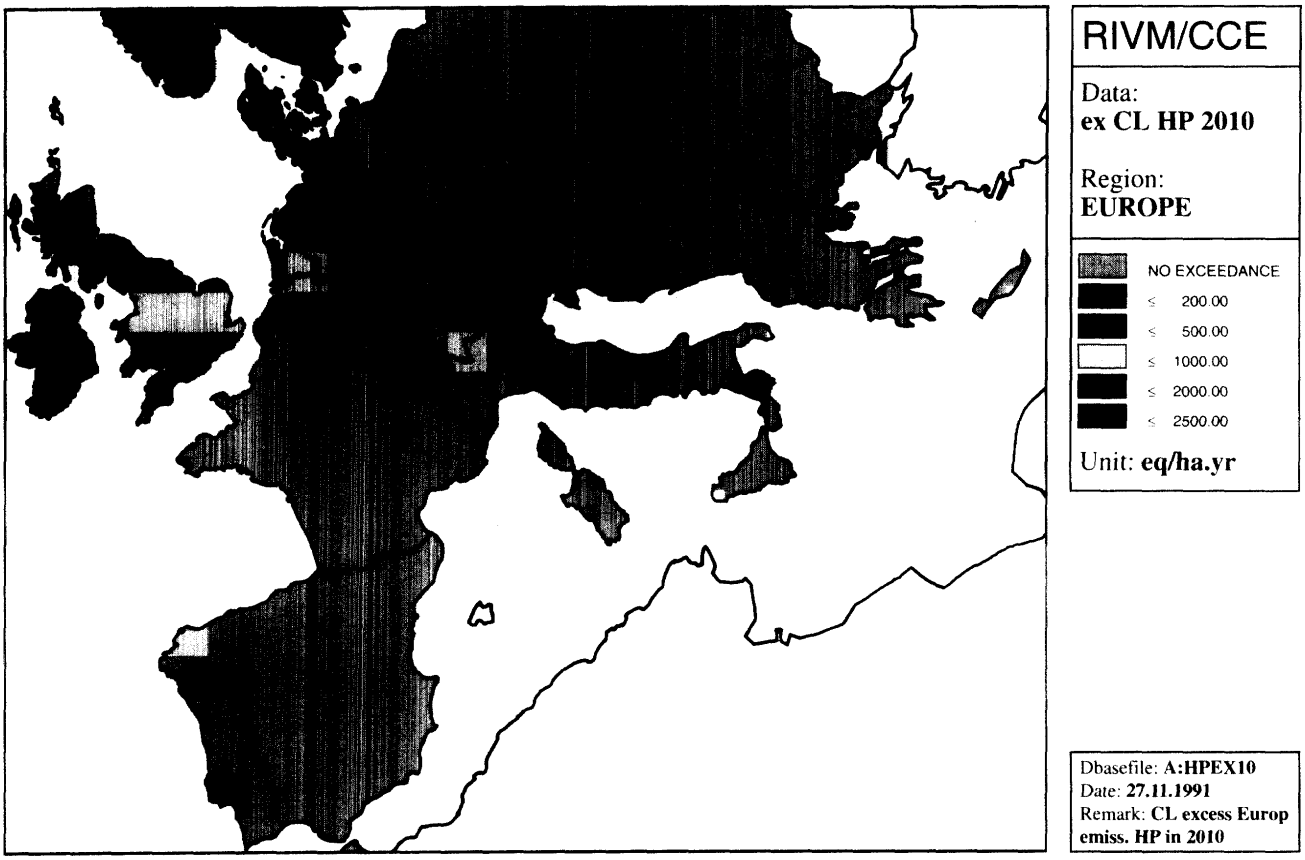


FIGURE 5: DEPOSITION OF SO_2 AND NO_x FROM EC-12 SOURCES IN EXCESS OF CRITICAL LOADS IN 2010 ON THE BASIS OF THE "HIGH PRICES" SCENARIO (see explanatory box on page 46)



EXPLANATORY NOTES

Critical loads

Critical loads have been defined as quantitative estimates of an exposure to one or more pollutants below which, according to present knowledge, significant harmful effects on specified elements of the environment do not occur. Significant harmful effects are assumed to occur when critical values of chemical compounds in forest soils and fresh-waters are exceeded.

A European map of critical loads has been developed at the Coordination Center for Effects (CEE) at the Institute for Public Health and Environmental Protection (RIVM) in the Netherlands on the basis of the EMEP grid system (150 km × 150 kms) and the cooperative mapping exercise undertaken by national administrations in 1990 in the framework of an UN-ECE programme.

'Mapping Critical Loads in Europe', J-P. Hettelingh, R. Downing, P. A. M. de Smet, 1991, CCE/RIVM.

The RAINS model

This is simulation model specially developed, using GEOMAN software, at the International Institute for Applied Systems Analysis in Laxenburg, Austria (IIASA). Rains stands for 'Regional Acidification Information and Simulation'.

As used for this Programme, the RAINS model combines information on long-range transboundary air pollution provided by EMEP (the European Monitoring and Evaluation Programme of UN-ECE) with

— information about current and projected energy use, agricultural activity and emissions of SO_2, NO_x and NH_3 on a country-by-country basis;

— emission control technologies and abatement costs;

— current plans for reductions of SO_2 and NO_x by the year 2000.

J. Alcamo, R. Shaw and L. Hordijk, eds. (1990), The RAINS-Model of Acidification: Science and Strategies in Europe, Kluwer, Dordrecht, The Netherlands.

The maps used in the Programme

The maps found in this document indicate the extent to which actual and projected depositions of SO_2 and NO_x exceed determined critical loads.

These exceedances reflect the difference between the CCE/RIVM critical loads maps for Europe and maps of acidifying depositions of SO_2 and NO_x developed for EC-12 and whole of Europe using the RAINS model referred to above. The two energy scenarios used are taken from the Commission's Communication 'Energy in Europe: Energy for a New Century' (July 1990).

While the aforementioned energy scenarios, when published, did not take account of the re-unification of Germany, the maps provided in this Programme relating to the pan-European situation do take account of the current plans for reductions of SO_2 and NO_x up to the year 2000 in the former GDR.

Acknowledgment

The European Commission wishes to acknowledge the facilities and assistance afforded by the Coordination Center for Effects at RIVM in the preparation of the maps used in this programme.

Table 8: Acidification

	Objective	EC targets up to 2000	Actions + Time-frame	Sectors/Actors
NO_x (1)	no exceedance ever of critical loads and levels	— stabilization at EC level emissions in 1994 (1990 level) #) — 30 % reduction in 2000	— actions listed in Table 7 on global scale also apply for NO_x and SO_x	Energy Transport Agriculture Industry Tourism
SO_x (1)		— 35 % at EC level reduction of emissions in 2000 (1985 level)	— proposals for product standards for coal, fuel oils and residuals before 1995	*EC* + MS + Energy and Industry
NH_3 (ammonia)		— variable targets in accordance with problems identified in regions	— Inventory of NH_3 emissions and trends before 1994; standards on new farm buildings before 1996	*MS* + LAs + EC EEA + AGRI
General VOCs		— 10 % reduction of man made emissions in 1996 — 30 % reduction (1990 level) in 1999	— reductions in transport sector — idem in industry solvents and paints, and chemical industry	*EC* + MS + Industry
Dioxins		— 90 % reduction of dioxins emissions of identified sources by 2005 (1985 levels)	— Directive (revision) on standards for municipal waste incineration plants before 1994 — proposal for Directive on incineration of hazardous waste: 1992	*EC* + MS *EC* + MS
Heavy metals		— at least 70 % reduction from all pathways of Cd, Hg and Pb emissions in 1995	— Integrated pollution control and revised BAT	*EC* + MS + LAs + Industry

#) Target already set by EC.

(1) In 1990 the Commission has presented a set of scenarios on energy demand and supply and their consequences for NO_x, SO_2 and CO_2 emissions. On the basis of computer calculations with the RAINS model, regions listed under objectives 1 and 2 of the Structural Funds would still have room for considerable development from the point of view of acidification. However, where areas within these regions would reach or exceed the critical loads, further reductions over and above those provided for in the existing EC legislation will require to be introduced. In all other EC-regions the reduction targets as listed should apply without any exceptions requiring a substantial decrease in energy demand through higher efficiency and increased energy savings.

Table 9: Air quality

Objectives	Targets up to 2000	Actions	Time-frame	Actors
— All people should be effectively protected against recognized health risks from Air Pollution	— implementation and enforcement of existing legislation on SO_2, NO_2, Lead, Particulates and Black Smoke	— identification of existing or potential problems	before 1995	*EC* + MS + EEA
		— proposals for amendments of existing legislation	idem	*EC* + MS
— Permitted concentration levels of air pollutants should take into account the protection of the environment	— WHO values become mandatory at EC level	— Air quality monitoring and control of concentration levels with regard to norms on all substances covered by legislation	not later than 1998	*MS* + *LAs* + EEA
— Extension of the list of regulated substances which cause pollution and danger to public health and the environment	For Ozone (O_3):	— Directive	in 1992	*EC* + MS
	— for health protection: current levels if not exceeding the mean value over 1-hour of 175 µg/m³ and the mean value over 8-hour of 110 µg/m³			
	— for protection of vegetation: a 200 µg/m³ mean value over 1-hour and a 65 µg/m³ mean value over 24 hours should not be exceeded			
	For Carbonmonoxide (CO) and Cadmium (Cd):	— identification of potential or existing problems	before 1997	*EC* + MS + EEA
	— knowledge of existing levels and setting of norms			
	— compliance with norms for concentrations			
	For other substances, such as heavy metals, organic compounds and deposition of Sulphur and Nitrogen:	— identification of potential or existing problems	before 1999	idem
	— knowledge of existing levels			
	— different targets according to different existing situations			

For most wild species of flora and fauna the splitting up and isolation of habitats, mainly because of infra-structural works (including high-tension electricity cables), pose the greatest threat. If habitats become too small and if connecting zones between them are blocked or lost, essential migration may be precluded, with consequential extinction in the case of some species.

The Community strategy will be aimed at the maintenance of European biodiversity primarily through sustainable land management in and around habitats of Community and wider importance. An interrelated network of habitats, based on the concept for Natura 2000, should be created through the restoration and maintenance of habitats themselves and of corridors between them. The creation and maintenance of this network will be very much dependent on how carefully transport, agricultural and tourist policies are shaped and pursued in the future.

Figure 6 outlines the strategic approach to protection of nature and biodiversity.

Table 10 sets out the targets for 2000 and the instruments necessary in the short run to have the Network and the surveillance of the European biodiversity partly operational in the year 2000.

Apart from protecting nature and bio-diversity in the large-scale dimension which is inferred in the preceeding paragraphs, it behoves national, regional and local authorities, enterprises, landowners and householders to maintain and enhance the natural beauty, parks and gardens in their own jurisdiction or neighbourhood.

5.4. Management of water resources

Water is one of the elementary sources of life. Water quality is also an indicator of the general quality of the natural environment. Without water, a harmonious and sustainable maintenance or development of socio-economic activities is not possible. Good quality water is available only in limited quantities at a given time and place. According to recent Eurostat/OECD statistics, the mean annual withdrawal per capita (including water for irrigation purposes) for EC-12 has risen from 590 m^3 in 1970 to 650 m^3 in 1975, 750 m^3 in 1980 and 790 m^3 in 1985 — an overall increase of about 35 % over a period of 15 years. Within the EC, the annual withdrawal rate per capita varied from 200-300 m^3 in Luxembourg to 1 000-1 200 m^3 in Italy, Portugal and Spain in the late 1980s. For the purposes of improving the quality of life and as a condition for achieving sustainable development, it is essential to secure sufficient water of adequate quality throughout the Community without upsetting the natural equilibrium of the environment.

FIGURE 6: DIAGRAM ON NATURE CONSERVATION

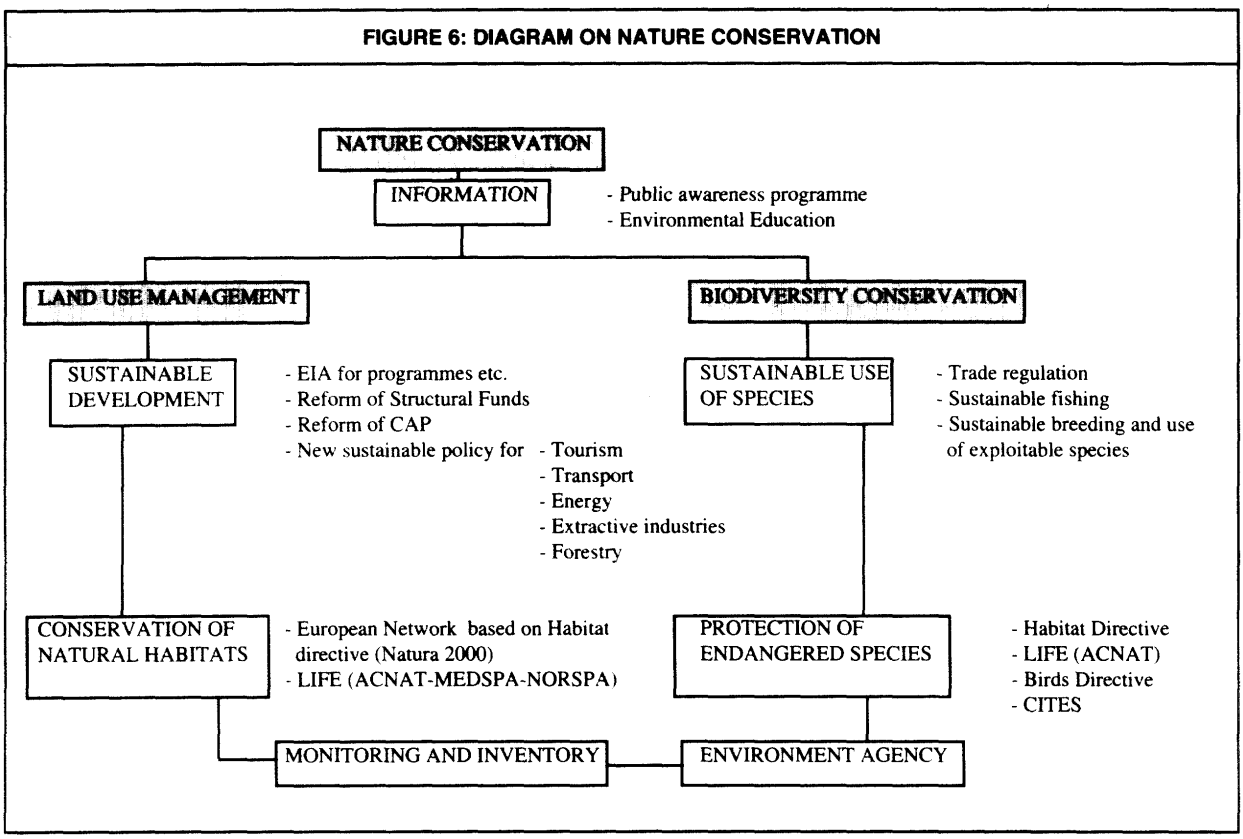


Table 10: Nature and biodiversity

	Targets up to 2000	Instruments	Time-frame	Sectors/Actors
Maintenance of biodiversity through sustainable development and management in and around natural habitats of European and global value: and through control of use and trade of wild species				Agriculture, Forestry, Fisheries, Transport, Tourism, Energy, Industry
	1. Maintenance or restoration of natural habitats and species of wild fauna and flora at a favorable conservation status	— Habitat directive	1992 ⇒	EC, *MS, LAs,* NGOs, Farmers
		— Updating of Directive 79/409/EEC on wild birds	ongoing	*EC* + MS + LAs
	2. Creation of a coherent European network of protected sites	— setting of criteria for identification of habitats, buffer zones and migratory corridors	1992-1993	idem + NGOs + Farmers
	— Natura 2000: flagship programmes of carefully selected and managed natural areas within the EC	— action programmes for the efficient conservation and monitoring of the sites designed for Natura 2000	1991-1993	idem
	3. Strict control of abuse and trade of wild species	— Inventory, monitoring systems, and recovery plans for endangered and overexploited species	1991-1992	idem
		— regulations concerning Internal and International trade of endangered species	1992 ⇒	idem + UNEP (CITES)
		— International Conventions (Biodiversity, Alpes, Regional agreements under Bonn Convention)	1992 ⇒	*MS* + EC + UNEP (CITES + Bonn convention)
		— Reform of CAP (notably zonal programmes for support of environmentally friendly agricultural practices)	ongoing	*EC,* MS, LAs
		— Environmental assessment of plans and programmes	1995 ⇒	*MS, LAs,* EC
		— Programmes for promotion of public awareness	1992 ⇒	idem + *NGOs*
		— Measures to maintain and protect forests	progressive	EC + *MS* + forest-owners

Community policies, accordingly, must aim at

— prevention of pollution of fresh and marine surface waters and groundwater, with particular emphasis on prevention at source;

— restoration of natural ground and surface waters to an ecologically sound condition, thus ensuring *(inter alia)* a suitable source for extraction of drinking water;

— ensuring that water demand and water supply are brought *into equilibrium* on the basis of more rational use and management of water resources;

Manufacturing industry (processing), the energy sector (cooling), the agricultural sector (irrigation) and the tourism sector (drinking and bathing) are very dependent on the availability of good quality and sufficient quantities of water, but are at the same time the main contributors to the pollution of water.

Table 11 indicates the overall objectives on water quantity and water quality to be realized in the long term, the targets to be reached in the year 2000 and the actions needed in the short term. They are in line with the programme of action outlined in the The Hague Declaration on the future Community Groundwater Policy as agreed at the EC Ministerial Meeting on 26 and 27 November 1991 (1).

5.5. The urban environment

In the Community, about 80 % of the population lives in cities and towns. The urban areas are thus the places where the problems of the environment touch most the quality of life of citizens. Demographic trends, including population, household sizes and space occupancy point towards ever-increasing pressures in urban areas. Pursuant to the principle of subsidiarity, responsibility for the quality of the urban environment and for undertaking necessary remedial or improvement measures will be a matter for the competent authorities, primarily the local authorities. As far as the Community is concerned, some of the environmental legislation (e.g. Directives on municipal waste incineration (2) and waste water treatment (3)) and many of activities it undertakes through the Structural Funds lead inevitably to its playing an important role in the development of cities. The purpose of the Community policy must therefore be to encourage local authorities to rise to the challenge that the environmental problems of many cities and towns pose today, and to assist them to find the best way of doing this.

Transport, energy, industry and in some cases tourism are the key sectoral activities which impact on the quality of the urban environment, and which also stand to gain significantly from more rational planning and sustainable management of urban areas. In 1990, the Commission published a Green Paper on the Urban Environment (4) which suggested a possible range of actions in relation to, *inter alia*,

— town and country land-use planning

— optimal management of industrial and economic growth, energy consumption, and waste

— rationalization of urban traffic including the improvement of public transport facilities

— protection and enhancement of the historical heritage of cities and towns and provision of green spaces.

In *Figure 7* an overall diagram is given which indicates clearly the complexity of the urban environment situation and the actors on the scene. As far as the concept of shared responsibility is concerned, much of the effort will fall to the industrial, business and transport sectors and to individual citizens/consumers.

With regard to the matter of objectives, targets and actions, it is clear that the quality of the environment in urban areas will benefit from the goals and measures outlined in the tables on the principal target sectors and

(1) As confirmed by a Council Resolution on 12. 12. 1991, OJ No C 59, 6. 3. 1992.

(2) OJ No L 163, 89/369/EEC and OJ No L 203, 89/429/EEC.

