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OECD WORK ON SUSTAINABLE DEVELOPMENT

A disussion paper on work to be undertaken over the period 1998-2001

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FOREWORD

Sustainable development was one of five priority areas identified in my paper on the challenges and strategic objectives of the OECD presented to the OECD Council in 1997. The Report of the High-Level Advisory Group on Environment of November 1997, co-chaired by Jonathan Lash and Stephan Schmidheiny, suggested giving further impetus to work in the area and recommended that the OECD "should as a matter of urgency, develop into the key intergovernmental organisation providing the industrialised nations with the analytical and comparative framework of policy necessary for their economies to make the transition to sustainable development".

Discussion of the policy challenges associated with sustainable development is not new in the OECD. A first wave of work relevant to the environmental dimension of sustainable development started more than 25 years ago with the initiative to establish the Environment Directorate. OECD work intensified in the late 1980s and early 1990s, partly as a response to the World Commission's Report on Environment and Development ("The Brundtland Report" of April 1987). Significant work related to sustainable development has also taken place recently in the OECD and its affiliates.

In recognition of their global nature and importance, some dimensions of sustainable development have also been a growing element of OECD's work in relation to non-members. In particular, OECD's policy dialogues and analytical work through the programmes of the Committee on Co-operation with non-Members (CCNM) and the Development Centre, and policy co-ordination through the Development Assistance Committee (DAC) and the Club du Sahel, have been addressing the economic, environmental and social dimensions of the development of non-members, including but not limited to Brazil, China, India, Indonesia and Russia.

The integration of economic policy with environmental and social concerns is a major challenge for governments aiming at sustainable development. The point of departure of OECD work is economic development and the forces driving it in an increasingly globalised world, and how it can be made more sustainable. The implication for future work in the OECD and its affiliates is that committees and the Secretariat -- and ultimately Ministers -- need to view this particular concern through a broader, multi-disciplinary prism than they have done in the past. In this respect I refer to the first Article of the OECD Convention which mandates the Organisation "....to promote policies designed... to achieve the highest sustainable growth and employment and a rising standard of living ...". There is general agreement, as we move into the 21st Century, that environmental and social considerations are key elements or constraints for future economic development in a globalising world, and thus essential to ensuring the longer-term welfare of our populations.

Sustainable development will be a major horizontal activity for the OECD and its affiliates for the next three years, and I intend to produce a major report to the OECD Ministerial Council Meeting in 2001, inter alia as an input to Rio +10. A number of intermediate outputs will be produced as the work moves along.

In this project, the OECD intends to co-operate with other international organisations and non-governmental organisations in order to obtain synergies and avoid duplication. We aim at an open and transparent process that will broadly engage civil society.

Donald J. Johnston
Paris, July 1998

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Chapter 1. EXECUTIVE SUMMARY

1. This document provides information about, and a road map for, future OECD work on sustainable development. It is intended for use within the OECD and its affiliates, as a basis for exchange of views and co-operation with non-member countries and other international organisations, and as a catalyst for dialogue with business, trade unions, academia, research institutes and other non-governmental organisations.

2. The importance of sustainable development has been clearly recognised by the OECD Council at Ministerial Level. The Communiqué of the April 1998 Ministerial Meeting states that "Ministers agreed that the achievement of sustainable development is a key priority for OECD countries. They encouraged the elaboration of the Organisation's strategy for wide-ranging efforts over the next three years in the areas of climate change, technological development, sustainability indicators, and the environmental impact of subsidies...". Further, "Ministers asked the OECD to enhance its dialogue with non-member countries in these areas and to engage them more actively, including through shared analyses and development of strategies for implementing sustainable development".