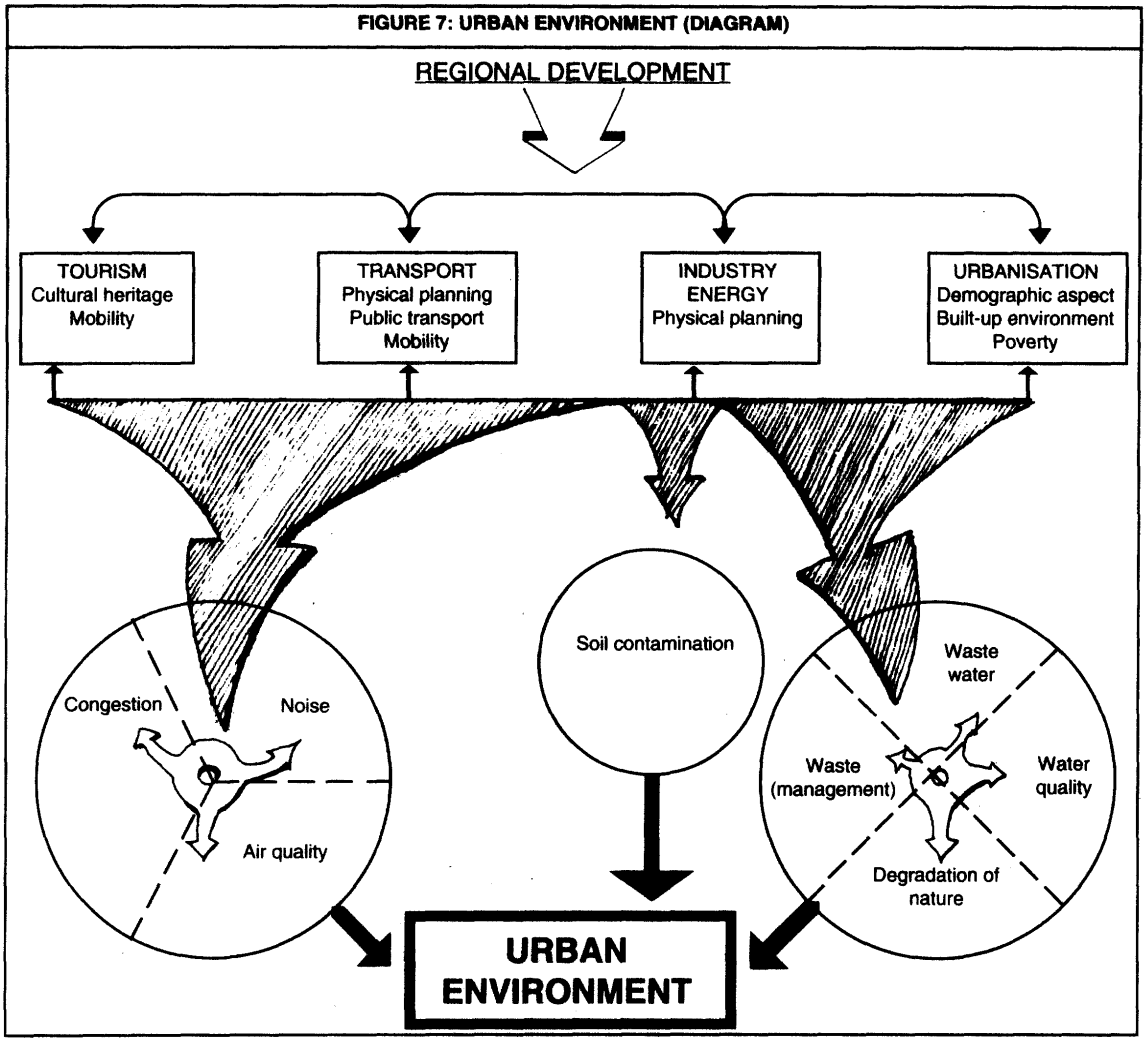
(3) OJ No L 135, 30. 5. 1991, 91/271/EEC.

(4) COM(90) 218, 27. 6. 1990.

Table 11: Water quantity and water quality

	Objectives	EC targets up to 2000	Actions	Time-frame	Actors
QUANTITATIVE ASPECTS Groundwater and surface fresh water	— Sustainable use of fresh water resources: demand for water should be in balance with its availability	— Prevent permanent overdraft — Integration of resource conservation and sustainable use criteria into other policies, including, in particular, agriculture and land use planning, but also industry (development, location and production procedures) — Marked reduction of pollution of both groundwater and fresh surface water	— Collection and updating of data on groundwater	1992/1993	*MS + LAs*
			— Monitoring and control measures on groundwater	by 1995	idem
			— Integrated water management and protection, including legislation	mid 1993	EC + *MS* + LAs
			— Measures to protect and rehabilitate aquifers	idem	*MS*
			— Measures to promote more effective water use	idem	*MS* + EC + sectors + *LAs*
			— Economic and fiscal measures	ongoing	*MS* + *LB* + EC
QUALITATIVE ASPECTS Groundwater	— To maintain the quality of uncontaminated groundwater — To prevent further contamination of contaminated groundwater — To restore contaminated groundwater to a quality required for drinking water production purposes	— Groundwater: to prevent all pollution from point sources and to reduce pollution from diffuse sources according to best environmental practices and best available technology	— Groundwater and surface fresh water: strict implementation of the existing directives on urban waste water and nitrate pollution to reduce the input of nutrients to the soil, water and sediments.	continuous	*MS + LAs*
			With regard to fresh water: examination of the need for a directive on phosphate reduction	1995	*EC*
			— Elaboration of further specific emission standards encouraging the development of production proceses and performance standards for products to prevent foresecable negative effects on water (use of best available technology combined with target standards to be achieved later)	1992 ⇒	*EC* + *MS* + Industry + standardization bodies (e.g. CEN)
			— Influence standardization bodies by participation of water industry where concerned	idem	idem

	Objectives	EC targets up to 2000	Actions	Time-frame	Actors
(continued)			— Proposals for progressive replacement of harmful presticides and progressive use limitations	1993	EC + MS
			— Economic and fiscal measures	ongoing	*MS* + LAs + EC
Surface water — fresh water	To maintain a high standard of ecological quality with a biodiversity corresponding as much as possible to the unperturbed state of a given water	— Surface water: quality improvement towards a better ecological quality and safeguard of high quality where it exists	— Surface fresh water: proposal for a directive to be presented.	1992	*EC* + MS
			Member States programmes for all waters taking into account their specific situation; practical measures, partly financed through national environment protection funds	1997	*MS*
— marine water	Reduction of discharges of all substances, which due to their toxic persistence or accumulating impact could negatively affect the environment, to levels which are not harmful to a high standard of ecological quality of all surface waters	— Marine water: objectives and actions similar to the North Sea conference to other sensitive sea areas of the EC	— Marine water: further to the measures to achieve a high ecological quality and to reduce surface water-pollution:		
			— Proposals on maritime transport preventing environmental damage from shipping activities (oil spills, loss of cargo, reduction of operational pollution) to be developed	1993 ⇒	*EC* + MS
			— Surveillance of geographic zones with appropriate monitoring techniques	ongoing	*MS*
			— Proposal for a directive on the reduction of operational and accidental pollution from small tonnage boats	1993 ⇒	*EC* + MS
			— Economic and fiscal measures	ongoing	*MS* + EC



those on air, water and waste. *Table 12*, hereunder deals with one of the most pressing problems in urban areas and which is not directly covered in the other tables referred to — noise. More than 16 % of the population suffers at night time from noise levels, mainly resulting from road and air traffic, over leq 65 dB(A) (1). This causes serious health risks. The primary objective should be to remedy this situation, before tackling other levels.

5.6. Coastal zones

The Community's coastal zones constitute a unique environmental heritage, with irreplaceable ecological, cultural and economic resources. The whole of the Community's marine resources depends on its environmental quality, and moreover this natural interface between land and sea is characterized by extreme fragility. As an indication of scale, the Community has about 58 000 kilometers of coastline excluding small islands and inland seas.

The pressures exerted on our coasts are increasing:

— coastal regions are striving to make good their lagging development;

— they are subject to incessant net demographic gains;

— coastal tourism is increasingly popular, and can be subject to significant seasonal fluctuations.

These and other pressures result in the reduction of open spaces and natural sites and substantial modifications to the landscape; they can also give rise to conflicts in land and sea use, and competition between local and regional authorities.

The Commission's Communication 'Europe 2000' (2) deals at some length with the environmental importance

(1) Source: ECMT report on Transport policy and the environment, OECD, Paris, 1990.

(2) COM(91) 452 final, 7. 11. 1991.

Table 12: Noise

Objective	EC targets up to 2000	Actions	Time-frame	Sectors/Actors
— No person should be exposed to noise levels which endanger health and quality of life	Night-time exposure levels in Leq dB(A):			Transport + Industry
	— exposure of the population to noise levels in excess of 65 should be phased out; at no point in time a level of 85 should be exceeded	— inventory of exposure levels in the EC	before 1994	EEA + MS + *LAs*
		— noise abatement programme to be set up	before 1995	*MS* + *LAs*
		— further reductions of noise emissions (cars, trucks, aircraft, cranes, mowers, etc.) Directives to be presented progressively, aiming at implementation not later than 2000	before 1995	*EC* + MS + Industry
	— proportion of population at present exposed to levels between 55-65 should not suffer any increase			
	— proportion of population at present exposed to levels less than 55 should not suffer any increase above that level	— standardization of noise measurement and ratings	continuous	EEA + *EC* + MS
		— measures to influence behaviour, such as driving cars, flight procedures, industrial processes operating at night time	idem	*MS* + *LAs* + EC
		— measures related to infrastructure and physical planning, such as better zoning around airports, industrial areas, main roads and railways	idem	*MS* + *LAs*

and development potential of coastal zones and islands. It points out that in many coastal regions, particularly the less developed ones, the natural assets of the environment constitute a key aspect of their development potential; but that, at the same time, these natural assets are severely threatened by urbanisation, and the tourism, transport, industry, energy, agriculture and fisheries sectors, although in the case of the latter sector, a conservation strategy is embodied in the Community's Common Fisheries Policy.

The Council of Ministers (Environment), in a Resolution adopted on 25 February 1992 (1), has requested the Commission to propose an overall Community strategy for the integrated management of coastal zones, with a view to providing a coherent environmental framework for integrated and sustainable forms of development. The proposed strategy will cover the entire ambit of the coastal zones, including fore-shore, coastal waters and estuaries, together with coastal land up to the limit of the marine or coastal influence. Certain R & D activities, such as those under the Community's Environmental Research, MAST and FAR/AIR programmes will provide a scientific basis for sound ecological management of these zones. In appropriate cases, the Community could give financial support from the Structural Funds, for example in the context of the proposed Objective 6, to the effective implementation of the strategy.

Table 13 indicates the main elements which will be incorporated in the strategy.

5.7. Waste management

The problems to which waste gives rise are both specific and relatively complex: waste is not only a potential source of pollution it can also constitute secondary raw materials. The choice of priorities in this sector has direct economic and environmental consequences and is of direct relevance not only to environment policies but to technology, economic and consumer policies.

Management of waste generated within the Community will be a key task of the 1990s. Current upward trends in waste generation must be halted and reversed in terms of both volumes and environmental hazard and damage. A Community strategy for waste management to the year 2000 has already been published (2) and endorsed by the

(1) OJ No C 59, 6. 3. 1992.

(2) SEC(89) 934 final, September 1989.

Table 13: Coastal zones

Objective	EC targets up to 2000	Instruments	Time-frame	Sectors/Actors
— Sustainable development of coastal zones and their resources in accordance with the carrying capacity of coastal environments	— higher priority to the environmental needs of coastal zones, through inter alia, better coordination between relevant EC, policies and between policies at the EC, national and regional levels	— framework of integrated management plans on appropriate levels	before 1998	*MS* + *LAs* + EC
	— operational framework for integrated planning and management	— better know-how and exchange of experience	continuous	*MS* + *LAs* + EC
		— creation and improvement of data bases and relevant indicators	before 1995	*MS* + *LAs* + EC
	— development of criteria for a better balance of land use and conservation and use of natural resources	— pilot projects on integrated management of coastal zones	1993/1994	*MS* + *LAs* + EC
	— awareness raising of the public, competent authorities and economic sectors	— information campaigns — eduction — professional training — financial support for demonstration projects and innovative approaches (LIFE)	1992 ⇒	*MS* + *LAs* + EC *Tourist sector* Transport Enterprises Agriculture General public
		— Improvement of criteria to ensure sustainability of projects and programmes (incl. EIA)	1993 ⇒	*MS* + EC

Council (1). The strategy includes a hierarchy of waste management options in which primary emphasis is laid on waste prevention, followed by promotion of recycling and reuse, and then by optimisation of final disposal methods for waste which is not reused. *Figure 8* indicates the strategic flow-chart for waste management.

This strategy will be pursued and reinforced under this Programme. In particular more attention will be given to the prevention of waste and solving the waste problems at source, the encouragement of re-use and recycling of waste by, inter alia, separation at source, prioritisation of waste streams and the encouragement of a rational network of disposal facilities. Further, application of lifecycle analysis will be promoted so as to encourage the intervention of all people concerned in order to attain targets to be achieved within a limited period. Hazardous waste requires particular attention in relation both to preventing waste and encouraging maximum recycling and the development of an EC-wide infrastructure for safe disposal.

Economic and fiscal instruments such as charges and levies will be applied, whereever appropriate. The legislative package of measures on waste management also requires to be rounded off by the adoption of specific directives on packaging, the incineration of industrial and toxic wastes, on the control and recuperation of landfill sites, and a more general directive on civil liability for damage.

Table 14 indicates overall objectives, targets for the year 2000 and the actions required in the short term.

(1) Council Resolution of 7. 5. 1990, OJ No C 122.

FIGURE 8: STRATEGIC CHART FOR A COMMUNITY MANAGEMENT POLICY ON HAZARDOUS AND OTHER WASTES

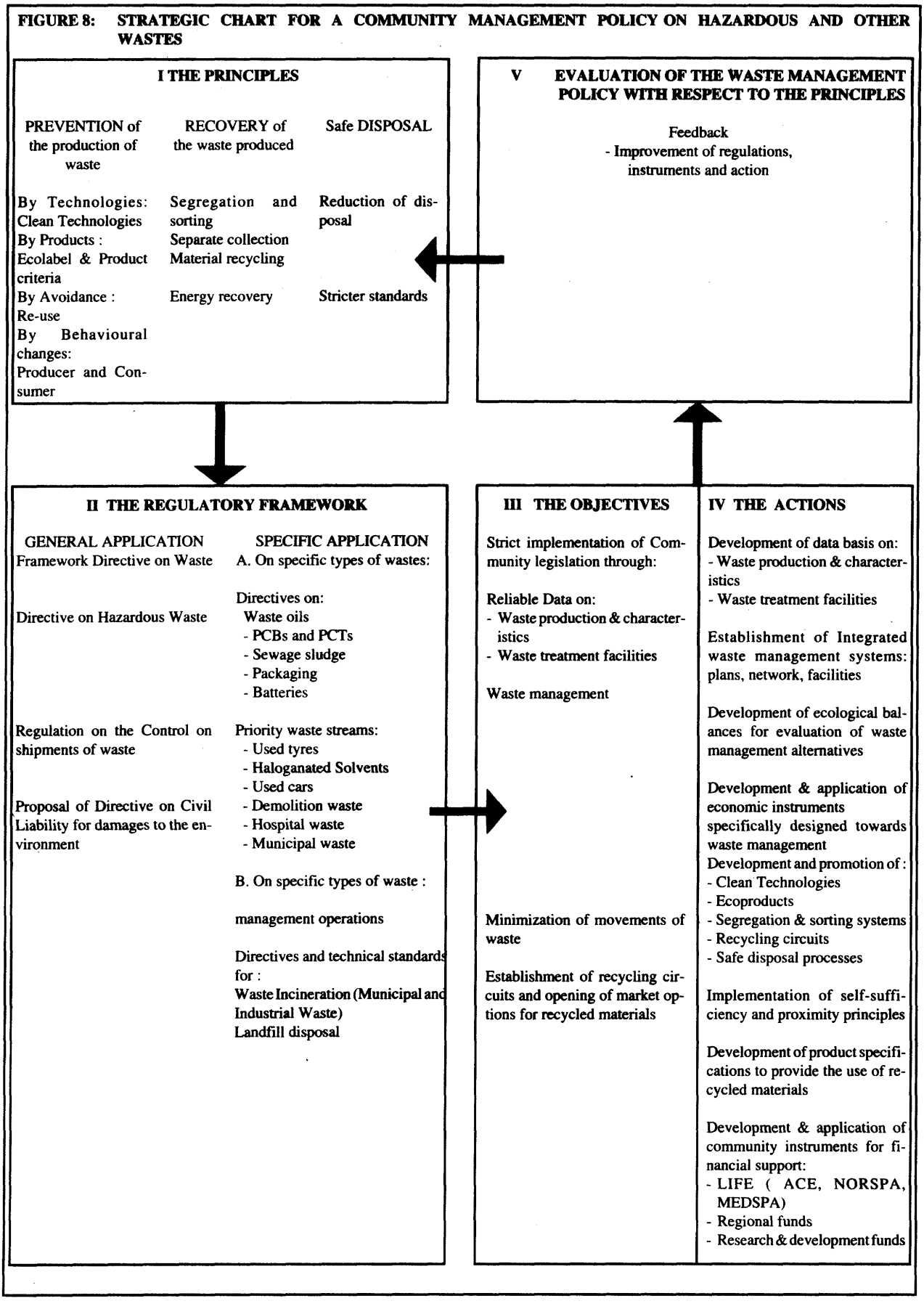


Table 14: Waste

	Objectives	EC targets up to 2000	Actions	Time-frame	Sectors/Actors
	— overall target: rational and sustainable use of resources				Industry Agriculture Transport Energy Tourism
Municipal waste	— prevention of waste (closing of cycles) — maximal recycling and reuse of material — safe disposal of any waste which cannot be recycled or reused in following ranking order: — combustion as fuel — incineration — landfill	— waste management plans in Member States — stabilization of quantities of waste generated at EC average 300 kg/capita (1985 level (1); on a country by country basis no exceedance of 300 kg/capita — recycling/reuse of paper, glass and plastics of at least 50 % (EC average) — Community-wide, infrastructure, for safe collection, separation and disposal — no export outside EC for final disposal — recycling/reuse of consumer products — market for recycled materials — considerable reduction of dioxin emissions (90 % reduction on 1985 levels by 2005)	— landfill Directive operational — directive on packaging operational — cleaner technologics + product design — policy on priority waste streams, stop on landfill for specific wastes (legislation + voluntary agreements) — reliable EC-data on waste generated, collected and disposed — system of liability in place — economic incentives and instruments (incl. deposit return systems + vol. agreements) — standards for dioxin emissions from municipal waste incineration	before 1995 1995 progressive ongoing 1995 2000 ongoing before 1994	EC + MS + *LAs* + Industry EC + MS + *LAs* + Industry *Industry* + EC + Public + MS + LAs *EC + MS + LAs + Industry + NGOs + Public* EC + MS + LAs + *EEA* *EC* + MS *MS* + EC + Industry *EC* + MS + LAs
Hazardous waste	— prevention of waste (closing of cycles) — maximal reuse/recycling of material — safe disposal of any waste which cannot be recycled or reused following ranking order: — combustion as fuel — incineration — landfill	— no export outside EC for final disposal — waste management plans set up in Member States — EC-wide, infrastructure for safe collection, separation and disposal — market for recycled materials	— landfill Directive operational — Directive on incineration of hazardous waste operational — policy on priority waste streams, stop on landfill for specific waste — cleaner technologies — reliable EC-data on waste generated, collected and disposed — setting up of bourse de dechets — system of liability in place — inventory of risks — economic incentives and instruments, incl. vol agreements	before 1995 1995 ongoing ongoing 1995 before 1995 2000 1995 ongoing	EC + *MS* + *LAs* + Industry *EC + MS + LAs* + Industry *EC + MS + Industry + LAs NGOs + Public* *Industry* + EC + MS *EEA* + MS + LAs + EC + Industry EC + *MS* + *Industry* *EC* + MS *EC + MS* + Industry *MS* + EC + Industry

(1) Based on Eurostat and OECD statistics.

CHAPTER 6

MANAGEMENT OF RISKS AND ACCIDENTS

Without prejudice to the overall objective of sustainable development, it is essential that over the remainder of this decade, the assessment and management of risks and the response to accidents and catastrophies should be improved considerably. Set out below is a summary of the main risk areas to which priority will be given under this Programme.

6.1. Industry-related risks

Protection of the environment and human health requires that industry-related risks be tackled on a number of fronts-general industrial activities, chemicals controls, biotechnology and product-labelling. A considerable amount of progress has been made as respects both legislation and controls in pursuance of the previous Community action programmes on the environment, notably

— Directive 82/501/EEC (1) on industrial accident hazards, more generally referred to as the 'Seveso' Directive;

— Directive 67/548/EEC (2) and subsequent amending Directives on the classification and labelling of dangerous substances;

— Directives on noxious emissions to air, discharges to water and management of toxic and dangerous wastes;

— Directive 90/219/EEC (3) regulating the use of genetically modified micro-organisms in research laboratories and industrial production plants, and Directive 90/220/EEC (3) to ensure appropriate risk assessment and management when genetically modified organisms are released into the environment;

Nevertheless, much remains to be done, especially in respect of chemicals and biotechnology.

Chemicals have become a virtually indispensable part of modern life. Almost all products contain some chemicals or are processed or wrapped by means of chemicals. More than 7 million chemicals are now identified; about 100 000 are in current use to manufacture products.

Apart from the increasing number of chemicals, there has been a phenomenal growth in the quantities produced. For example, global production of organic chemicals alone has jumped from 7 million tonnes in 1950 to 63 million tonnes in 1970 and to over 250 million tonnes at present. Most chemical agents are potentially hazardous if incorrectly applied or if released in large quantities either by design or accident. Moreover, many chemicals tend to continue as polluting agents long after their original purpose is served. The most important industrial uses of chemicals are in the processing of paper products, primary metals and food products, petroleum refining and the manufacture of textiles, transport machinery, electrical machinery and equipment, rubber and plastics.

Some of the more beneficial aspects of the new techniques of genetic engineering and biotechnology have been referred to in Chapter 4.1. However, there are concerns that this new technology might entail potential risks not only related to human health, but also for the total environment. There could be a risk that the widespread use and release of novel, genetically modified organisms could upset the delicate balance existing in nature or even have evolutionary impacts. Consequently, sound management of biotechnology both within the European Community and beyond is a must.

Regulation of biotechnology calls for a delicate balance between public health/environmental concerns and research/industrial interests. The Community has taken a clear, preventive approach in adopting legislation to establish a common set of environmental risk assessment requirements and safety measures. This is intended to protect the health of citizens and the environment, as well as ensuring a single unified market for biotechnology.

The Community has also taken steps to mobilize the considerable technical potential available in the European standardisation bodies in pursuit of effective application of biotechnology and in support of legislation; the standardisation programme will be extended to include methods for identification of GMOs, standard testing methods for evaluating environmental impact and risk and common evaluation protocols.

(1) OJ No L 230, 5. 8. 1982.
(2) OJ No L 196, 16. 8. 1967.
(3) OJ No L 117, 8. 5. 1990.

Figure 9 overleaf provides a flow diagram showing the process for dealing with existing chemicals. Priority actions to be taken over the remainder of this decade in respect of industrial risks, chemicals and biotechnology are set out in *Table 15*, below.

FIGURE 9: FLOW DIAGRAM SHOWING THE SELECTION PROCESS FOR DEALING WITH EXISTING CHEMICALS

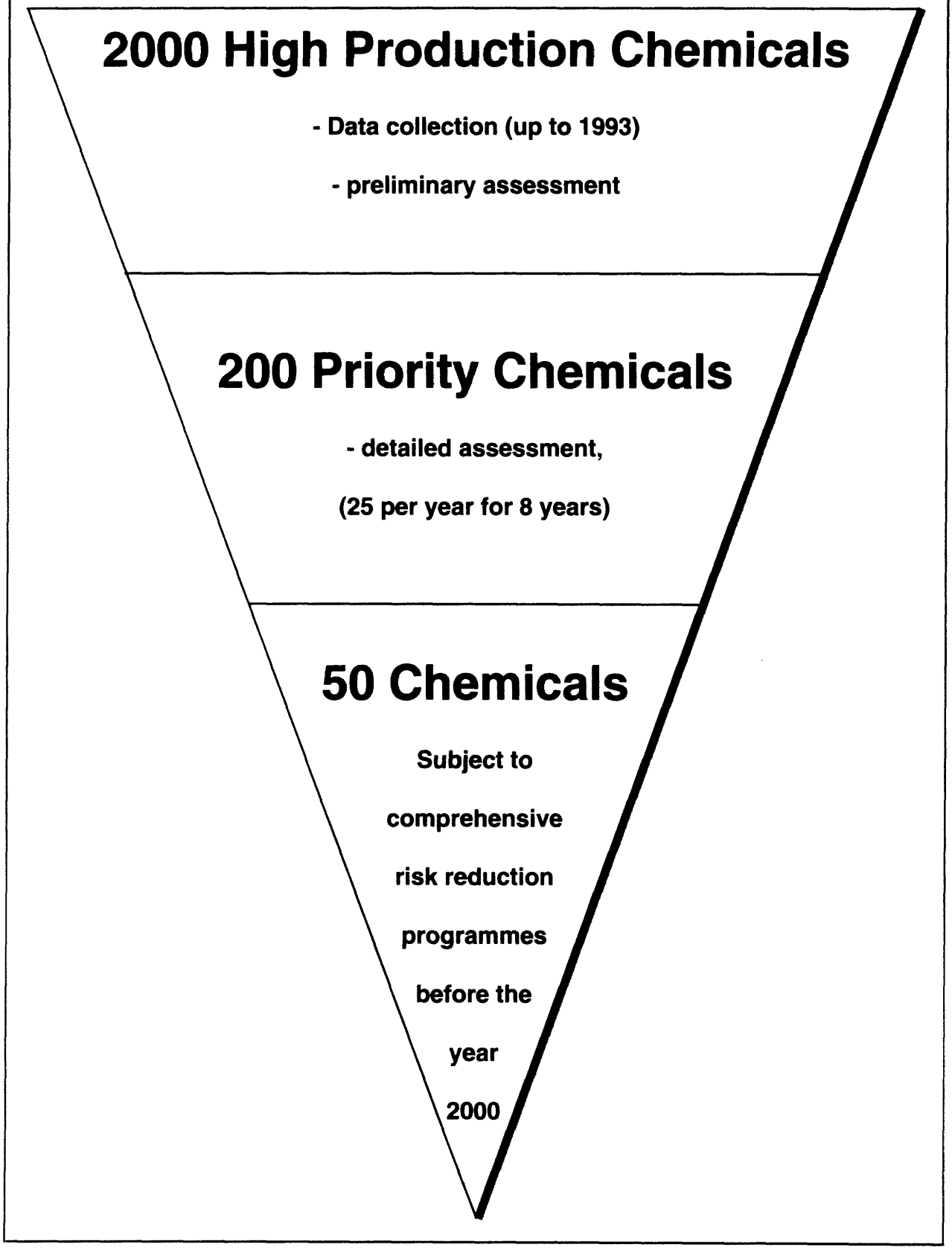


Table 15: Risk management

Objectives	Targets up to 2000	Measures	Time-frame	Actors
(a) INDUSTRIAL ACTIVITY				
— Management of industrial risks	Improved safety standards	Comprehensive appraisal of experience within the framework of Directive 82/501/EEC	1993/1994	*EC*
	Development of safety management standards	Report to Council and Parliament, including any necessary programme of action	1995	*EC*
	Improvement in, and harmonisation of, implementation measures	Development of standards for risk assessment and management	ongoing	*Standards Institutes*
	100 % coverage of dangerous establishments	Comprehensive review of implementation	1994, 1998	*EC*
— General environment control	Improved management and procedural standards	Development of standard for environmental management systems	ongoing	*Standards Institutes*
		Eco-audit (progressive)	1994 ⇒	*Enterprise*
(b) CHEMICALS CONTROL				
— Data collection	Effective notification procedure for all chemicals	Notification of all new chemicals	ongoing	*EC* + MS + Industry
		Data collection of all existing chemicals. Council regulation on existing chemicals	1992 ⇒	*EC* + MS + Industry
— Hazard identification	Maintenance/improvement of existing classification criteria	Continual update in the light of scientific and technical progress	ongoing	*EC*, MS
		Extension of list of classified substances	ongoing	*Manufacturers + importers*
— Risk assessment	Common principles for assessments	Amendment of Directive 67/548/EEC	1992/1993	*EC*
	Assessment of 2 000 high production volume chemical	Council regulation on existing chemicals	1993 ⇒	*EC*, MS, Industry
	Assessment of 500 active substances in non-agricultural pesticides	Council Directive on non-agricultural pesticides	1994 ⇒	*EC*, MS, Industry
— Risk management	Strengthen links between classification and control measures	Establish the Advisory Committee on chemicals risk reduction	1992	*EC* + Industry
— Risk reduction	Risk reduction programmes for 50 priority chemicals	Legislation + voluntary agreements	1994 ⇒	*EC, MS, Industry*

Objectives	Targets up to 2000	Measures	Time-frame	Actors
(c) BIOTECHNOLOGY				
— Risk management for contained use of GMOs	100 % coverage of all installations and activities	Comprehensive review of implementation	ongoing	*EC*
	Effective safety measures for use of GMOs in research and industry	Development of more detailed criteria	1992 ⇒	*EC* + MS
— Risk management for release of GMOs to the environment	Effective approval procedure for all releases in the Community, both for research and industry	Comprehensive review of implementation and technical adaptation	ongoing	idem
	Oversight of export of GMOs to third countries	Proposal for regulatory instrument	1992	*EC*
— Risk assessment	Common approaches and principles for environmental risk assessment	Development of risk assessment methodologies	1993 ⇒	*EC* + MS + Standards Institutes (e.g. CEN)
	Common testing methods, identification methods, etc.	Assessment and common acceptance of methods	1993 ⇒	
	Safe transport of GMO's	EC legislation	1992	*EC* + MS
(d) PROTECTION OF ANIMALS USED FOR EXPERIMENTAL PURPOSES				
Reduction in animal experimentation	50 % reduction in the number of vertebrate animals used for experimental purposes	Directive 86/609/EEC (see also Maastricht Declaration on the protection of animals)	ongoing	*EC*, MS, Industry

6.2. Nuclear safety and radiation protection

The Euratom Treaty lays down the Community's objectives and tasks in relation to the peaceful use of nuclear energy. Nuclear safety has received special attention in recent times both inside and outside the Community. The increasing credibility of Community actions in the aftermath of the Chernobyl accident, the Transnuclear affair and, more recently, the financial and technical assistance provided towards improvement of safety measures in the nuclear reactors of the countries of the former Soviet Union and Central and Eastern Europe have increased the pressure on the Community to provide leadership in the field of nuclear safety.

Within the Community itself, nuclear electricity generation at present accounts for about 34 % of the total electricity supply produced by about 132 power stations throughout six Members States of the Community. This share is larger in Europe than in any other part of the world and reaches proportions of 60 and 70 % respectively in Belgium and France. For the foreseeable future nuclear installations will continue to be an important source of energy in the European Community, especially in view of its potential to guarantee independance from third countries for our energy supply and to avoid the environmental impacts of more traditional energy sources, notably coal and oil. Accordingly, a continued effort in nuclear safety and radiation protection, as well as appropriately safe arrangements for management of nuclear waste and decommissioning of obsolete plants, will be necessary.

In recent times there also has been increasing evidence of a radiological significance of exposure of the population to indoor radon concentrations. In February 1990, the Commission issued a Recommendation following the principles laid down by the International Commission on

Radiation Protection (ICRP) taking account of the most recent data on radon (1).

In order to deal in a global way with all these types of exposures, the Euratom Treaty calls on the Community to establish uniform safety standards to protect the health of workers and of the general public and ensure that they are applied. This task includes regulatory, technical and informative aspects.

Basic safety standards were first issued in the form of Directives in 1959. These provide the basis for a comprehensive Community policy on radiation protection, especially as the basic safety standards apply to practically any activity which might involve a risk to the population, to workers and to the environment, caused by irradiation or contamination. These standards apply at present to about 900 000 workers throughout the Community in different sectors using ionising radiation, such as the nuclear power industry and medical, industrial and research applications.

Because nuclear research and nuclear technology are areas of rapid change and since there are still many developments to come in radiobiology and radio pathology, it has always been considered important that the safety standards be kept up to date. They have been updated several times since 1959, the last occasion being in 1984. The Commission has submitted a proposal to the Council of Ministers for a Directive to update the basic safety standards and to provide a rigorous system of prior authorisation and control of movements of radioactive wastes from origin to final destination point (2).

Following the accident at Chernobyl in April 1986 the Community adopted common food controls (3) in order both to protect the health of the Community's citizens and to avoid internal trade conflicts. A Council Regulation of March 1990 (4) provided for the continuation of these controls and established a mechanism to govern the progressive return to normality thereafter. Regulations have also been made in regard to intervention levels for all potentially important radionuclides in foodstuffs, including baby-foods, dairy procedure and liquid foodstuffs, to be applied in the event of any future accidents. The set of rules now in force are reckoned to constitute a complete protective system as far as food stuffs are concerned.

The Chernobyl accident also demonstrated that the provision of information at international, national and local level had to be improved. Two major measures taken by the Community in this respect since then are

(i) A rapid information system, ECURIE, established in December 1987 (5); this system is compatible with an analogous system set up by IAEA in the frame of the Convention on early notification of nuclear accidents.

(ii) A Directive, adopted in November 1989 (6), on informing the general public about health protection measures in the event of a radiological emergency; this Directive and a subsequent Communication define the content of the information to be provided to the population under normal circumstances and in case of an emergency.

The Community has also undertaken a series of measures in the area of public information that include the publication and distribution of handbooks, brochures and videos aimed at media professionals and the public at large.

It is particularly important to the nuclear energy sector that public confidence in it be maintained or even enhanced. For this purpose it is essential not only that the industry operates to acceptably high safety standards but also that it is seen to do so. This will require widespread public information from credible sources. The national authorities and the utilities themselves have the primary role in this regard. However, the Euratom Treaty entitles the Commission to verify the operation and efficiency of environmental monitoring facilities installed in Member States. This right was exercised occasionally in the early sixties. In December, 1989 the Commission decided to resume its activities in this field. To date, visits have been made at the Philippsburg nuclear power station (Germany) and at the facilities for controlling the environmental radioactivity of the Luxembourg Ministry of Health; this programme will be stepped up considerably in the period up to 2000. Inspections of equipment for measuring discharges of radioactive effluents and for environmental monitoring will be carried out at the request of a Member State or on the initiative of the Commission. Particular importance will be attached to the inspection of facilities associated with sites of major public concern.

(1) OJ No L 80, 27. 3. 1990.
(2) Council Directive 92/3/Euratom, 3. 2. 1992.
(3) OJ No L 371, 30. 12. 1987 — OJ No L 211, 22. 7. 1989 — OJ No L 101, 13. 4. 1989.
(4) OJ No L 82, 29. 3. 1990.
(5) OJ No L 371, 30. 12. 1989.
(6) OJ No L 357, 7. 12. 1989.

Nuclear installations of the first generation are at this stage becoming obsolete or are programmed to be decommissioned in the near future. Since this process will continue as long as nuclear power plants are used for energy production, it is imperative that satisfactory radiation protection criteria for dismantling nuclear installations, including the recycling of the materials and for restoration of nuclear sites be adopted and implemented as a matter of considerable urgency.

Among the various actions aimed at improving preparedness in the event of a nuclear accident, a number of Community initiatives on mutual assistance in the case of a nuclear accident or radiological emergency are already under way. They include regular meetings of experts to work towards better utilization of available resources in the event of a nuclear accident or radiological emergency. A first draft of an inventory of the resources available to counteract the effects of occurrences of this type has already been prepared. Apart from performing specific tasks, the meetings are in themselves creating a ready network of correspondents from the competent authorities of the Member States to provide for optimum mutual assistance within the Community should the need arise.

A special effort will be made in the field of information and education of the public on radioactivity and radiation protection aspects. In particular, in primary and secondary education, pedagogical support material will be made available for teachers in an extended project. Suitable training of young scientists, medical personnel and other workers dealing with ionizing radiation will continue to play an important role in radiation protection. Several support actions are at present under consideration, including a training brochure for transport workers who transport radioactive material or waste, a videotape for general practitioners and graduating medical students on radiation protection in radiodiagnosis, informative brochures for dentists, etc.

Finally, in the field of management of radioactive wastes a number of signals indicate that the time has come to initiate work on a Community-wide strategy that embraces all types of radioactive waste including industrial and sanitary waste generated outside the nuclear fuel cycle. Such strategy should have as an overriding goal of assuring the protection of the environment, workers and population including future generations. The preparatory work will take into consideration the existing Community instruments as well as the implication of the Internal Market for the management of radioactive waste.

A key element of the strategic plan will be a Community Directive that will modify the basic safety standards for radiation protection to cover transfers of radioactive wastes. The Directive is already in an advanced state of preparation and will extend to radioactive waste the existing Community provisions on shipments of hazardous waste. According to the proposal under discussion all movements of radioactive waste will be submitted to a rigorous system of authorisation and control from their origin to their final destination.

Table 16 indicates the objectives, targets and measures to apply over the remainder of this decade. In summary, the Community will continue to improve standards of nuclear safety and radiation protection in order to maintain its excellent record; and as an essential complement, the Community will continue to contribute to mitigation of the consequences of the Chernobyl accident and to upgrading the safety of nuclear installations in the countries of the former Soviet Union and in Central and Eastern Europe. This latter aspect is dealt more fully with in the chapter dealing with international co-operation.

6.3. Civil protection and environmental emergencies

During the period of this Programme, this aspect of the Community's activity will be stepped up both as a practical contribution to the creation of a People's Europe and, more importantly, to reflect political and economic developments within and outside the Community.

Two particular aspects will determine the choice of priorities in this area:

— firstly, the need to improve the general state of readiness and the operational capacity of civil protection services for the purposes of securing human safety in the event of natural and technological disasters;

— secondly, the need to improve emergency response in the face of growing risks arising from large industrial concentrations, and the production, storage and transportation of toxic or hazardous substances and wastes; in addition, there is a special need to intensify international co-operation to improve response mechanisms in the case of grave environmental catastrophies such as forest fires and oil spills which, because of scale, often exceed the capacity of a single state to respond effectively.