3. To help countries in achieving a transition to sustainable development requires a framework for the integration of economic, environmental and social policy. This was the main call of the report to the OECD Secretary-General, Donald J. Johnston, of the High-Level Advisory Group on Environment, in November 1997[1]. The OECD and its affiliates are well equipped with broad, multidisciplinary expertise to assist Member governments in this task. Work on sustainable development encompasses the full range of activities of the Organisation: macro and micro-economic analysis; environmental policy; labour markets, education, health and social policies; agricultural and fisheries policies; energy policy; technology policy; regional, local and urban policies; and development co-operation. Activities with non-members add an essential global perspective. The challenge is to move beyond a sectoral approach to policies, and to exploit potential synergies and interrelationships between this wide range of competencies. Our response will involve as far as possible the harmonisation and integration of policies within an overall economic framework.

KEY DIMENSIONS OF SUSTAINABLE DEVELOPMENT

4. In 1987, the World Commission on Environment and Development (the Brundtland Commission) defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". The concept of sustainability is derived from the scientific literature, where it characterises the management of a natural resource in a manner that is consistent with the preservation of its reproductive capacity. In the social sciences, sustainable development implies a focus on welfare considerations broader than just economic growth, on equity concerns, and on the need for governments to address threats to global "commons", such as the environment, natural resources and a cohesive social system. The emphasis is on the links between the key components of sustainability, namely the economic, social and environmental dimensions; on the need to balance these links when there are conflicts; and on ensuring that economic policy takes into account environmental and social policy concerns, and vice versa.

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[1] "Guiding the Transition to Sustainable Development. A Critical role for the OECD". November 1997. This document is available on the OECD web site (http://www.oecd.org/subject/sustdev/index.htm).

5. The need for an integrated approach to policy is evident in the area of social and human capital. One partial 'economic' approach, often used in the assessment of social insurance programmes, defines sustainability in narrow financial terms, i.e. that anticipated payments should be covered by contributions. A more comprehensive approach, however, takes into account other concerns, e.g. social expectations, the effectiveness of social programmes in meeting their objectives, and their efficiency and employment impacts. "Balance" is the key for governments in achieving sustainability of social programmes: too little social expenditure may result in poverty and inadequate human capital formation, undermining long term growth prospects; too much social expenditure could reduce incentives for private provision and for work.

6. It is also true that environmental and social problems have an economic dimension that must be brought to the forefront. Major causes of environmental degradation are due to externalities and to the lack of well-defined property rights. Open access to many environmental resources means that economic agents lack the incentives to take the full costs of environmental degradation into account. Hence the importance of using economic instruments to 'get the price right'. The divergence between private and social costs which characterises the use of many environmental resources means that the desired mix between environmental amenities and the production of goods is not achieved by the market mechanisms in place.

7. Improving the environment and social conditions normally entails opportunity costs. This argues for pursuing these policy goals at the lowest possible cost, for balancing environmental and social protection with economic imperatives when these are in conflict, and for exploiting complementarities whenever possible. Hence, the application of environmental (and social) principles must be put into a cost-benefit framework, as ecosystems and natural resources cannot be protected regardless of the costs to society. The overarching objective of sustainable development is to maximise human welfare, and provide a sound economic, social and environmental base for future generations. The different dimensions of sustainable development are further elaborated in Chapter 2.

ACTIVITIES IN RELATION TO NON-MEMBERS

8. Given their global nature and importance, key aspects of sustainable development have been a growing element of OECD's work in relation to non-members. In particular, OECD's policy dialogues, analytical work and policy co-ordination have been addressing the economic, environmental and social dimensions of the development of non-members, including the "Big Five" (Brazil, China, India, Indonesia and Russia).

9. As discussed in the OECD report *The World in 2020*, non-OECD countries will account for a growing share of the world's environmental challenges. At the global level, a high-growth scenario could see a doubling of greenhouse gas emissions from 1992 to 2020, with non-OECD countries accounting for over three quarters of this increase. Non-OECD countries may also add to environmental pressure regionally, nationally and locally, and there are indications that these pressures could intensify insecurity and conflict within and between countries. The deepening of our co-operation with non-members on sustainable development, especially in relation to climate change, will imply: strengthening policy dialogue, particularly with the "Big Five"; continuing research and developing quantitative measures of sustainable development; examining mechanisms to facilitate the diffusion of cleaner technologies; and strengthening co-operation and links with multilateral financial institutions and others working with non-OECD economies, drawing on OECD's accumulated experience and networks in environmental management co-operation.