Table 16: Nuclear safety

Objectives	Targets up to 2000	Measures	Time-frame	Actors
(a) UPGRADING OF SAFETY MEASURES	Update existing Community Basic Safety Standards according to the 1990 ICRP recommendations	Amendment of Directive 80/836/Euratom	1992 ⇒	*EC*, MS
	Keep BSS up to date with scientific developments and latest ICRP recommendations	As above	ongoing	*EC*, MS
	Harmonise Community nuclear safety requirements	Develop and implement Council Decision of 25 July 1975	ongoing	*EC*, MS
	Extend Community safety culture to the countries of the former Soviet Union and Central and Eastern Europe	— Technical Assistance Programmes	1991 ⇒	*EC*, MS, Industry
		— Extend G-24 coordination to include the countries of the former Soviet Union	1991 ⇒	*EC*, G-24
	International Framework Convention	Active support to the IAEA in the preparatory work	1992 ⇒	*EC*, IAEA
(b) VERIFICATION OF MONITORING INSTALLATIONS (ARTICLE 35 OF THE EURATOM TREATY)	Reactivation of a Treaty provision	Define verification objectives and goals	1991 ⇒	*EC*
		Implementation	ongoing	*EC*, MS
(c) STRATEGY ON WASTE MANAGEMENT	Complete BSS to include transfers of radioactive waste	Supplement Amendment of Directive 80/836/Euratom	1992 ⇒	*EC*, MS
	Strategic management plan for all radioactive waste	Establish, adopt and implement strategic plan	1992 ⇒	*EC*, MS, Industry
(d) ENHANCEMENT OF PUBLIC INFORMATION AND EDUCATION	Radiation protection education in primary and secondary school	— Handbook for teachers	1992	*EC*, MS
		— Brochures, videos	ongoing	idem
	Improve quality of public information	Standing conference on health and safety in the nuclear age	ongoing	*EC*
		Preparation and publication of a journalist's guide to nuclear power	1992	*EC*
		Recommendation for a harmonised approach to public information on indoor radon exposure 1	1993	*EC*
(e) ADEQUATE TRAINING IN RADIATION PROTECTION	Improve quality of ionising of different professional groups	Courses in different fields of radiation protection and nuclear safety	1992 ⇒	*EC*

In operational terms, it will be necessary to press ahead with further improvement and refinement of the mutual assistance procedures and arrangements in respect of both natural and technological catastrophies, including accidental pollution; optimisation of interventions in the case of emergencies and catastrophies in third countries will require improved coordination of the efforts of the Member States within the Community and increased co-operation with pertinent international organisations (IMO, UNEP, UNDRO, etc). More satisfactory mobilization of both personnel and material resources could be achieved by

— the establishment of Task Forces to respond to different types of emergency;

— increasing the range and quality of training courses and simulation exercises;

— improving information and communication systems for more rapid and efficient transmission of information, instructions and decisions between the key players in emergency situations.

The Community — with the Commission acting as facilitator — will continue to develop and improve the present information network and operational procedures. Furthermore, a renewed effort will be made in the matter of public awareness and education. The designation of the 12-month period from June 1993 as European Year of Civil Protection will offer an important and timely boost in this regard. Activities launched in anticipation of and during that year will be continued systematically at least up to the year 2000 when the UNs international decade on prevention of natural catastrophies closes.

CHAPTER 7

BROADENING THE RANGE OF INSTRUMENTS

One of the principal strengths of the European Community, as distinct from other international institutions such as the United Nations agencies and OECD, is that it is a legislative body; when it acts in a legislative capacity its measures are binding on its constituent Member States. Under the first four action programmes, Community activity has predominantly been in the form of Council Directives and Regulations. A great majority of the measures adopted have been designed to respond to clearly identified problems or to apply controls to certain processes or activities, though there are notable exceptions, such as the measures on environmental impact assessments, protection of wild fauna and flora and access to environmental information. Many of the Directives serve the dual purpose of protecting the environment and eliminating distortions of competition within the Internal Market.

As a consequence of this legislative activity, the Community and its constituent Member States have achieved a significant degree of success in containing threats to public health and the environment, which cannot be ignored and should not be understated, and now have a body of law which, though relatively young and far from complete, provides a very solid foundation for the further steps which require to be undertaken in the years ahead.

There will be a continuing need for legislative measures at Community level, particularly in respect of

— the establishment of fundamental levels of environmental care and protection;

— Community commitments to wider international agreements; and

— common standards and/or controls which may be deemed necessary or expedient to preserve the integrity of the Internal Market.

But it is not feasible to adopt a Directive or Regulation which says: 'Thou shalt act in a sustainable manner.' Also, because of the broad scope of many of the present-day environment issues and the threats to our biosphere posed by current trends in political, economic and social life, it is imperative to focus on the causes of environment-based problems in a different manner. It is essential to go to the root of these problems — human activity, human values in relation to the environment and natural resources and human behaviour and consumption patterns.

In order to bring about substantial changes in current trends and practices and to involve all sectors of society, in a spirit of shared responsibility, a broader mix of 'instruments' needs to be developed and applied. Environmental policy will rest on four main sets of instruments: regulatory instruments, market-based instruments (including economic and fiscal instruments and voluntary agreements), horizontal supporting instruments (research, information, education etc.) and financial support mechanisms. The following elements are important to the creation of an extended package: a fuller list of objectives, targets, time-frame and relevant actors is set out at the end of this Chapter — see *Table 17.*

7.1. Improvement of environmental data

Satisfactory guardianship of the environment, from conception of policies to the adoption and application of de facto measures, can ultimately be assured only if the quantity and quality of relevant information is good enough. Better knowledge and understanding of the fundamental laws which govern the performance and evolutionary processes of nature under the influence of natural phenomena and human interventions are indispensable. Knowledge of nature and natural processes is still limited; the ongoing scientific debate about the greenhouse effect and its possible consequences offers a striking example of this.

Work on the preparation of the Report of the State of the Environment published concurrently with this Programme has hightlighted the lacunae and deficiencies in the available environmental information in the Community and the Member States:

(a) in most Member States there is a number of different institutions or organisations involved in data collection and analysis; differences in nomenclatures, criteria, methodologies and interpretation militate against both compatibility and comparability, whether at national, regional or Community levels;

(b) there is a serious lack of base-line data, statistics, indicators and other quantitative and qualitative material required to assess environmental conditions and trends, to determine and adjust public policies and to underpin financial investments;

(c) there is an almost complete absence of the more precise, quantitative data on human interventions and influences on the environment which are needed for meaningful modelling exercises and the optimisation of policy and large-scale investment decisions;

(d) information which is available is often not processed or presented in a suitable form for potential end-users — administrations, enterprises and general public — and does not take account of the different levels of sophistication or simplification required, nor of the fact that different types of decision require different types or levels of information.

In the light of the foregoing, and bearing in mind the relationship between good decisions and good information, it is imperative that under this Programme a high level of priority be assigned to

— filling the current gaps in base-line data on the environment and improving their compatibility, comparability and transparency;

— standardisation of scientific and technical aspects of information retrieval, collation and interpretation to optimise the value and usefulness of data obtained at and between different administrative and business levels and between different geographical regions and levels;

— exploiting and strengthening the experiences and capacities of the European statistical system to deliver environmentally relevant statistics on a regular basis, which will be comparable to and linked to the traditional official statistics in the economic and social fields;

— increasing the frequency and improving the quality of state of the environment reports at local, regional, national and Community levels.

The European Environment Agency: an essential tool

Improvement of environmental information will demand a combined effort on the part of all relevant bodies and levels of administration working in an effective partnership. Against this background it was decided to establish a European Agency for the Environment and

the European Environment Information and Observation Network (1). The task assigned to the Agency is to supply those concerned with the Community Environment policy, in the Community Institutions or in the Member States, with reliable information, comparable across the European territory. This information will describe the quality and sensitivity of the environment, as well as the pressures bearing upon it. The Agency will operate in conjunction with Eurostat and the R & D arms of the Commission. The rôle of the European Environment Agency is seen as crucial in relation to the evaluation and dissemination of information, distinction between real and perceived risks and provision of a scientific and rational basis for decisions and actions affecting the environment and natural resources. It is imperative, accordingly, that the Agency become fully operational as a matter of considerable urgency.

7.2. Scientific research and technological development

While government, enterprise and consumers represent the essential economic players whose decisions can benefit or impact upon the environment, the range of options which can be brought into play will rely heavily on the success in identifying cause and effect relationships and in finding appropriate scientific and technological solutions. In Chapter 2 it is recognised that the ultimate limiting factor for economic and social development is the tolerance level of the natural environment. Concepts such as environmental tolerance and resilience, risk, impact, etc, which are essential in the formulation of policy, can only be defined and utilized by understanding fundamental environmental processes operating at the key spatial and temporal scales, and how these are altered by human activity. In each of the sectors addressed in this Programme, particular attention needs to be paid to opportunities for improving the environment and the management of the natural capital stock through the better use of existing technologies and the development and use of new or improved ones.

Considerable achievements have already been made in the development of clean technologies and genetic engineering, for example, but a wealth of opportunities and potential new industries awaits exploitation. For the most part, this field will need to be tackled at company, regional and national levels. The Community for its part, can make important contributions in the matters of bio-ethics, formulation and promotion of priority research programmes, exchanges of data and results and technology transfer.

The Community already has a significant involvement in research and development related to environmental problems and issues. Programmes such as Environment and Marine S & T include basic and strategic studies of global change, its possible impacts, ecosystem dynamics, natural and technological risks as well as environmental improvement through cleaner technologies, waste management and mitigation of industrial accident risks. Other R & D programmes, such as those on biotechnology, agro-industry, energy, industrial materials and information technologies, all contain work on their respective environmental aspects.

However, it is clear that a substantially increased and more coherent R & D effort is required in order to address the more far-sighted, cohesive and effective strategy contained in this Policy and Action Programme. In essence, EC-level R & D must provide direct support for the following objectives, inter alia,

— Provision of a scientific basis for evaluating state of the environment and improved early warning of environmental problems. This implies development of environmental baselines, indices, advanced monitoring and assessment systems, etc.

— Improved understanding of basic environmental processes and the impacts of human activities. Here, long-term strategic research is required to elucidate global change, its possible impacts and to define the conditions for environmentally sustainable development.

— Development of a sound basis for regulatory and market related instruments. This would comprise essentially pre-normative R & D concerning public health and safety, environmental risks and impact assessments, environmental audits, chemicals control, etc.

— Development and application of techniques for prevention, reduction and mitigation of environmental impact. This would include advances in environmental biotechnology, new materials, new and cleaner processes, improved waste management and prevention of industrial accidents. Work in this area will be directed primarily towards the target sectors identified in Chapter 4.

Finally, the relationships and linkages between environmental policy and supporting R & D must be substantially strengthened. In order to ensure maximum gain from R & D activities, improved information flow and feedback between R & D and policy formulation will be required, as well as a more adaptable approach to R & D so as to enable it to respond more directly and flexibly to

(1) Council Regulation EC/1210/90; OJ No L 120, 11. 5. 1990.

changing policy requirements. Reciprocally, it will be important to devise mechanisms whereby policy formulation and implementation can respond to changes in scientific knowledge and technological capability.

7.3. Sectoral and spatial planning

Sound land-use and structural planning can provide the framework and the ground-rules for the socio-economic development and ecological health of a country, region or locality. In the endeavour to achieve sustainability, the planning functions and the public authorities in whom responsibility is vested must ensure an optimisation of the 'mix' of industry, energy, transport, human habitation, leisure and tourism, ancillary services and supporting infrastructure which is consistent with the carrying capacity of the environment.

Integrated planning of this kind will be a particularly important element in the drive for economic and social cohesion in the Community. The achievement of the various mixes required in different areas and circumstances and at different population levels demand an advanced level of planning and co-ordination within the Member States.

The establishment of an appropriately comprehensive planning/development/environmental protection framework calls for the application of the principle of subsidiarity through decision-making at the most appropriate level, for example:

— at Member State or Community level where national and regional economic development plans or global issues are in question;

— at the level of natural geographical or regional units where regional development, pollution or river-basins are involved and for inter-urban transport;

— at local level for issues which have limited geographical impact.

Within the Community, land-use and structural planning generally follows an identifiable sequence starting with national or regional economic plans and ending with local physical development and environmental protection plans. The sequence has two principal components — the upstream policies or plans including control principles and statements of intent, and the downstream programmes and projects which form the basis of action. Given the goal of achieving sustainable development it seems only logical, if not essential, to apply an assessment of the environmental implications of all relevant policies, plans and programmes.

The integration of environmental assessment within the macro-planning process would not only enhance the protection of the environment and encourage optimisation of resource management but would also help to reduce those disparities in the international and inter-regional competition for new development projects which at present arise from disparities in assessment practices in the Member States.

Finally, in pursuance of their commitment to integration of policies, the Commission and the Member States have already undertaken — at the Maastricht Summit — to taken full account of environmental impact and the principle of sustainable development in the formulation and implementation of measures.

7.4. The economic approach: getting the prices right

Although the value of many environmental assets is difficult to measure in monetary terms and, in the case of particularly important or rare elements should not be priced in any event, valuations, pricing and accounting mechanisms have a pivotal role to play in the achievement of sustainable development. Economic valuations can help economic agents to take environmental impacts into account when they take investment or consumption decisions. Where market forces are relevant, prices should reflect the full cost to society of production and consumption, including the environmental costs.

Among the measures required to be taken in order to determine environmental costs with a view to more environmentally effective pricing mechanisms are:

— evaluation of the natural and environmental resource stocks of the Member States in economic terms;

— development of renewable resource indicators for Member States (and, in appropriate cases, regions) to show the rates at which natural resources are used and renewed including availability and use of water resources, soil formation and erosion, growth and harvesting of forests, regional fish populations and catches, etc;

— extension and adaptation of the traditional tools of economic statistics on the basis of research at national and European level, including modification of key economic indicators, such as GNP, so as to reflect the value of natural and environmental resources in generating current and future incomes and to account for environmental losses and damage on the basis of assigned monetary values;

— development of meaningful cost/benefit analysis methodologies and guidelines in respect of policy measures and actions which impinge on the environment and the natural resource stock;

— redefinition of accounting concepts, rules, conventions and methodology so as ensure that the consumption and use of environmental resources are accounted for as part of the full costs of production and reflected in market prices. Such measures must include appropriate checks and controls so as to ensure market transparency and fair competition.

To maintain or improve enterprise awareness of environmental issues, to ensure that all environmental expenses and risks are taken into account, and to facilitate a stewardship function of accounts on environmental topics, enterprises should:

— disclose in their annual reports details on their environmental policy and activities, and the effects thereof;

— disclose in their accounts the expenses on environmental programmes (this requires a clear definition of such expenses);

— make provision in their accounts for environmental risks and future environmental expenses.

Use of economic and fiscal incentives

In order to get the prices right and to create market based incentives for environmentally friendly economic behaviour, the use of economic and fiscal instruments will have to constitute an increasingly important part of the overall approach. The fundamental aim of these instruments will be to internalize all external environmental costs incurred during the whole life-cycle of products from source through production, distribution, use and final disposal, so that environmentally-friendly products will not be at a competitive disadvantage in the market place vis-à-vis products which cause pollution and waste. In this respect, two options are possible: a pricing approach and one related to quantity. While the Community and the Member States are currently engaged in the former, it will be important to study also the extent to which possible options such as tradeable permits could be utilized to control or reduce quantities. It will be of increasing importance to ensure that the range of instruments will be applied in a cost effective way so as to avoid unnecessary adjustment costs to the economy of the Community to minimise adverse distributional consequences and to achieve optimum environmental benefit. In developing such instruments, it will also be important to consider not only the potential impact on the local and wider environment but also their economic efficiency and regional impact.

A first important category of economic instruments consist of charges and levies. They are well understood and used, for instance in the field of water pollution. They have been developed in the past primarily to create the necessary funds for clean-up operations and infrastructures such as water treatment installations, and will remain important for these and other similar purposes such as waste disposal. However, in line with the polluter-pays principle, such charges should be progressively reorientated towards discouraging pollution at source and encouraging clean production processes, through market signals.

Responsibility for charges and levies on emissions from stationary sources traditionally has been a task for national and local authorities. According as such charges become more widespread and have real environmental impact and, in consequence, generate greater financial income, some intervention at Community level may be necessary to ensure that charging systems are designed in a transparent and comparable way, and to ensure that distortions of competition within the Community are avoided (e.g. in the cases of water and air pollution), especially where emissions or discharges from mobile sources are concerned.

As a second category, fiscal incentives can exert considerable influence on patterns of consumption and behaviour. Environmental considerations are already being taken into account in the fiscal area within the Community: ready examples include the differentiated duties being applied by the Member States in the case of unleaded and leaded petrol, the proposal for a Council Directive on excise duties on motor fuels from agricultural sources [1] and the energy/carbon tax envisaged in the Commission Communication 'A Community Strategy to limit carbon dioxide emissions and to improve energy efficiency' [2].

This evolution will be encouraged over the period covered by this Programme with a view to an overall modernisation and rationalization of fiscal systems to render them more responsive to the need to protect the natural resource base and the environment. In this regard, it is now widely accepted as economically more efficient to tax those activities which damage the economic resource structure, including the environment, and to reduce the burden of those taxes which can have a negative effect on employment and investment. Every care should be taken, however, to avoid increases in the overall burden of taxation.

[1] COM(92) 36 final, 28. 2. 1992.
[2] SEC(91) 1744 final, 14. 10. 1991.

State aids, involving direct and indirect subvention systems, form a third category of economic instruments. The Commission has already adopted a framework for environmental state aids in order to guarantee an orderly system in the Community which is compatible with the 'polluter pays principle'. This framework will be updated to take into consideration not only the growing importance of subsidies for particular types of environmental expenditure, but also to ensure the integrity of the Internal Market.

Fiscal deductions to encourage investments in environmental equipment and clean production processes constitute a particular category of state aids which is coming into increasing use. Such fiscal incentives can be very effective in speeding up the introduction of clean capital equipment, and should be encouraged to facilitate the critical transition towards sustainability.

A fourth category of market-based instruments to be developed in the Community is environmental auditing. In the first instance this has to be seen as an internal management tool which should indicate performance on resource management including use of raw materials, energy consumption, productivity levels and waste. It should highlight areas of risk, indicate performance on risk prevention and management and audit levels of safety and health in the work place. For shareholders, investors, financial and insurance institutions such resource-based audits would provide a performance indicator as important as traditional financial accounts. For public authorities and the public at large, environmental audits will provide both a compliance and performance indicator which can provide a boost to overall public confidence.

Lastly, an integrated Community approach to environmental liability will be established. The concept of 'shared responsibility' has an important dual aspect. On the one hand, it is important to share responsibility for preventing further damage to the environment. On the other hand, there is also the need to protect the common interest in the environment by making sure that, if damage to the environment does occur, it is properly remedied through restoration. Liability will be an essential tool of last resort to punish despoilation of the environment. In addition — and in line with the objective of prevention at source — it will provide a very clear economic incentive for management and control of risk, pollution and waste.

7.5. Public information and education

The success of the drive towards sustainability will depend to a very considerable extent on the decisions, actions and influence of the general public. But, while surveys show a high, and increasing, level of environmental awareness among the general public, the public is considerably lacking in essential information. In addition to having access to available environmental information under Council Directive 90/313/EEC [1] (due to come into force 31 December 1992) and a right to involvement in the assessment of environmental effects of major projects, it is essential that the citizen be enabled to participate in the process of setting conditions for operating licenses and integrated pollution control, and be facilitated in judging the actual performance of public and private enterprises through access to inventories of emissions, discharges and wastes and to environmental audits.

As regards general information, a comprehensive strategy will be required to inform the public at large, the social and economic partners, regional and local authorities and non-governmental organisations of the objectives and targets of Community environment policy and of their respective responsibilities and potential contributions. This strategy will provide for the creation of structures facilitating the participation of citizens and actors in the Commission's actions in this field. These structures could be set up on regional and/or local level, taking into account the experiences of existing networks (the centres for rural information and the local urban initiative centres).

The individual, as a consumer, can make a fully informed and rational choice only if the product information with which he/she is provided covers all relevant aspects such as performance, reliability, energy-efficiency, durability, running costs, etc, and if this information is given in a neutral form, supported by effective and dependable guarantees. The Community-wide eco-label will make a contribution in this respect, but it, too, will require to be developed within the short-to-medium term and combined with a more global approach to consumer safety and environmental protection.

The importance of education in the development of environmental awareness cannot be overstated and should be an integral element in school curricula from primary level onwards.

The starting point for joint action by the European Community and the Member States in the field of environmental education is the Resolution on Environmental Education of the Council and the Ministers of Education meeting within the Council of 24 May 1988 [2].

[1] OJ No L 158, 23. 6. 1990.
[2] OJ No C 177, 6. 7. 1988.

The Resolution states — inter alia — that:

'the objective of environmental education is to increase the public awareness of the problems in this field, as well as possible solutions, and to lay the foundations for a fully informed and active participation of the individual in the protection of the environment and the prudent and rational use of natural resources'.