10. In the area of development co-operation, work is geared to the OECD's Partnership Strategy for the 21st Century. Adopted by the Development Assistance Committee (DAC) in May 1996, this strategy incorporates long-range development goals for economic well-being, social development and environmental sustainability. Monitoring progress towards these goals will build on a set of core indicators recently agreed upon by the OECD and other international organisations. More detailed information on our activities in relation to non-members is provided in Chapter 3.

HORIZONTAL PROJECTS ON SUSTAINABLE DEVELOPMENT

11. The OECD and its affiliates will develop and intensify their horizontal work on sustainable development over the next three years by elaborating upon and or commencing four specific projects, which are briefly described below. Other projects, e.g. drawing on work on regional, local and urban development, on work on natural resources, and on our activities with non-members could be developed as the work proceeds.

12. *Climate change.* This project aims to assist Member countries to respond to the threat of climate change in an effective, efficient and equitable way. It will address three main issues:

- Clarification and implementation of the Kyoto Protocol and the Convention. This will require assessing the design options of the new mechanisms and of the compliance system envisaged by the Protocol, as well as the domestic policy strategies for achieving emission reduction targets. The latter work will consider the reform of sectoral policies in the agriculture, transport and energy fields; the potential contribution of subsidies and fiscal policies; and the role of technologies to limit greenhouse gases.

- Effects of achieving the Kyoto targets, including the quantification of the economic effects. Building on the significant experience of the OECD and IEA, one strand of work will focus on the development and use of models to explore the economic aspects of climate change. Quantitative analysis will be complemented by a general evaluation of the Kyoto agreement, including analysis of technical, social and political issues which are not easily addressed by models.

- Moving beyond Kyoto to achieve the longer-term objective of stabilising concentrations of greenhouse gases. Work will address how incentives may encourage the participation of developing countries, consistent with the principle of 'common but differentiated responsibilities' and in the context of wider priorities on sustainable development; the economic benefits of involving non-Annex I countries in a global trading scheme; and the scope for low-cost greenhouse gases reduction measures and technology measures.

13. Work on this project, which draws on contributions from several OECD directorates and affiliates, will commence with preparations for an International Workshop on Climate Change Modelling, in September 1998, which aims at comparing results from a broad set of models. A short integrated note will be prepared for the November 1998 meeting of the Conference of the Parties (COP4) in Buenos Aires, highlighting our work plans. Additional information on this project is provided in Chapter 4.

14. *The impact of support measures, taxes and resource pricing.* 'Getting prices right' is essential to enhance the allocation of resources in the light of economic, social and environmental considerations. Regulations, the use of tradable permits, the reform of direct and indirect support measures, and the levying of fees, charges and taxes are all instruments that can be used to achieve these objectives. While the OECD has undertaken considerable work on the levels and effects of support and tax incentives to various economic sectors, this project recognises the need for a co-ordinated and more integrated approach to get prices right. The main objectives of the project are:

- To expand data gathering on support measures, environmental taxes and resource pricing methods, notably in agriculture, fisheries and energy.

- To further develop analytical tools to investigate how these policy measures interact with each other, with other policies and with country- and site-specific circumstances to affect the environment, the economy and employment, and to apply these tools in country reviews.

- To offer policy advice to countries on how to enhance the effectiveness of these policy measures, and to identify those areas where internationally concerted actions may alleviate the perceived political and economic consequences of acting alone.

15. Output from this project will draw on activities carried out across various OECD directorates, the IEA and the ECMT. These include work on support to agriculture; work on how government transfers affect fishing capacity and activity; studies on the environmental effects of liberalising trade in fossil fuels; work on support to coal producers and on the environmental effects of liberalising the energy sector; work on indicators of support to different transport modes; work on incentive measures for the conservation and sustainable use of biodiversity; work on water pricing and on the use of tradable permits for water management; collecting comparable data on environmental taxes; and reviews of the cost-effectiveness of the pursuit of environmental objectives by individual countries, including the use of economic instruments. The work on support measures, taxes and resource pricing will also be on the agenda of co-operative efforts with non-member countries. Additional information is provided in Chapter 5.