This Programme calls for a speeding up of substantive implementation of the Resolution. Without prejudice to the Member States' prerogatives in the field of education, environmental studies — whether separate or integrated into natural and social science studies or amalgamated with other studies in preparation for everyday life (such as civics, politics, industrial relations, hygiene and health care) — should be included in all primary and secondary school curricula by the year 2000 at the latest and be listed as a formal examination option as soon as possible after that date. In order to work towards those goals it will be necessary to initiate, without delay, the establishment of university courses and summer-schools, teacher training programmes and the publication and development of environmental literature and teaching aids.

7.6. Professional education and training

Current and projected trends in structural and technological change, in market supply and demand, and in market competition can be attributed to a significant degree to a user-driven market which increasingly is demanding quality in all aspects of both products and services. The response to this demand is dictated by the level of skills and 'know-how' within the manufacturing and service sectors. Furthermore, empirical data in respect of Europe and the U.S.A. indicate that there is a close correlation between the proportion of population who undergo a high standard of professional and vocational education and training and regional prosperity; that in such regions there tends to be a demand for higher quality; and that producers of goods and services in those regions are competitive in wider, even global, markets.

These factors, among others, are indicative of the need for new or additional skills or training in administrations and in manufacturing and service industries if both the Community's environmental and Internal Market objectives are to be met. Specific skills and training requirements emerging from studies (e.g. the FAST programme) made across the Community include:

In the public sector,

— policy, structural and project decision-making and management;

— management of water resources;

— energy conservation and waste disposal in public institutions (hospitals, power stations, public offices, plant and machinery);

— monitoring of standards of adherence to legislation and operating conditions and of levels of pollution;

— operation of sewage plants and waste water treatment facilities;

— environmental impact assessment.

In the private sector, additional skills and training required at all levels, managerial and operational, include

— in manufacturing industry: research and development, process management, energy efficiency, exploitation of biotechnologies, prevention, reuse, recycling and safe disposal of wastes, containment and rehabilitation of contaminated sites, transport operations, vehicle maintenance and fuel conservation;

— in agriculture, horticulture and forestry: nature conservation and management, ecologically sustainable farming practices, agricultural and horticultural advisers, waste management, integrated pest control, erosion control and prevention and control of fire;

— in the services sector: environment consultancy (legal and technical), provision and dissemination of information and knowledge (especial to SMEs), environmental impact assessments, environmental accounting and auditing, cleaner and more efficient transport and better quality tourist services and information.

In terms of occupations, the needs include biologists and chemists, geologists and land surveyors, architects and land-use planners, civil, mechanical, electrical and production engineers, and environmental technicians, operatives and training specialists.

7.7. Financial support mechanisms

Within the overall context of sustainable development, conservation of natural resources and prevention of pollution and waste and effective application of the 'polluter pays principle' the policies and actions set out in this Programme should pay for themselves. Tenaciously pursued, they should increase industrial, economic and social efficiency and prosperity at no greater cost than more wasteful current practices.

As a matter of principle, financial interventions from Community or public funds must not have the effect of diminishing the fundamental responsibility of the relevant economic 'actors' and must not provide an alibi for failure to integrate the environmental dimension into production processes, into choices of individual

behaviour and into relevant economic and sectoral policies and programmes. Further, the fact that there are financial interventions must not create any misunderstanding that sustainable development is more expensive or less cost efficient than a laissez-faire approach.

Nevertheless, certain current and prospective financial mechanisms have, and will continue to have, a significant input into the achievement of objectives of the Programme.

The structural policies

The Community's Structural Funds — that is to say the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the guidance element of the European Agricultural Guidance and Guarantee Fund (EAGGF) — are applied in the Community to strenghten economic and social cohesion and benefit the poorer regions of the Community. A major reform of their operation was agreed in 1988; the financial resources available for assisting the weaker regions have been both increased and concentrated on specific objectives. The budget is being doubled in real terms between 1987 and 1993; in 1992 it represents about 27 % of the overall Community budget.

Of these Funds, the ERDF at present makes the most important contribution towards economic development through its direct intervention in the financing of productive investments and infrastructures. Many of its interventions have consequences for the environment. Within the ERDF, funds devoted to 'environmental projects' have risen considerably from around 100 MECU per year in 1985-1987 to some 700 MECU per year under the present programme (in 1991 prices), partly as a consequence of ENVIREG and other Community initiatives. The ESF, in its support of training and job-creation, and the EAGGF in its interventions on rural development and eco-farming also contribute to the protection and improvement of the environment.

In addition to the 'environmental' expenditure referred to, the Community Support Frameworks which form the contracts between the Member States and the Commission (as fund managers) require conformity with environmental legislation and assessment of the environmental impact of projects. However where models of regional development overemphasize short-term economic growth there can be environmental side effects which are not consistent with the goal of sustainable development. Yet more emphasis will be given, accordingly, to assessment of the wider implications of plans, programmes and projects for the environment and the sustainability of development.

Forthcoming review of the structural policies

In the further reform of the Structural Funds, the Community will aim to promote development which will be sustainable in pursuance of Article 2 of the new Treaty. In this context Fund-assisted development should be based on the intrinsic strengths and natural resources of the designated regions and be geared towards high quality processes and products. This implies both a greater level of integration of the environmental dimension into the Fund processes themselves — with the environment being treated as a mainstream concern of the development process — as well as improved coordination and synergy between the different funds. Such an approach will be fundamental for the longer-term economic and social cohesion of the Community.

In the case of the ERDF, Fund-assisted development will take account of the environmental implications. Member States will be encouraged to take an integrated approach, taking full account of the environmental impact at an early stage in the formulation of plans and programmes and avoiding environmental degradation that could be irreversible or would require costly corrective action in future.

As regards the ESF, this Programme stresses the importance which attaches to education and training aspects, including indications of professional and vocational expertise which will be needed for its effective implementation. In the context of the review, and in conjunction with the Task Force on Human Resources, Education, Training and Youth, the ESF will give increased support to job-creation and training related to environmental activities that facilitate sustainable regional development.

The opportunities and incentives to promote responsible management of land, forest and eco-systems through both the EAGGF and ESF will increase according as the Common Agricultural Policy is reoriented towards a better balanced and more dynamic management of rural areas of the Community. As a general principle to be applied in the long-term re-structuring of the CAP, entitlement to Community support will progressively become conditional on exploitation of agricultural and other rural resources in an environmentally acceptable way, and eventually in a way which enhances and improves the quality of the rural environment and the countryside in general.

Finally, as respects the Structural Funds in general, there is a need for more integrated planning and networking, especially where the integration and cohesion of peripheral regions are concerned — this is a theme

which will is pursued further in the framework of the 'Europe 2000' exercise (1).

Community Financial Instrument for the Environment (LIFE)

While the philosophical concepts of environmental responsibility and sustainable development are quite widely accepted, they still remain rather abstract for the vast majority of economic actors. Whether as administrators, entrepreneurs or consumers, they may not understand how they are expected to translate concepts into everyday actions. In this context, the principle tasks of LIFE will lie in

— defining and promoting models of production and behaviour which are in line with the principles of sustainable development;

— practical demonstration of the technical viability and economic efficiency of chosen models and actions;

— supporting specific demonstrations, pilot projects and horizontal information, education and training designed to influence the economic actors through the use of practical examples; and,

— strengthening administrative structures.

Up to now, these types of actions have been pursued in a rather disparate fashion through a collection of small-scale financial instruments — MEDSPA, NORSPA, ACE and ACNAT. LIFE is designed to achieve an effective integration and increased efficiency of the foregoing instruments through better co-ordination of procedures and better all-round management.

Institution of a Cohesion Fund

Article 130d of the Treaty on European Union provides for the establishment, before 31 December 1993, of a Cohesion Fund for the making of financial contributions to projects in the fields of environment and trans-European networks in the area of transport infrastructure. The potential beneficiaries are Greece, Ireland, Portugal and Spain. The very nature of the Fund presupposes a high level of Community intervention (85 to 90 %). The Cohesion Fund will add a new dimension to the economic and social cohesion effort. The new Fund will be to these States what the Structural policies are to the regions.

It is envisaged that Cohesion Fund financing will be subject to two conditions:

— Firstly, the projects to be considered must derive their origins from Community legislation. For projects in the field of environment this means that they must result from a Community decision which implies disproportionate costs for the public authorities of the Member State in question. In this way the Cohesion Fund will help the poorer Member States to effectively apply Community environmental legislation.

— The second condition is prior adoption by the Council of an economic convergence programme. Implementation of this programme will be monitored by the Community in the context of multilateral surveillance provided for in Article 104c of the Treaty.

The Commission will be presenting a proposal in the course of 1992 for a Regulation on the establishment and operation of the Fund.

The European Investment Bank

Environmental protection has constituted an important criterion for EIB project selection and appraisal for most of the last twenty years. In 1983, a formal declaration of intent on environmental policy was made by the EIB of a 'Declaration of Environmental Policies and Procedures relating to Economic Development', together with the World Bank, regional development banks, UNEP, UNDP and the Commission of the European Communities; the EIB became a member of the Environmental Committee of the International Development Institutions (CIDIE).

In 1984, the Board of Governors laid down the foundations of Bank policy enabling it to intervene in favour of environmentally-related projects throughout the entire Community. Since 1988 the Bank has maintained cooperation with the World Bank within the framework of the Environmental Programme for the Mediterranean (EPM). One result of this co-operation is the Mediterranean technical assistance programme, METAP, whose objective is to function as a catalyst for environmental investment in the region. Further opportunities for increased cooperation are envisaged — for instance, cofinancing investment within ENVIREG.

For its operating purposes the Bank has adopted an environmental definition which covers water-related projects, solid waste disposal, air pollution control, heritage conservation and certain urban pollution-reducing projects. Notwithstanding this rather restrictive definition there has been both a sharp increase in Bank lending in Member Countries in recent years (rising to 15 % of total lending in 1989) and a widening of types of environmental investment covered. The environmental content of the Bank's lending varies among the Member States (from 2 to 3 % in Portugal and France to 44 % in Germany), reflecting, among other factors, the Bank's range of lending possibilities in these countries.

(1) COM(91) 452 final, 7. 11. 1991.

Table 17: Horizontal measures

Objectives	Targets up to 2000	Actions	Time-frame	Actors
1. IMPROVEMENT OF DATA	— Improvement of Base-line data	— Community programme for environmental statistics	1992 ⇒	EEA + *EC*
		— National statistics on environment	1995	*MS*
		— Regional and Community statistics	1995	*EC*
	— Development of Environmental Indicators	— Indicators of general progress and trends	1995 1997	*EC* *EC*
	— Regular assessment of quality and progress	— National and Community reports on the state of the environment	1995 2000	*MS* *EC*
	— Inventory of polluting emissions and discharges, and waste	— Published inventories (progressive)	1994 ⇒	*EC*, Enterprise
2. SCIENTIFIC RESEARCH AND TECHNOLOGICAL DEVELOPMENT	— Considerable reinforcement of investments in general environment and energy R & D	— New R & D programme	1992/1996	*Enterprise* + MS + EC
	— Specific programmes as low carbon technology, biomass, and other renewable energies		1993	idem
	— Extended programmes on biotechnology, including its use in integrated pest control in agriculture		1995	idem
	— Expanded programme on clean technologies, recycling technologies, recyclable and reusable materials		1993	idem
3. SECTORAL AND SPATIAL PLANNING	Integrated socio-economic development plans	— Integrated Regional Development Plans	1992 ⇒	*MS, LAs,* EC
		— Integrated Transport Management Plans up to 2000	1994	*MS,* LAs, *EC*
		— Integrated Coastal Management Plans	1998	MS, *LAs,* EC
		— Integrated Transport Plans for 2010	1997	*MS,* LAs, *EC*
		— Environmental Impact Assessment at planning and at project level	1995 ⇒ ongoing	*MS, LAs,* EC
		— EIA applied to ERDF — aimed programmes + projects	1993 ⇒	*MS, LAs,* EC
4. GETTING THE PRICES RIGHT	Evaluation of environmental resource stock	— Preliminary guidelines linked to 'Improvement of Data'	1993 1995	*EC* *EEA, EC, MS*
(a) Evaluation and accounting	Development of renewable resource indicators	— 'Shadow' GNP tables showing natural resource values	1995 ⇒	*MS* + EC
	Modification of key economic indicators	— Formal GNP tables	1999 ⇒	idem
	Cost/benefit analysis	— Development + implementation of a coherent programme internalizing external costs	1992 ⇒	*MS* + Industry
	Institutions of environmental accounting mechanism	— Consultations with professional organisations	1992	*EC*
		— Community guidelines	1993	*Accountants* + *Prof.Bodies* + *EC*
		— Parallel accounts in companies	2000 ⇒	
	Disclosure of environmental issues in the accounts of enterprises	— Consultation with MS, Industry and professional organisations	1992/1993	*EC, MS,* Industry and Prof. Bodies
	Instruments	— EC Directive	1994	*EC* + MS

Objectives	Targets up to 2000	Actions	Time-frame	Actors
(b) Fiscal incentives	Integration of environment protection requirements into fiscal policies	— Promotion of fiscal incentives for environment	1993	*MS* + EC
(c) Charges	Improved transparency of charging systems	— Review of national and local levies and charges — collation of data	1993	*MS* + *LAs* + *EC*
(d) State Aids	Application of polluter pays principle	— Comprehensive review of State Aids in environment field	1992/1993	*EC* + *MS*
(e) Other economic and market related instruments	— Environmental Audit of all major public and private enterprises	— Directive on Eco-audits Eco-audits	1992 1994	*EC* + MS + Accountants
		— Consultations with MS, Industry and insurance institutions	1992/1993	*EC* + MS, LAs + Enterprise
		— Initiation of scheme of performance Bonds in respect of convenants and license conditions	1995	*MS* + LAs + Insurance companies
	— Integrated liability and joint responsibility	— Directive on civil liability for damage caused by waste	1993 ⇒	*EC* + MS
		— Discussion document on civil liability and joint responsibility systems	1992	*EC*
		— Adoption of EC regulation	1995	*EC* + MS
	— Deposit/Refund systems	— Progressive implementation Reports on progress and effectiveness	ongoing 1995/1998	*MS*, Enterprise *EC* + MS
5. PUBLIC INFORMATION AND EDUCATION	— Improved level of general information	— Public access to environment info	1993	*LAs, MS, EC*
		— Regular state-of-environment reports	1995 ⇒	*LAs, MS*
	— Specific information campaigns on selected themes	— Waste, energy consumption, transport etc. (to be decided by Environment Policy Review Group)	1992 ⇒	*EC, MS,* public utilities
	— Improved Consumer information	— Ecological labelling	1993 ⇒	*EC*, MS
		— Integrated Environmental/ Consumer Safety label	1998	*EC*, MS, Standards Institutes
	— Integrated environment into all primary and secondary school curricula	— Report on current situation and proposal on developments	1992	*EC*
		— Programme of pedagogic research	1992/1993	*MS*, Educ. Insts., EC
		— Adoption of general guidelines	1993	*MS*
		— Preparation of books/ teaching aids	ongoing	*Enterprise*
		— Training of teachers	1993 ⇒	*Educ. Insts.*
		— Integration into school curricula	2000	*MS*
		— Programme of seminars, summer schools, colloques	1993 ⇒	*MS*, Educ. Insts.
		— Annual update of progress	1993 ⇒	*EC*
6. PROFESSIONAL EDUCATION AND TRAINING	— Integration of environmental studies in a representative proportion of third level institutions	— Report on current situation for all sectors	1992	*EC*
		— Incorporation of environment studies	1993 ⇒	*National Educ. Insts.*
		— Idem of environment faculties	idem	idem

Objectives	Targets up to 2000	Actions	Time-frame	Actors
(continued)	— Vocational training programmes for technicians, machine operators, agronomists, foresters and other appropriate workers and trainers	— Pedagogic research, preparation of books and teaching aids	1992 ⇒	*Educ. Insts.* Enterprise
	— Professional training courses, seminars and workshop for planners, accountants, auditors	— Co-ordination among professional institutes, development of guidelines and procedures	1992 ⇒	*EC* + Prof. Bodies
	— Ongoing programme of courses and seminars for policy planners, transport managers, agricultural advisers, tourism operators	— idem	idem	idem
7. FINANCIAL SUPPORT MECHANISMS	Full integration of environmental dimension in disbursement of structural funds (with effect from the ratification of the new Treaty)	— Take account of environmental impact	1993 ⇒	*MS*, LAs, EC
	FEOGA aid to be orientated to favour sustainable, integrated farming and rural development	— Progressive re-orientation price to income supports	1992 ⇒	*EC*
		— Land management contracts	1992 ⇒	*MS* + EC
		— Rural Development Programme	Progressive	idem
		— Forest Development Programme	idem	*Forest Enterprises*, MS + EC
	LIFE to be developed as a 'booster mechanism' for effective implementation of environment policy	— initiation of LIFE	1992	*EC* + MS
		— Comprehensive review and extension as appropriate	1995	idem
	New Cohesion Fund	— Special boost for air, waste water, waste treatment etc.	1993-1998	*EC* + MS + LAs
	New financial support mechanisms to assists SME's	— Comprehensive survey of difficulties and needs	1992/1993	EC, *MS, industry Organisations*
		— Comprehensive review of State Aids in environment field	1993	*EC*

CHAPTER 8

SUBSIDIARITY AND SHARED RESPONSIBILITY

The principle of ***subsidiarity*** has been given a place of prominence and general application in the new Treaty on European Union. Article A refers to the process of creating an ever closer union among the peoples of Europe, *'in which decisions are taken as closely as possible to the citizen'*. On the basis Article 3b of the new Treaty, the Community will take action, in accordance with the principle of subsidiarity, only if and insofar as the objectives of the proposed action cannot be sufficiently achieved by the Member States and can therefore, by reason of the scale or effects of proposed action, be better achieved by the Community.

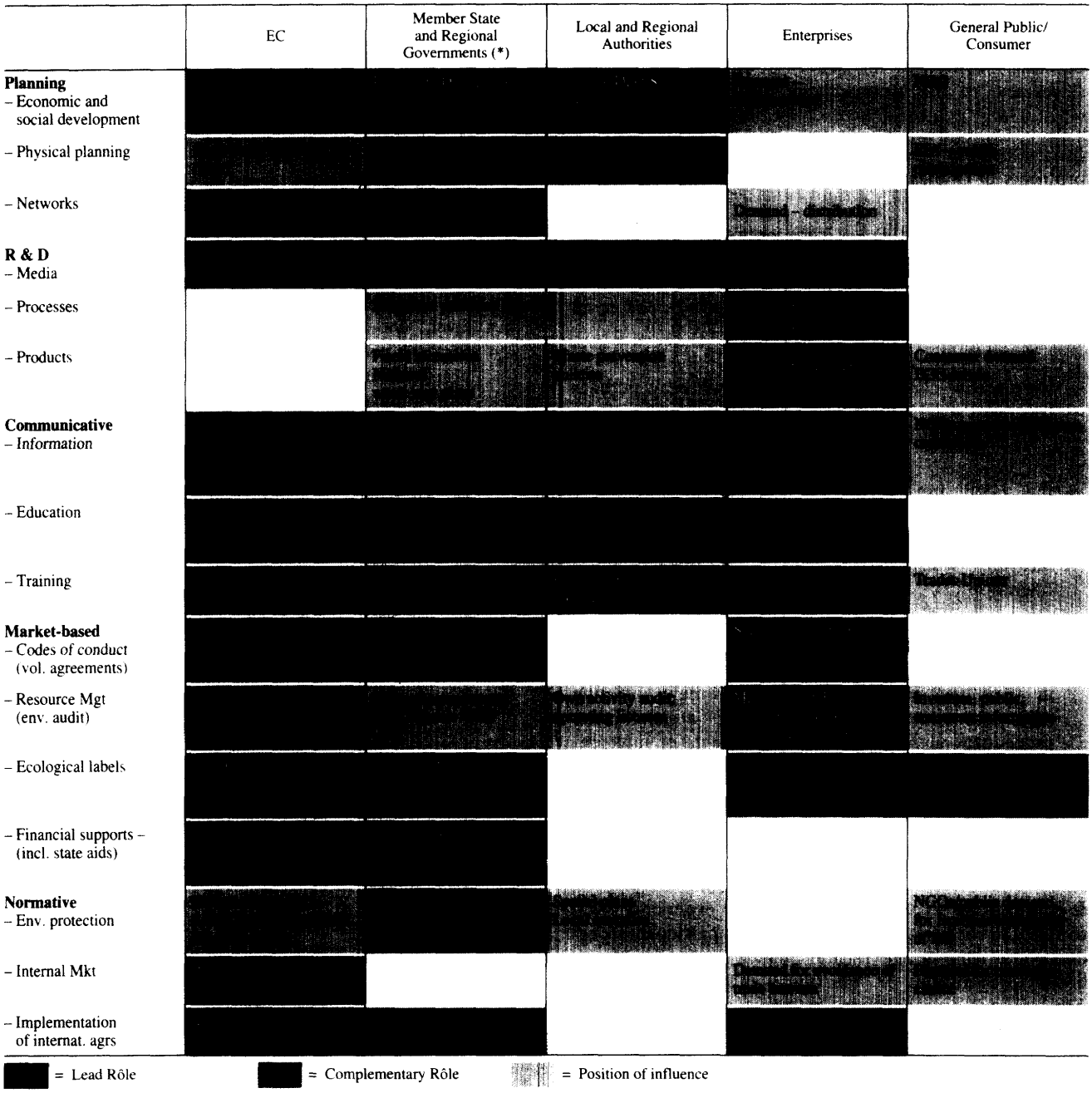
In drawing up this Programme, an attempt has been made to translate the principle of subsidiarity into operational terms.