16. *Technology and sustainable development.* Technology and innovation have a key role to play in delinking economic growth from environmental degradation. OECD Member and non-member countries have a shared interest in strengthening the development and diffusion of cleaner technologies and environmentally-sound products. Provided that prices are set appropriately, there may be opportunities to reap major cost savings, enhance efficiencies in resource use, reduce pollutant emissions and waste generation, and establish cleaner and safer workplaces The primary aims of the project on technology and sustainable development are :

- To deepen understanding of the concepts of eco-efficiency and resource productivity, both in general and as applied to specific sectors and technologies.

- To understand how enterprises incorporate environmental objectives into their management strategies, and what signals are needed to stimulate investment in clean technologies.

- To recommend to Member countries policies which promote the development and use of environmentally-sustainable technologies.

17. This project will address a number of general issues, including the contribution of technology to eco-efficiency and resource productivity; the identification of the main barriers to the development and use of clean technologies in enterprises; the role of governments in the development and diffusion of clean technologies; strategies to reduce barriers to use and diffusion which may stem from lack of public understanding; and the role of development co-operation in helping developing countries to acquire and incorporate appropriate technologies. These issues will be further examined in a set of case studies of biotechnology, energy technology, and information technology. Additional information is provided in Chapter 6.

18. *Measuring performance. Indicators of sustainable development.* While the OECD has been in the forefront of the development of statistical and economic indicators, the emergence of the concept of sustainable development has intensified the need for indicators which capture the links between the economic, social and environmental dimensions. The main objectives of the horizontal project on indicators of sustainable development are to:

- Review progress toward establishing a common framework for the development of sustainable development indicators.

- Explore how progress can be made on technical aspects of indicator development, such as physical and monetary measures and spatial scales.

- Advance work on an integrated and practical set of indicators for policy analysis, including monitoring and evaluation.

19. The project will draw on work carried out in various OECD directorates on environmental indicators, sectoral indicators, and sustainable consumption indicators; on indicators of human capital, health outcomes, and other social indicators; on conventional economic indicators; on agri-environment indicators; on indicators covering demographic, economic, social and environment aspects for sub-national areas; and on energy-environment indicators. An informal meeting with country representatives and some international organisations, bringing together statisticians, analysts, and policy makers, is planned for 8-9 October 1998. The aim is to better define the OECD workplan, to get feedback from external observers, and associate partners to our work Additional information on this project is provided in Chapter 7.

WORK ORGANISATION

20. A three-year project organisation has been created:

- A Sustainable Development Steering Group, a Director-level co-ordinating body - chaired by the Secretary-General.

- A Director-level co-ordinating group on climate change chaired by Deputy Secretary-General Thorvald Moe.

- Five working groups with representation from OECD directorates and affiliates.

See the organisation chart in Annex I.

21. The various strands of work will be drawn together and presented to the OECD Ministerial Council Meeting in 2001. A number of intermediate outputs will be produced, including an integrated progress report to the OECD Ministerial Council Meeting in 1999. A key objective is to provide, in an consistent manner across OECD directorates and affiliates, policy analysis and concrete and pragmatic recommendations to be used as:

- Objective and high quality analytical inputs to on-going international processes of considerable economic importance, of which perhaps the most important is the climate change negotiation.

- A point of departure for strengthened co-operation with non-member countries, focusing perhaps on a few key aspects of global importance.

- A basis for peer reviews of national policies towards sustainable development in a number of Member countries, drawing on economic, environmental, energy, and social and educational reviews.

- A means of throwing further light on the environmental interface with important sectoral policies pertaining to agriculture and fisheries, energy and transport. Regional and local aspects could also be explored and incorporated in the overall report to the Ministerial Meeting in 2001.