Since the objectives and targets put forward in the Programme and the ultimate goal of sustainable development can only be achieved by *concerted* action on the part of all the relevant actors working together in partnership, the Programme combines the principle of subsidiarity with the wider concept of *shared responsibility*. This latter concept involves not so much a choice of action at one level to the excusion of others but, rather, a mixing of actors and instruments at the appropriate levels, without any calling into question of the division of competences between the Community, the Member States, regional and local authorities. For any one target or problem, the emphasis (actors and instruments) could lie with the Community/national/regional government level and for another with the regional/local/sectoral level or at the level of enterprises/general public/consumers.

The practical application of the principle of subsidiarity and shared responsibility will also involve respect for the current (Article 130r (4) and proposed (Article 130s (4) stipulation that without prejudice to certain measures of a Community nature, the Member States must finance and implement environment policy.

Table 18 represents an attempt to indicate the complementarity of actions at different levels within an overall framework of subsidiarity and shared responsibility. In other tables of the Programme the *'actors'* column indicates the different actors considered as most relevant to the implementation of specific measures.

Tabel 18: Examples of shared responsibility



(*) It is appreciated that, because of differences in the constitutional and instutional arrangements in the Member States, competences are not shared in a common manner. Accordingly, as the title indicates, this table is intended to provide theoritical examples of shared responsibility which are not intended to inferfere with existing divisions of competences. The reference to Regional Governments is used to cover sub-national governments such as the Länder in Germany and the regional administrations in Belgium, Italy and Spain which have certain exclusive competences in the fields of policy dealt with in this Programme.

CHAPTER 9

IMPLEMENTATION AND ENFORCEMENT

Satisfactory implementation and enforcement of the policy, strategy and measures set out in this Programme at all levels of society will be imperative if the objectives of environmental protection, sustainability of socio-economic activity and development and the integrity of the Internal Market are to be achieved. Ultimately, measures designed to facilitate sustainable development and involving all economic actors through the application of a broad range of instruments should be self-enforcing. For the foreseeable future, however, the likelihood is that the effectiveness of implementation will be closely related to the quality of the measures themselves and of the arrangements for their enforcement.

In the past, a number of factors has contributed to problems of implementation, including

— a lack of overall policy coherence, partly due to an evolving, sometimes shifting, agenda as the scope of environmental policy grew, and partly because much of the environmental legislation was developed in an ad hoc manner;

— the narrow choice of instruments, whereby perhaps too great a reliance was placed on regulation of the 'command and control' type;

— the need for unanimous agreement within the Council of Ministers, frequently necessitating political compromise, has resulted in some cases in measures which are difficult to put into practical operation;

— the preponderant recourse to Directives as the form of legal instrument has often given rise to difficulties in their incorporation into quite widely differing national statutory codes and administrative procedures with consequential problems of interpretation and practical implementation;

— management inadequacies at all administrative levels, from Community down to local authorities.

It is important to learn from these past experiences and to take appropriate steps to improve this particular aspect of policy. Among the reforms which are required are better preparation of measures, including improved consultation arrangements, more effective integration with complementary measures, better practical follow-up to legislative measures, both administrative and operative, and stricter compliance checking and enforcement.

In order to institute these reforms, it is intended to establish the following ad hoc dialogue groups:

(i) A consultative forum will be established to provide for consultation and information exchange between the industrial/production sectors, the business world, regional and local authorities, professional associations, trade unions, environmental and consumer organisations and relevant Directorates-General of the Commission; it is envisaged that this Forum will act as an umbrella organisation, with specialist subgroups set up as necessary to deal with specific topics or issues. The common interest in moving towards sustainability and the need to increase levels of awareness and consensus in the application of shared responsibility underline the importance of this Forum.

(ii) An implementation network comprising representatives of relevant national authorities and of the Commission in the field of practical implementation of Community measures; it will be aimed primarily at exchange of information and experience and at the development of common approaches at practical level, under the supervision of the Commission. Without prejudice to the specific responsibilities and prerogatives of the Commission in regard to implementation and enforcement under Articles 155 and 169 of the Treaty, the Network can help to promote consistency in the practical application of Community policy and rules as between the Member States. This will involve, inter alia, exchanges of information on technical developments, compliance initiatives and precautionary actions. Member States might also avail of the Network's expertise or assistance for advice on local or national compliance mechanisms, audits and reporting arrangements.

(iii) An environment policy review group comprising representatives of the Commission and the Member States at Director-General level will be established to develop mutual understanding and exchange of views on environmental policies and measures. It will be modelled on the Committee of Directors-General of Industry which has been operating very effectively for a number of years past. One of its essential purposes is to fill the gap resulting from the fact that communications between the Commission and the Member States on environment issues have largely been confined to deliberation of specific proposals within the Council and exchanges in relation to infringement proceedings.

These three dialogue groups will serve, in a special way, to promote a greater sense of responsibility among the principal actors in the partenariat, and to ensure effective and transparent application of measures. They are not

intended to duplicate the work of committees established by Community legislation for the purposes of follow-up in respect of specific measures, nor by the Commission in relation to specific fields of interest such as consumer protection, tourism development, etc. nor by Member States for implementation and enforcement of policy at national level. Finally, they will not substitute the existing dialogue between industry and the Commission, which it is intended to strengthen in any event.

Among the practical reforms to be undertaken will be:

Improvement in legislation

— a more careful choice and preparation of instruments: the legislative approach may not always be the best choice as a first step even though it may have an essential role to play in the longer term;

— relevant legislative measures and standards should benefit from prior consultation of the Consultative Forum and, before finalisation of content, should be subjected to an 'enforceability assessment';

— environmental legislation should incorporate specific enforcement provisions, notably where standards are prescribed;

— there should be a practical follow-through on all new legislation in terms of training programmes, seminars and workshops;

Implementation

— Directives adopted at Community level must be transposed in national legislation within the time-frames decided by the Council;

— Clean-up programmes and monitoring plans agreed in Council must be put in place in conformity with the time-frames adopted;

— All Member States that have not already done so should establish enforcement bodies and procedures to ensure full and equal compliance with both legislative and authorisation-associated requirements;

— The reporting requirements of various Directives and Regulations, recently rationalized by a composite Directive on reporting (1), must be assiduously adhered to;

— Because of the implications for the relative competitiveness of firms within the Internal Market, as well as for the purposes of applying the 'polluter pays principle' a comprehensive review of fines and penalties applied in different parts of the Community will be carried out before end-1993;

— Optimum transparency as regards implementation of legislation and, in particular, as regards authorisations for emissions into the environment must be assured.

Integration of policies

— In pursuance of the Treaty (Article 130r (2)) and the objective of sustainable development, the environmental dimension will be fully incorporated into all other Community policies;

— an assessment of the implications for the environment will be made in the course of drawing up Community policies and legislation with special care taken in the areas of internal market, international trade, industrial, energy, agriculture, transport, regional development and tourism;

— Member States should undertake similar integration by applying environmental impact assessments to their own plans and programmes.

— Non-compliance with EC and national legislation can result in damage to the environment as well as to property both in the physical and in the financial sense; it can also create distortions in competition between enterprises. In this context, the provisions of Article 171 of the new Treaty in regard to action by the European Court in the event of non-compliance, including the possibility of imposing a lump sum or penalty payment, could have an important incentive or corrective effect.

Involvement of the public

— Given their right of access to environmental information (Directive 90/313/EEC) (2) the public must be enabled to participate as fully as possible in the decision making processes for construction authorisations, operating permits, emission/discharge licences, etc; they have a direct interest in the quality of their living environment, and in addition, can provide an important spur to good performance by companies in their area — perhaps even as employees or managers; this principle must also apply for information at the disposal of Community institutions;

— An accessible and efficient complaints facility should be developed at local, regional and national level to improve confidence between public, competent

(1) OJ No L 377, 31. 12. 1991, 91/692/EEC.

(2) OJ No L 158, 23. 6. 1990.

authorities and industrial or business establishments. In this context, complaints should be considered less a nuisance than a resource. They are an indication to enforcement agencies of something amiss and can keep the competent authorities in touch with the realities of situations from which they may be geographically remote or which they are not in a position to monitor on a continuing basis.

— Individuals and public interest groups should have practicable access to the courts in order to ensure that their legitimate interests are protected and that prescribed environmental measures are effectively enforced and illegal practices stopped.

Environmental liability

— the Commission has already proposed a Directive in regard to civil liability for damage to the environment caused by waste (1);

— as soon as practicable the Community will establish a mechanism whereby damage to the environment is restored by the person or body who is responsible for the damage incurred; care will have be taken that the 'polluter pays principle' is fully respected;

— where the author of environmental damage cannot be readily identified — for instance in the case of pollution from diffuse sources — other mechanismes for liability-sharing should be devised.

Involvement of the European Environment Agency

Under the terms of the instituting Regulation, the issue as to whether the Agency should have a rôle in monitoring implementation of Community measures, was postponed for decision in the context of a review to be conducted after its first two years of operation. However, as a generator of environmental data, as a body charged with ensuring the quality and comparability of data and as producer of state-of-the-environment reports, the Agency will have a key rôle to play in the area of implementation and enforcement in any event.

Reports on implementation

Finally, the Commission will continue to provide reports to the Council, the European Parliament and the general public on the extent and quality of implementation and enforcement throughout the Community. According as the quantity and quality of information is improved in consequence of improved reporting by the Member States and availability of more dependable data through the European Environment Agency, together with the potential experience and observations of the proposed Network on practical implementation of Community measures, these reports will serve both as a performance indicator and as an incentive mechanism for general improvement of implementation and enforcement.

(1) OJ No C 251, 4. 10. 1989.

PART II

THE COMMUNITIES' RÔLE IN THE WIDER INTERNATIONAL ARENA

INTRODUCTION

In the early stages, Community policy and action on the environment were mainly focussed on the solution of particularly acute problems within the Community. Later there was a clearer recognition that pollution did not stop at its frontiers and that it was necessary, therefore, to intensify regional and international co-operation to combat transboundary pollution. In recent times, the evolution has gone a step further and it is now generally accepted that problems of a global nature are seriously threatening the ecological balance of our planet as a whole. Global issues relating to the environment and natural resources have now become so important that, in the run-up to 2000, they could be an important determinant of the ways in which international relations will develop — economically, politically and in security terms. This appreciation is now formally recognized in Article 130r (1) of the new Treaty on European Union which includes among the Community's environment policy objectives the promotion of measures at international level to deal with regional or world wide environment problems.

The scale, scope and nature of environmental and natural resource problems today is mainly due to the unprecedented level of socio-economic development during this present century, and particularly over the period since the end of World War II. The world is on history's steepest growth-curve: this century alone, the world's population has tripled; about four-fifths of this growth has taken place since 1950. Over the next 50 years, population levels are expected to double and even with only a very modest improvement in living standards there could be as much as a five-to-ten fold increase in economic activity touching all the key sectors, notably energy, transport, industry, construction and agriculture.

These trends pose a threat to nations' economic potential, their citizens' health, their internal political security and, in the case of global warming, their very existence.

In the Dublin Declaration, the European Council stressed the special responsibility of the Community and its constituent Member States to encourage and participate in international action to combat global environment problems. It stated that 'the Community must use more effectively its position of moral, economic and political authority to advance international efforts to solve global problems and to promote sustainable development and respect for the global commons'.

CHAPTER 10

ENVIRONMENTAL THREATS AND ISSUES

10.1. Global issues

Four major problems are an increasing cause of global concern and call for a coherent and effective response as a matter of urgency:

Climate change

Emissions from many different human activities are dramatically increasing atmospheric concentrations of greenhouse gases, such as carbon dioxide, methane and nitrous oxide. Notwithstanding some scientific uncertainty, experts agree that these changes in the composition of the Earth's atmosphere are resulting in a process of global warming with many associated risks — raising of sea levels, climatic disturbances, drought and desertification — which could have enormous implications for social and economic life.

Ozone layer depletion

A broad scientific consensus has emerged that several man-made chemicals especially CFCs — are responsible for the destruction of the stratospheric ozone layer which protects the Earth's surface from ultraviolet radiation. This is one of the few areas where a compre-

hensive remedial strategy including legal and financial measures — has been developed. Now however the situation appears to be more grave than previously thought. Scientific evidence published in December 1991 by UNEP (1) indicates that the depletion of the ozone layer over many parts of the globe is twice as serious as hitherto believed.

Biodiversity loss

Biodiversity is subject to increasing pressures mainly due to the disruption of ecosystems and the destruction of habitats. According to some estimates up to 100 species could be lost every day (2). Apart from its ecological implications, the erosion of the Earth's biological heritage could have serious economic effects since the potential to develop new products, especially food and medicines, is undermined as animal and plant species disappear.

Deforestation

Deforestation levels are causing increasing alarm, particularly in tropical and subtropical rain-forest areas: according to official FAO data, deforestation is now progressing at the rate of 17 million hectares per annum. This trend can aggravate other global environmental problems because of the role forests play as a sink for CO_2 and as a reservoir for biological diversity. In addition, about 2,5 million native inhabitants of the forest areas depend on their natural surroundings for food, fuel, furniture and clothing.

10.2. Problems of regional or local concern

Atmospheric pollution, deterioration of the marine environment , soil erosion and desertification, unsound management and disposal of hazardous wastes and toxic chemicals, industrial risks, rapid urban growth, degradation of freshwater resources etc. pose grave problems and challenges which have to be faced up to in many parts of the world if sustainable, ecologically sound development is to be achieved. Of course, the scale and extent of these problems vary according the particular economic and demographic situation in each region or country.

OECD countries

In the OECD countries some progress has been achieved in combating specific types of pollution and environmental degradation, but there are still many outstanding issues which will have to be urgently addressed (as is indicated in respect of the Community in the preceding chapters). It is clear however that the main challenge these countries will have to face will be to effect a substantial change in consumption patterns so as to reduce their share in the use of the world's natural resources, while at the same time ensuring a steady improvement of the quality of life.

Central and Eastern Europe

In many parts of Central and Eastern Europe environmental degradation is extremely severe. Past socio-economic structures and policies inculcating centralised planning and absence of public participation have contributed to the emergence of a situation characterized by inefficiency, wasteful practices and high pollution levels.

The developing countries

But it is in the developing countries that environmental problems are most serious. Soil degradation and desertification, destruction of habitats, over-exploitation of natural resources, deterioration of human settlements and degradation of fresh water resources rank among the developing nations' most pressing environmental problems. Population pressure and poverty are key factors in the emergence of unsustainable development patterns in many of these countries. Population growth places burgeoning demands on their fragile resource base for the provision of basic needs: an adequate diet, potable water, energy, shelter and material goods. At the same time, the dire economic position in which they find themselves may force these countries to adopt short-term ecologically harmful strategies in the endeavour to increase foreign exchange revenues needed to service immediate needs. Lack of adequate institutional and regulatory controls, combined with the limited availability of technical, human and financial resources exacerbates local and regional difficulties and problems.

(1) UNEP: Scientific Assessement of Ozone Depletion, 17. 12. 1991.

(2) Whereas only 1,5 million species are known today, some estimates put the total number of possible species at 10 times that amount. The daily loss rate indicated above has been estimated on the basis of this higher figure for total species.

CHAPTER 11

INTERNATIONAL CO-OPERATION

It goes without saying that no single nation alone, nor group of nations, can provide effective solutions to these problems. Rather, it is essential to secure a high degree of international cooperation and mutual understanding between nations and groups of nations if the world community is to have any real chance of finding just and sustainable solutions and of achieving both intergenerational and intragenerational equity — not only in environmental terms but also economically and politically.

Over the past twenty years, the Community has been playing an important part in international action in the field of the environment. The Community is a contracting party to some 30 conventions and international agreements, and is actively supporting the work of different international and regional institutions, such as UNEP, UN-ECE, OECD and the Council of Europe. In pursuance of its obligations under the Treaty, as amended by the Single European Act, and under Article 130r (1) of the new Treaty on European Union, the Community's involvement in international environmental action will be stepped up over the period covered by the Programme.

11.1. The Community's position on the major issues

As regards climate change, the Community's commitment to stabilise CO_2 emissions at 1990 levels by the year 2000 with further reductions thereafter is the basis for its position in the ongoing negotiations to draft a framework global Convention on climate change. The elaboration of complementary protocols to define specific global targets and commitments on carbon emissions and 'sinks', particularly forests, on the basis of such framework must also be accelerated. The Convention should set an ultimate global objective of stabilizing greenhouse gas concentrations at a level that would prevent dangerous anthropogenic interference with the global climate, within a time frame sufficient to allow ecosystems to adapt naturally. It should also take into account the common, but differentiated, responsibilities of the Parties, recognizing that the manner in which they will have to implement their commitments may depend on their level of development and greenhouse gas emissions.

The Community is a contracting party to the Vienna Convention for the protection of the ozone layer and to the Montreal Protocol on substances that deplete the ozone layer. The Community has decided to introduce unilateral control measures which are more severe than those in the Protocol. In view of the new scientific evidence available the Community would support a bringing forward of the phasing-out schedule agreed in June 1990, and urge all parties to the Montreal Protocol to adopt more stringent measures along the lines of the Community regulation.

The convention to be adopted on biological diversity at UNCED should recognize that the conservation of biological diversity for the benefit of present and future generations is a common responsibility of mankind, and should ensure its protection at three different levels: genetic diversity within each species, in order to maintain their evolution potential; the diversity of the species themselves; and lastly the variety of the ecosystems in which they are to be found. Ex-situ conservation should be regarded as a complement to in-situ conservation and never as a substitution to it. The convention on biological diversity should also address the questions concerning access to biogenetic resources and control of biotechnological risks.

The envisaged declaration at UNCED on the management and development of all forests — temperate, boreal and tropical — should incorporate a commitment to conclude an international Convention on forests at the earliest possible time. In addition the active participation of the ITTO and GATT will be necessary in order to address the particular issue of international trade in tropical timber with a view to reconciling environmental imperatives and legitimate trade activities in the meantime. Assistance in the forestry sector requires co-operation and coordination. A revamping of the Tropical Forestry Action Plan, with an emphasis on a country-driven rather than a donor-driven approach, will help countries to plan and manage their own forest resources in a sustainable way.

In conformity with the mandate given by the European Council and the G-7 economic summit, the Commission has launched a pilot project for the conservation of the largest tropical forest of the world. This is an exceptional initiative to which the Commission is participating with the Brazilian Government and the World Bank, and involving a total amount of 250 million US dollars. This

enables the Community to adopt a positive stance in the run-up to the UNCED Conference (Rio, June 1992). It is hoped that the results of the programme can be successfully applied to other regions.

11.2. Other priority issues of major international importance

The Community is in the process of formally adopting a new regulation to bring its legislation into line with the existing 'Prior Informed Consent' procedures in the case of international trade in toxic chemicals and pesticides. The elaboration of legally binding international agreements aimed at upgrading the status of the UNEP London Guidelines for the exchange of information on chemicals in international trade, as well as of the FAO Code of Conduct on distribution of pesticides would mark a major step forwards. The establishment of Prior Informed Consent procedures to reduce the risks associated to international trade in genetically modified organisms would also be highly desirable.

As regards hazardous wastes, efforts will be directed towards ensuring the widest possible application of the provisions of the Basle Convention, and towards the adoption of a specific Protocol to the Convention on liability and compensation. At the same time, the export of hazardous wastes to countries that do not have the facilities to treat and dispose of the wastes under the same stringent conditions as apply in the country of origin should be banned in accordance with the Lomé convention and other relevant regional conventions.

The Community should strengthen its involvement in all relevant initiatives to protect regional seas and international water courses. In addition to its participation in existing agreements for the protection of the Mediterranean and the North Sea, the Community intends soon to become a contracting party to the Helsinki Convention on the protection of the marine environment in the Baltic Sea Area. It is also participating in the negotiations for the eleboration of a framework convention on the protection and use of transboundary water courses and international lakes, as well as of a number of agreements on several European river basins, including the Danube basin. A convention on the Elbe was signed by the European Community together with Germany and the Czech and Slovak Federal Republic in 1990, and one on the Oder will be signed shortly. The Community is actively supporting, through its MEDSPA programme, the Environmental Programme for the Mediterranean launched jointly by the World Bank and the EIB. This plan provides a good example of inter-institutional co-operation for the protection of the environment which could be extended to other regions.

11.3. Global partnership

The ongoing negotiations on global environmental issues are increasingly demonstrating that a joint effort by both industrialised and developing countries is required to establish and execute a coherent and effective strategy to respond to these challenges. Its scientific and technological co-operation must be strengthened in order to reinforce endogenous technical capacities, flow of know-how and technologies must be accelerated with the active involvement of all relevant actors, particularly the business community.

High priority must be attached to the creation of new and additional financial resources to cover the supplementary costs which might fall on developing countries in consequence of internationally agreed measures to protect the global environment. In its conclusions on UNCED of 12 December 1991, the Environment Council recognised that new and additional financial resources are needed to assist developing countries to deal with global environmental externalities. It was also stressed that the Global Environmental Facility (GEF) should play a leading role as the multilateral financial mechanism in the resolution of environmental problems of global significance in developing countries, although its structure and procedures should be developed and adjusted so as to take into account the needs of the participating partners. The Community, as such, should be party to the GEF in order to optimize efficiency in the application of Community funds already committed for global and environment-related projects.

Recent experiences have shown that trade and environment related issues are becoming increasingly important as environmental policies and strategies are strengthened and extended at both national and international level. Against this background, it is essential to accelerate the dialogue on the interlinkages between environmental and trade policies in all relevant international fora, especially in the GATT. This dialogue should be one of the main priorities on the post-Uruguay Round agenda, and recognizing that unilateral use of trade instruments for environmental purposes should be avoided in principle, should focus on the role of international trade in promoting sustainable development.

11.4. Regional co-operation

It is particularly important to strengthen regional cooperation to tackle specific transboundary problems. The introduction of environmental considerations into regional co-operation instruments and the establishment and effective enforcement of appropriate legal agreements are needed to prevent the transposition of environmental problems or transfers of pollution from one country to its neighbours. A high priority should therefore be attached to the adoption of effective rules

for the management and protection of shared environmental resources for the prevention of detrimental transboundary impacts, and agreements on civil liability and compensation for environmental damage.

In this context, the Community must actively support regional initiatives in these areas, especially within the UN-ECE and the Council of Europe, by participating in the new convention on environmental impact assessment in a transboundary context, in the negotiations on prevention and control of transboundary effects of industrial accidents and deliberations on civil liability for damage resulting from activities dangerous to the environment.

11.5. Institutional issues

The solution of the emerging environmental challenges requires the improvement and strengthening of existing international institutions, in particular UNEP, as well as enhanced coordination between them to ensure optimum use of resources.

Particular emphasis should be put on achieving a better scientific understanding of ecological processes and on improving the collection and dissemination of environmental information, with a view to providing a sound basis for international action in this field. To this end the possibility of creating an international network of environmental agencies should be considered.

Finally, it must be said that the rapid development of international environment law which has taken place over the past two decades has not always been matched by a corresponding effort to implement the existing conventions and agreements. For this reason, it is essential to establish appropriate mechanisms to monitor compliance with regional and international environmental agreements. Questions relating to prevention and settlement of environmental disputes have also to be addressed, ensuring the participation of all relevant international actors.

CHAPTER 12

BILATERAL CO-OPERATION

Environmental concerns are now being reflected in the bilateral co-operation links established between the Community and its partners all over the world. Co-operation with other industrialised countries, with a view to achieving a better coordination of environmental policies and a more effective response to common environmental challenges has been steadily increasing particularly through active participation in the work carried out by the OECD. At the same time, the existing mechanisms for consultation and exchange of information on environmental issues between the Community and its major industrialised partners, namely USA, Canada, Japan and Australia, need to be substantially reinforced. In the pan-European context, the agreement on the European Economic Area calls for a progressive convergence of environmental policies in the Community and in EFTA countries. This convergence should be progressively reflected in international fora, where the positions adopted by both groups of countries already reflect similar concerns and objectives.

Environmental co-operation with industrialised countries should be reinforced and extended. It is particularly important to achieve a closer convergence of environmental policies, especially as regards those measures which might have a significant impact on the competitive position of industry. It is essential to avoid that the implementation of involving environment policies would have a detrimental effect on the competitiveness of a country or of a group of countries vis-à-vis its industrialised partners.

It is clear however that particular priority should be attached to the reinforcement of environmental co-operation with developing and Central and Eastern European countries, in view of the extremely severe environmental situation these countries are confronted with.

12.1. Developing countries

The Community is committed to assisting developing countries in addressing the increasingly grave environmental problems they face and in achieving sustainable development. At present, the Community and its Member states contribute about 47 % of total official development assistance, representing 0,45 % of GDP (over twice the percentage of funds provided by either the USA or Japan). The Community and Member States will continue to intensify their efforts: apart from the additional financial resources which will be required to promote the developing countries' participation in measures aimed at the solution of global environmental problems, it is necessary to increase official development aid and to mobilise new financial resources, especially private ones, to finance sustainable and environmentally sound development programmes and projects.

The Community and its Member States reaffirmed in December 1991 their commitment to reach the accepted UN target of 0,7 % of GNP for overseas development aid, in order to assist developing countries in the implementation of sustainable development policies at the national level.

Furthermore, coordination between Community aid and the individual bilateral programmes of the Member States has been strengthened over time to ensure a coherent and effective response to partners' needs. The Community is also working towards ever-closer coordination over long-term aid programming in the belief that its partners should not be faced with conflicting advice, priorities and administrative procedures from the various donor agencies within Europe. Such coordination also extends to other multinational donor institutions.

The African, Caribbean and Pacific (ACP) countries

At Community level, a significant effort has been undertaken over the past years to increase the resources available for co-operation with developing countries, and to make them more concessional. A comprehensive co-operation relationship with ACP countries has been established since 1963. Environmental protection and sustainable development are playing an increasingly important part in this relationship. These issues are at the very core of the Lomé IV Convention which was signed in December 1989 and came into effect in September 1991 (1). The Convention stresses that:

'development shall be based on a sustainable balance between its economic objectives, the rational management of the environment and the enhancement of natural and human resources ... priority must be given to environmental protection and the conservation of natural resources, which are essential conditions for sustainable and balanced development from both the economic and human viewpoints ... co-operation shall entail mutual responsibility for preservation of the natural heritage.'

A specific title of the Convention lists the main principles and priorities for ACP/EC environmental co-operation, and includes provisions for the screening of all projects and programmes for their environmental impact, on the furnishing of adequate information on pesticides and other toxic chemicals, and measures prohibiting the export of radioactive and hazardous waste from the Community to the ACP States.

As for the financial resources, the Community will make available to its ACP partners within the context of Lomé IV Convention, 12 000 MECU for the most part in the form of a subvention, phased over a period of 5 years. Between 1986 and 1989, 230 projects for combatting desertification were financed amounting to 1 700 MECU. To this, one must add projects for the management of marine resources, for the promotion of renewable energies and other similar interventions. Following the first assessment of indicative programmes of Lomé IV, it is expected that an amount of 400 MECU per annum will be allocated to environmental programmes.

The Asian and Latin American (ALA) countries

The evolution in the environmental dimension in the Lomé Conventions has its parallel in the evolution in policy orientations governing co-operation with the ALA countries. Under new guidelines established at the beginning of 1991, environmental protection is listed among the priority areas for co-operation. At least 10 % of the total amount available for technical and financial co-operation with ALA countries (2 750 MECU in the period 1991/1995) must be allocated to environmental projects. The new guidelines also stress the need to integrate environmental evaluation in the development process as a whole, with the aim of ensuring long-term protection of the natural resource base and sustainable development.

The non-Community Mediterranean Countries

Similarly, the renewed policy orientations in respect of co-operation with non-Community Mediterranean Countries for the period 1992/1996 foresee a reinforcement of regional co-operation in the field of the environment. Regional projects in this area — e.g. fight against marine pollution and management of coastal areas — will be implemented by means of horizontal co-operation outside bilateral agreements. An important part of the Mediterranean horizontal allocations of 230 MECU will be devoted to environmental projects including, in particular, demonstration and training projects. The EIB is expected to allocate some 1 800 MECU in loans to the region covering the entire range of projects proposed, including environmental projects referred to. In addition, environmental protection is one of the main priorities for the allocation of funds under the bilateral financial protocols (1 075 MECU in budgetary appropriations and 1 300 MECU in EIB's loans). MEDSPA, an environmental funding programme which enables expenditure on technical assistance in non-Community Mediterranean countries can also contribute in this area. Taken together, the above elements comprise a coherent set of financial instruments which could significantly contribute to implementing the commitments and objectives agreed by the riparian States, the Community, the EIB and the World Bank when adopting the Nicosia Charter (1990).

(1) OJ No L 229, 17. 8. 1991.

The question of priorities

Although the setting of priorities for cooperation in the field of the environment with our ACP, ALA and Mediterranean partners must be the result of a bilateral dialogue which takes account of the specific needs and priorities of each country, it is clear that for environmental co-operation to work effectively particular emphasis must be put on institution building and on the improvement of endogenous technical capacities in the developing countries. No programme of assistance will be successful if the recipient country lacks the skills, management, and organizational ability to formulate and implement appropriate environmental protection and sustainable development policies. The reinforcement of scientific and technological co-operation with developing countries is of vital importance; existing programmes for joint research and training in the environment and development field should be continued and extended. In the allocation of funds and in the choice of projects, high priority should also be accorded to programming which are crucial for the development process, such as energy efficiency and development of renewable energy sources, combating and reversal of land degradation, desertification and deforestation, and protection and management of fresh water resources.

Finally, the Community will establish appropriate environmental safeguards at both programme and project levels, as recognized, inter alia, in the Lomé IV Convention and in the Resolution on environment and development adopted by the Development Council in May 1990 (1).

12.2. Central and Eastern Europe (CEE)

The momentous political changes in Central and Eastern Europe have had a major impact on the international political agenda, with environmental issues featuring very high on the list of priorities for discussion. The improvement of environmental standards and the protection of human health and quality of life has been highlighted by the new democratic governments as a priority to be addressed in parallel with the process of economic reform and liberalization.

Environmental degradation in many CEE regions is severe; in some areas the damage already incurred may be irreversible. Although the extent and type of degradation varies from country to country, and from region to region, common problems prevail. These problems include extensive acid rain damage to forests (up to 75 % of Polish forests are said to be affected), and the poisoning of complete river systems (the water of the Vistula is unfit even for industrial use). There is a permanent high risk of serious industrial accidents particularly in the nuclear and chemical fields.

Many of the problems have a regional, transboundary dimension: the Vistula basin covers most East European countries, the Elbe crosses the Czech and Slovak Federal Republic and Germany, the Danube basin covers most of the southern countries: their pollution spreads into the Baltic, the North Sea and the Black Sea. *Figure 10* indicates the relative impact of depositions of SO_2 and NO_x in Europe resulting from emissions from Europe as a whole in 1990. The importance of taking a pan-European view in the case of these depositions can be deduced from *Figure 11* which indicates the projected depositions in 2000 on the basis of the most stringent scenario for the EC (see 'acidification') and expected reductions in Central and Eastern European countries (based on present undertakings).

Association Agreements

On 31 December 1991 the Community concluded Association Agreements with Poland, the Czech and Slovak Federal Republic and Hungary. They provide the long-term framework within which relations between the Community and these countries will develop including environmental co-operation. Similar Agreements with Roumania and Bulgaria are currently being negotiated. Trade and Co-operation Agreements with the Baltic States and Albania, which will also contain environmental provisions, are in preparation.

PHARE Environment Sector Strategy and Regional Programmes

Since the very beginning, environmental protection has been an integral part of the Community's PHARE programme of assistance for economic reform in Central and Eastern Europe. Originally geared to help Poland and Hungary, the programme now includes the Czech and Slovak Federal Republic, Roumania, Yugoslavia and Bulgaria.

The 1990 PHARE environment programmes were launched in Poland (22 million ECU), Hungary (25 million ECU), the Czech and Slovak Republic (30 million ECU) and in the ex-GDR (20 million ECU). Since these programmes comprised a relatively large number of different project activities, PHARE — financed technical assistance teams were set up in the respective Environment Ministries to assist with programme preparation and implementation. The experience of the PHARE 1990 programmes, based largely on 'project shopping lists', underlined the need for a more strategic approach to the environmental problems of the region.

(1) Council Resolution 6723/90 of 29. 5. 1990.

FIGURE 10: DEPOSITION OF SO_2 AND NO_x FROM ALL EUROPEAN SOURCES IN EXCESS OF CRITICAL LOADS IN 1990

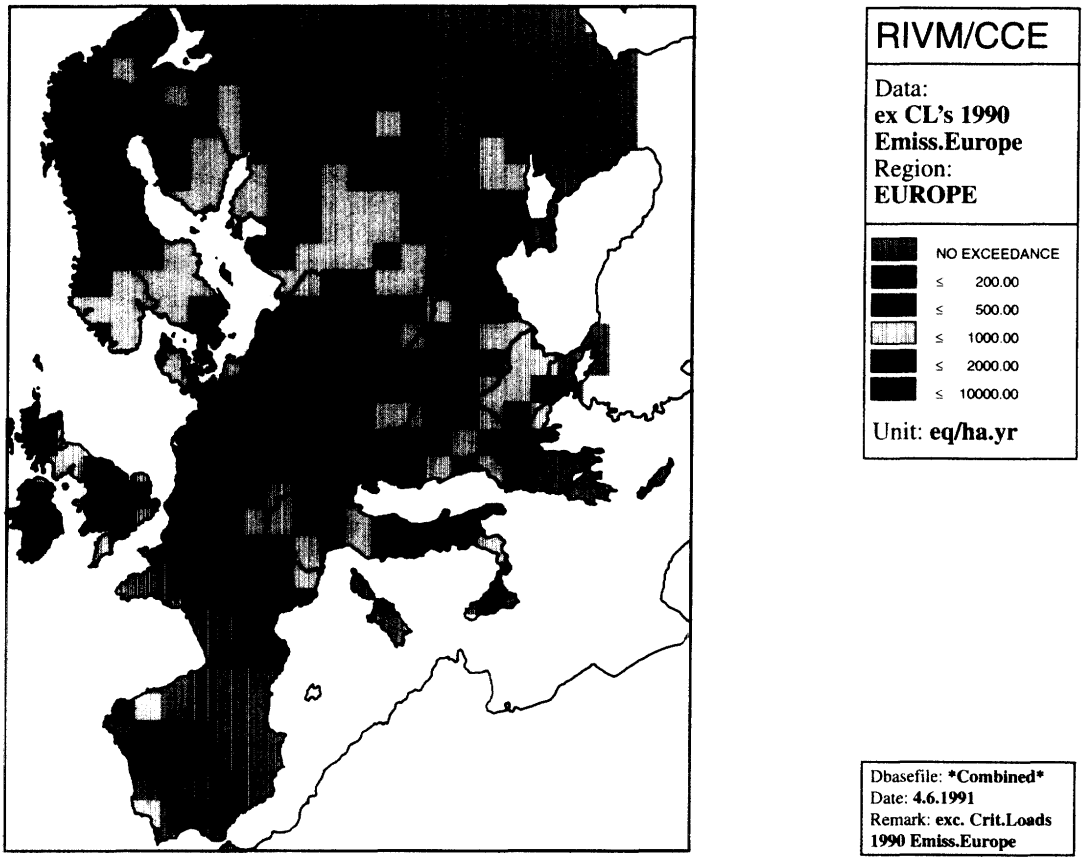
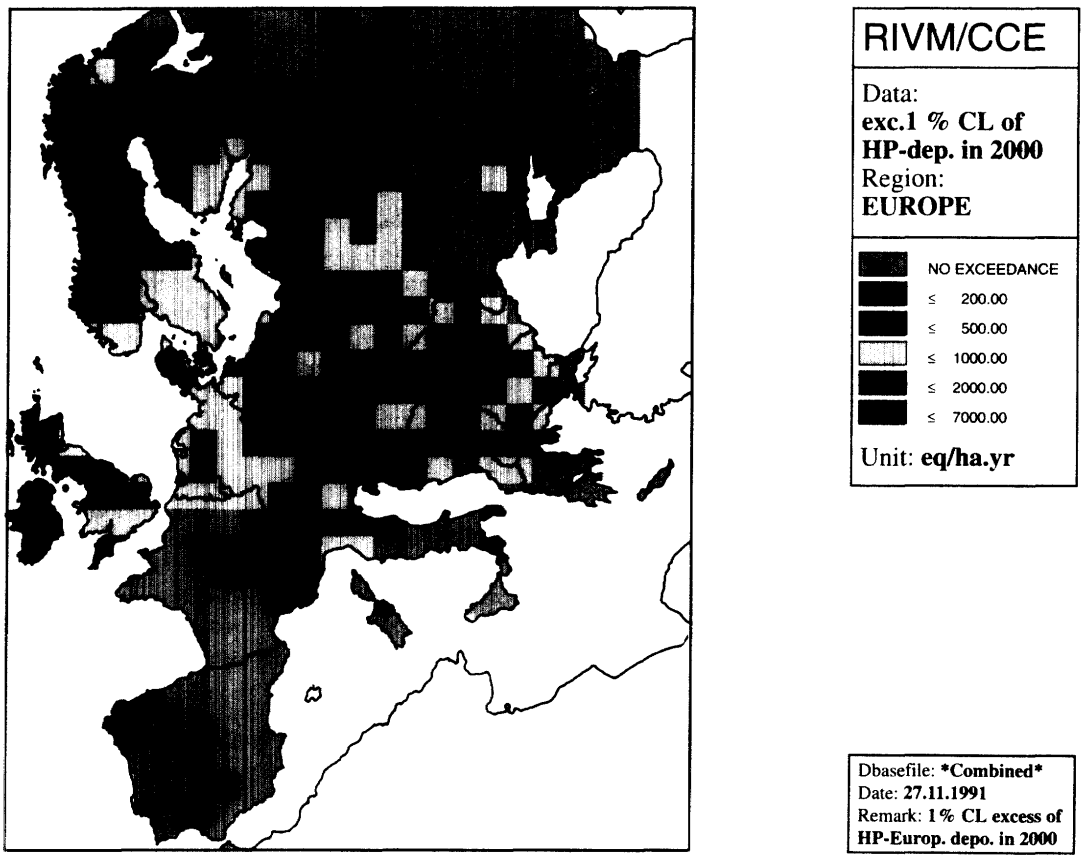


FIGURE 11: DEPOSITION OF SO_2 AND NO_x FROM EUROPEAN SOURCES IN EXCESS OF CRITICAL LOADS IN 2000 ON BASIS OF THE EC "HIGH PRICES" SCENARIO AND THE EXPECTED REDUCTIONS IN THE OTHER EUROPEAN COUNTRIES



Consequently an 'Environment Sector Strategy for CEE', covering a 3-year period, prepared by the Commission, has been endorsed by both the G-24 Environment Working Group and the Environment Ministers' meeting at Dobris Castle in June 1991. This strategy identifies a number of policy objectives and priorities including public awareness building, strengthening and expansion of the institutional, policy and regulatory frameworks and transfer of information and technology. This strategy provides the foundation for the 1991 PHARE Environment Programmes for Poland (35 million ECU), Hungary (10 million ECU), Roumania (2 million ECU), Bulgaria (15 million ECU) and the Czech and Slovak Federal Republic (5 million ECU).

In view of the transboundary nature of most environmental problems, the first regional environment programme under PHARE, with a Community contribution of 20 million ECU, was launched in 1991. This programme includes initiatives for the Danube Basin, the Black Triangle, the extension of CORINE activities to CEE, a Report on the State of the Environment in Europe and applied research.

Nuclear safety and radiation protection

Under the PHARE Environment Programme, 15 million ECU have been allocated from the 1991 budget to a Regional Nuclear Safety Programme. The Technical Assistance Programme for the former USSR countries includes an energy sector programme which provides 53 million ECU towards the management and safety of their nuclear installations. More wide-ranging possibilities will be offered by the recent co-operation agreement with the former USSR countries on nuclear safety as well as from the European Energy Charter and consequential Protocols.

Looking to the future

The task facing these governments is mountainous. Substantive, lasting, progress will only be possible with assistance from the outside, especially from the Community. During the period covered by the current Environment Sector Strategy major changes in policy will be determined, institutional and regulatory frameworks and capabilities strengthened, and the link between environmental and economic reform reinforced. But the financial investment needed to reduce pollution to critical load levels and to move to the sustainable use of natural resources in CEE will require resources which are clearly well beyond those available under the PHARE and other G-24 Programmes.

Consequently, as we move towards the year 2000, it will increasingly be the private and public sectors in the CEE countries themselves that must assume responsibility for generating the required investments needed to reduce pollution at source. This will require fundamental changes in pricing policies, substantial investments in new equipment and technologies, and even the complete closure of some of the very worst polluting production units. Extensive credits and forward-looking lending policies on the part of both national and international banking institutions will be called for. In this context the role of the recently established European Bank for Reconstruction and Development (EBRD) will be crucial; indeed the EBRD has already launched its first lending programmes in the environment sector in the CEE.

Table 19: International environmental issues

Objectives	Targets up to 2000	Measures required	Principle actors
1. Preservation of global biodiversity	— no further deterioration of ecosystems and habitats necessary to maintain diversity of species and within species	— Global Convention on Biodiversity	International Community
		— National and Regional Strategies on Biodiversity	All countries (EC + MS)
		— preventive approach, EIA	
		— inventories	
		— protection of forests, wetlands and other species — rich ecosystems	
		— Increased technical and financial Assistance to Developing Countries	Industrialized countries (including EC)
		— Valuation of biological resources	idem

Objectives	Targets up to 2000	Measures required	Principle actors
2. Control of global warming	— Stabilisation of CO_2 emissions at 1990 levels	— Global Climate Change Convention	International Community
	— Limitation or reduction of CH_4 emissions	— Protocol on CO_2 emission reductions	
	— Increased energy effiency	— Protocol on limitation of CH_4 emissions	
	— Protection/enhancement of Greenhouse gases reservoirs/sinks	— Increased technical and financial Assistance to Developing and CEE Countries	
		— National and Regional Strategies including	Individual States, Regions, including EC + MS
		— Invéntories of Greenhouse gases and sinks	
		— Increased energy effiency	
		— Promotion of renewable sources of energy	
		— Economic/fiscal incentives	
3. Protection of ozone layer	— Phase-out of production and use of CFCs, Halons, Carbontetrachloride and 1,1,1,-trichlorethane	— Full implementation of Montreal Protocol (incl. technical and financial assistance)	International Community
		— Review of scientific data and response	idem
		— EC Regulations	EC + MS
4. Protection of forests	— Maintenance/reinstatement of forests at least at 1990 levels	— Global agreement on protection, development and management of forests	International Community + ITTO
	— Substantial reafforestation programmes for tropical, temperate and boreal forest areas	— Implementation of forest provisions in global conventions on biodiversity and climate change	idem
	— Integrated protection/sustainable management of forest areas	— ITTO 'Target 2000' on timber trade	Producing and importing countries, ITTO, EC, GATT
		— Reduced timber consumption, including promotion of recycling of paper and board	idem
		— Restructuring of relevant international organisations e.g. ITTO, TFAP, UNEP	International Community
		— National strategies for promotion, enhancement and protection of forests	All countries
		— Finalization of pilot programme on Brazilian rain-forest; extension to other forest areas	Brazil, EC, World Bank, G-7, other countries
		— Increased technical and financial assistances to developing countries	International Community, EC
		— Monitoring of global forest coverage, including remote sensing	idem

Objectives	Targets up to 2000	Measures required	Principle actors
5. Promotion of sustainable development	— Relief of pressure on the environment in developing countries resulting from population growth and poverty	— Adoption and implementation of 'Agenda 21'	UNCED participants
		— Effective implementation of provisions on sustainable development in Lomé IV	EC + ACP
	— Integration of environmental objectives and criteria into macro-economic reform programmes	— Effective implementation of environmental guidelines for co-operation between EC and ALA countries	EC + ALA
	— Solution of critical problems for the development process in developing countries and in Central and Eastern Europe	— Effective implementation of Nicosia Charter	Mediterranean countries
	— energy demand and supply	— PHARE national and regional programmes	EC, EIB, MAP, World Bank
	— land degradation and desertification	— Increased technical and financial assistance to all developing countries for the formulation and implementation of national and regional programmes for sustainable development	International Community, EC, World Bank, G-24, EIB, Multinational companies, financial institutions, research and technological bodies
	— water resources	— institutional strengthening	
		— financial resources	
		— scientific and technical transfer, cooperation and assistance	
		— Increased public health and environmental awareness	International Community, individual countries, NGO's
		— governement, local and regional authority and corporate decision-makers	
		— general public	
		— Codes of conduct for enterprises	International Community, EC, MS, Enterprises
		— Investment in environmental clean-up in former centrally-planned countries	International Community, EC, PHARE, World Bank, EIB, BERD, Financial institutions

CHAPTER 13

UNCED: THE UNITED NATIONS' CONFERENCE ON ENVIRONMENT AND DEVELOPMENT

Just as the 1972 Conference in Stockholm created a new awareness and concern about the environment at broad international level, so too can the 1992 UN Conference in Rio de Janeiro bring global political will and commitment to effective action into a new dimension. The basic aim of the Conference is to elaborate strategies and measures to halt and reverse the effects of environmental degradation and to promote sustainable and environmentally sound development in all countries. It should therefore mark the transition from a model of development almost exclusively aimed at promoting economic growth towards a model wherein environmental protection and rational management of natural resources will be taken on board as integral components of development patterns.

The Community and its Member States are actively participating in UNCED's preparatory process. In October 1991, the Commission tabled a communication to the Council ('A common platform: Guidelines for the

Community for UNCED 1992' ([1])) proposing some basic orientations to guide the Community's stance at the Conference. This communication provided the basis for the adoption of the Council's conclusions of 12 December 1991 on UNCED, where it was particularly stressed that, although sustainable development is important to all countries, whatever the present state of their economies, there is a special responsibility on the more developed countries, not only to pursue sustainability themselves, but also to assist other countries, in a fair and constructive partnership based on mutual trust and equity, to make progress in the same direction.

Apart from the expected adoption of framework conventions on climate change and biodiversity and of a statement of principles on conservation and development of forests (including a commitment to conclude a legally binding instrument at the earliest possible time) UNCED's output should include two key elements:

— An *'Earth Charter'* or Declaration of basic rights and obligations with respect to environment and development.

— An agenda for action, *'Agenda 21'*, which will constitute the agreed work programme of the international community for the period beyond 1992 and into the 21st century.

It is clear that the outcome of UNCED will deeply influence the Community's actions, policies and objectives in the years to come. The implementation of the principles and measures to be agreed at the Conference will require, first of all, a reassessment of the Community's own internal policies; secondly, in conformity with the Dublin Declaration, the Community must continue its efforts to promote international action to protect the environment and to meet the specific needs and requirements of its partners in the developing world and in Central and Eastern Europe.

In the case of the link between the ACP countries and the Community under the Lomé Convention, the UNCED process will deepen joint reflection on future programmes and will help to promote mutual priorities in matters of protection and conservation of the environment.

The internal and external dimensions of Community environment policy are inextricably linked. Both aspects will have to be duly integrated to build up a coherent and effective response to the complex problems on UNCED's agenda. Whatever the remaining uncertainties about the extent and depth of the environmental damage we are inflicting upon our planet, the overwhelming evidence is that the threats and risks posed by current trends in consumption and behaviour are much too great to justify.

([1]) SEC(91) 1693 final, 30. 10. 1991.

PART III

PRIORITIES, COSTS, REVIEW

CHAPTER 14

SELECTION OF PRIORITIES

Because this Programme is as much about policy and strategy designed to change current trends as about specific actions, and because it is based on the principle of subsidiarity and the concept of shared responsibility, there is less a question of selection of priorities than a choice of critical paths. Clearly, in the case of some long-term objectives, as could apply in the transport and energy sectors for example, certain steps have to be taken as a matter of priority now in order to produce the desired results over an extended time-frame. In cases involving interaction between the public and private sectors, the determination of rules or establishment of guidelines by the former may be a prerequisite for actions by the latter, thereby indicating different time-frames and priorities in a common field of action.

Horizontal measures

In order to change patterns of consumption and behaviour in society so as to make them compatible with the concept of sustainability it will be necessary to strike a new balance between the perceived short-term benefits of individual persons or bodies and the long-term benefit of society as a whole. While the regulatory approach will continue to have an important function it would not be able to achieve the desired balance without the addition of complementary measures. To this end, the following horizontal measures are accorded priority:

— Improvement of Data: basic information, trends, indicators;

— Getting the Prices Right: internalisation of external costs through valuation and costing mechanisms, cost/benefit analysis, economic/fiscal incentives, environmental auditing, civil liability, etc.;

— Information, Education and Training of all economic actors including policy-makers, planners, managers, workers, consumers;

— Full Integration of Environment and Other Policies;

— Strict Implementation and Enforcement;

Priority fields of action

In the endeavour to move towards a more sustainable balance between human activity and socio-economic development and the resources and regenerative capacity of nature, priority is accorded to the following fields of action:

— Sustainable Management of Natural Resources: soil, water, natural areas and coastal zones;

— Integrated Pollution Control;

— Prevention and Management of Waste;

— Reduction in the Consumption of Non-Renewable Energy;

— More Efficient Management of Mobility;

— Improvement of the Urban Environment;

— Improvement of Health and Safety, with special emphasis on industrial risk assessment and management, nuclear safety and radiation protection.

It will be noted that, in keeping with the principle of subsidiarity and the concept of shared responsibility which permeates this Programme, many of the specific actions envisaged will fall to be carried out at levels other than that of the Community. Furthermore, pursuant to Treaty requirements on integration of environment into other policies, some of the above priority areas will fall to be pursued partly, or primarily, within the ambit of policies such as those on agriculture, energy and transport.

CHAPTER 15

THE QUESTION OF COSTS

General considerations

One of the major shortcomings of economic policy in the past has been its failure to take into account or measure accurately the full external costs imposed on the environment. Historically, the Earth's eco-system has been treated as an infinite source of raw materials, energy, water etc.

Society's income (or GDP) was seen to depend only on capital and labour resources. However, it is now clear that society's income today and in the future and the sustained production of goods and services depend not just on the availability of capital and labour but also on natural and environment resources. Failure to properly account for, cost and value the environment and environment policy may lead to a wholly misleading understanding of society's wealth, its income and its real sustainable development potential.

Policies which are designed to promote economic development are doomed to eventual failure if they do not include the environmental dimension as an integral component. The climatic changes, acidification, desertification, flooding, toxic waste and pollution which are causing so much concern today can all be traced back, to one extent or another, to short-sighted actions for economic gain which failed to take the longer-term environmental costs into account. Just as a sound business enterprise endeavours to maintain and increase its capital value and invests in facilities, expands production, buys new equipment and improves the quality of its services in order to protect its long-term health, so also Planet Earth requires certain types of 'investments' in order to maintain itself as a healthy ecosystem and to ensure long-term, sustainable, economic growth. Future generations depend on the investments we make now. Failure to make these investments in due time could ultimately put whole regions and ultimately civilization itself out of business.

Practical difficulties in costing the environment and its preservation

Firstly, it is not possible to indicate the potential 'cost' of the Programme as a whole to the Member States, the regional and local authorities and the economic actors. If the concept of sustainable development has any credibility, the ultimate benefits should outweigh the so-called costs over time; in this context, the new Treaty (Article 130r (3)) requires that the real cost of non-action be taken into account in any such equation; if the costs of 'non-action' are not taken into account, decision-making will tend to be biased against a sustainably optimal policy response. However, in practical terms, a number of major difficulties arise:

(i) Information about the physical state of the environment is often lacking or insufficient. There is uncertainty about the tolerance limits of the environment.

(ii) The costs of environmental damage or the benefits of repairing the environment or costs of 'non-action' are difficult to assess, with practical techniques only just beginning to emerge.

(iii) The value of the environment to future generations requires the choice of an appropriate discount rate, itself a potentially controversial issue.

(iv) Unlike business which uses money as a common unit of measurement, there is no 'numéraire' for environmental variables. This means it is difficult to weigh up true opportunity costs of improving one environmental variable against another. Also because some environmental threats may damage human health and, secondly, because ultimately all environmental variables interlink, environment policy requires an integrated or 'holistic' approach.

(v) Community public policy choices are governed not just by environmental costs and benefits (even if measurable) but by other principles enumerated in the Treaty (e.g. precautionary and preventive principles, social cohesion etc.).

Also, there should be a clear understanding that certain aspects of the environment are or can be 'priceless' and thereby not susceptible to normal economic costing mechanisms such as cost-benefit analysis or the free play of market forces e.g. an adequate quality level of drinking water, the last giant panda or elephant, the singing of birds, aspects of cultural heritage. Where satisfactory economic evaluation and costing is not possible, qualitative evaluation is an indispensable tool for accelerating the full integration of environmental considerations into the decision making process and transition towards sustainable development. To this end,

instruments such as environmental indicators and environmental impact assessments should be further developed and refined.

None of this is to deny the importance of costing environmental policies and programmes. In accordance with the Treaty, an analysis of the potential costs and benefits of action and non-action will be undertaken in developing specific formal proposals within the Commission. In developing such proposals every care will be taken as far as possible to avoid the imposition of this disproportionate costs and to ensure that the benefits will outweigh the costs over time.

Future perspectives on costing

As soon as may be possible, then, a broad and balanced approach to the design and the choice of environmental priorities must be elaborated, based on the fullest possible assessment of all relevant costs and benefits. In the same vein, the selection of instruments should be such as to allow given environmental targets to be reached with least costs. In this latter respect, the measurement of costs should include the administrative or resource costs carried by the public sector and an economic evaluation of the diminution of the natural resources stock as well as the compliance costs faced by enterprises and private households. The following 5-point plan is advanced as a package to be pursued during the term of the Programme in order to come to terms with the difficulties outlined above and to devise an appropriate and effective costing mechanism which will serve the dual requirement of environmental protection and sustainable development:

— As a matter of priority, improved information on the state of the environment, appropriate indicators and tolerance capacities must be made available to policy makers in order to better define sustainable development parameters.

— Further intensive research efforts are needed to value and account for the environment; international coordination and burden-sharing should be encouraged wherever possible in this domain. Appropriate discount rates should be chosen to safeguard the rights of future generations with due allowance for uncertainty and risk.

— A Community cost-benefit methodology should be drawn-up as a matter of urgency which could be applied to all projects and policies with an environmental dimension. Consideration should be given to whether the costs of 'shadow' environmental restoration projects should be included in economic cost-benefit analyses and under what conditions such shadow projects should be given preference (e.g. in conditions of great uncertainty).

— All Community environmental policies and other policies having an environmental dimension must be costed as comprehensively as possible, taking into account all costs and benefits of 'action' and 'non-action' in conformity with Article 130r of the Treaty. Where possible priorities should be determined on the basis of where benefits are highest.

— Environmentally adjusted (i.e. to take account of the natural resource stock of air, water, soil, landscape, heritage etc.) national accounts should be available on a pilot basis from 1995 onwards for all Community countries, with a view to formal adoption by the end of the decade.

CHAPTER 16

REVIEW OF THE PROGRAMME

The road to sustainable development both within the Community and beyond will be a long one. This Community Programme is intented to initiate changes in behaviour and trends at Community level, in the Member States, in the business world and at the level of the ordinary citizen. The approach adopted throughout is to determine

— objectives, either specific or general, pointing towards a sustainable development path;

— targets for the period up to 2000 so that there will be either a quantifiable or qualitative measure of progress; and

— actions to be taken in the short-to-medium term to initiate the journey and/or to accelerate progress.

Because of inadequacies in base-line data and projected trends there are bound to be uncertainties about the

validity of certain targets or the urgency of certain actions. However, the Heads of State and Government of the Community have determined that, in aiming for sustainable development, the precautionary approach should apply.

While this Programme adopts the end of the decade as its horizon, the present intention is to have it 'roll over' at an intermediate stage. Apart from the expected improvement in relevant information and availability of results from the Community's current research programme on the environment (1990-1994), there will be major reviews of Community policies on industry, energy, transport, agriculture and the Structural Funds over the next few years.

Applying the analogy of a large ship, which takes considerable time and space to manoeuvre, the 1992-1995 phase should be viewed as a priming period, changing the sense of direction and commitment, and the 1996-2000 phase as getting the operation under full steam. Accordingly, a comprehensive reappraisal of the situation will be undertaken and an up-dated report on the state of the environment and a review of the policy-cum-strategy set out in this Programme will be published before the end of 1995.

CONCLUSION

We are at a turning point in the integration of environment issues into the other policies of the Community. The impact of the Internal Market, the need to put sustainable development at the heart of other policies and to set an adequate example to the rest of the world require a major change in approach.

This Programme itself constitutes a turning point. It sets out for the first time both a strategy and timetable for the actions necessary to ensure that the Community itself moves towards a sustainable economy, and for assisting less-developed neighbours to do so also. This Programme is not merely a task for the Community institutions: it will require the full partnership and full support of all the actors necessary to make it work. The Community can only provide the framework.

The achievement of this Programme and its objective of sustainable development constitutes one of the major political and economic challenges for the Community between now and the year 2000. It is the basis for the 'more enlightened and more systematic approach to environmental management' that the European Council in June 1990 felt was urgently required. To fail to rise to this challenge would not only be detrimental to the present generation but would also constitute a grave disservice to future generations. The Community and all its citizens must take their responsibilities in their own hands. It is above all a shared responsibility which requires collective action.

The environment is dependent on our collective actions; tomorrow's environment depends on how we act today.