CHAPTER 2. KEY DIMENSIONS OF SUSTAINABLE DEVELOPMENT

22. The sustainable development concept emphases the links between economic, social and environmental concerns. These links are complex, and the existence of complementarity or substitutability depends importantly on specific circumstances. Sustainable development focuses broadly on welfare rather, than economic growth alone, on equity considerations, and on the need for governments to address threats to the global "commons". It is important, in this context, to ensure that economic policy takes into account environmental and social policy concerns, and vice-versa, while fully exploiting the potential that new technology and more efficient production techniques hold. A core principle is that economic sustainability -- for example, saving and investment behaviour by current generations that will permit future generations to enjoy appropriate economic living standards, and suitable institutional frameworks such as pension and health systems which are viable over time -- is not sufficient to maximise welfare over the longer term.

23. Integration of economic policy with environmental and social concerns and full exploitation of the potential of new technology are essential to achieve sustainable development. Some of the challenges posed by this integration are illustrated below by looking at the economic, social and environmental dimensions.

THE ECONOMIC DIMENSION

24. Heightened interest in environmental and social problems in economic policy discussions reveals a growing awareness that such problems have important economic dimensions that must be brought to the forefront. In practical terms, what does this imply?

25. A major cause of environmental degradation is the presence of external environmental costs and the lack of well-defined property rights. Open access to many environmental resources, which are regarded as common property by economic agents, means that agents lack incentives to take the full costs of environmental degradation into account. A key factor in an effective pursuit of sustainable development is thus "getting the price right". The divergence between private and social costs which characterises the current use of many environmental resources, notably air and water, means that the desired mix between environmental amenity and the production of goods is not achieved by market forces under *laissez-faire* conditions.

26. Unless prices for raw materials and products properly reflect social and environmental costs and benefits, and unless prices can be assigned to air, water and land resources that presently serve as cost-free receptacles for the waste products of society, resources will be used inefficiently and pollution will increase. Hence, "externalities" need to be internalised either through the price system or by establishing property rights. The Polluter Pays Principle (PPP), established by the OECD governments in the 1970s, was aimed at dealing with one part of this problem but is by no means easy to apply, given the difficulties in estimating social costs. Valuing and dealing with environmental benefits is even more challenging. The acceptance of PPP -- even though it has not been fully applied -- and the increasing use of economic instruments, as well as the examination of subsidies harmful to the environment, seems to indicate increasing awareness that economic considerations must be factored into the setting of environmental policy. An example is the work of the ECMT Task Force on the Social Costs of Transport, completed in 1998, which established a standard basis for the examination of external costs, reviewed methodologies and estimates of transport externalities, and made recommendations on the mix of both economic and regulatory policy instruments for internalising them.

27. Energy being a fundamental element in economic development, a key question is whether energy demand growth can be compatible with sustainability. This depends on the level of economic activity, on the composition of output and on the technology and fuel mix. Work by the IEA has aimed to provide a comprehensive understanding of the relationship between economic growth and energy, in particular CO_2 energy-emissions, taking into account several technological issues.

28. Improving environmental and social conditions normally entails opportunity costs in terms of economic development. This argues for pursuing policy goals in these areas at the lowest possible cost. In terms of environmental protection this means that, ideally, the marginal benefit in terms of improved environment obtained for each extra resource spent should be equal across the range of possible interventions. Previous OECD work on measures to alleviate climate change has illustrated this clearly; concentrating a given overall emission cut in a few countries, where the costs of abatement are high, leads to an economic loss for the world as a whole compared to the situation where emission cuts are distributed so that their marginal costs are equalised.

29. The main economic instruments, environmental taxes and tradable permits, should be used to improve economic efficiency while meeting environmental objectives, but they raise difficult distributional implications. Used within a country, the revenues obtained through such taxes or by selling permits may allow governments to reduce other taxes that distort economic behaviour -- e.g. on labour -- and reap a double dividend in the form of improved economic performance. Used across countries, these instruments can ensure lower-cost outcomes. Wide involvement of non-OECD countries is desirable to minimise the cost of emission reductions; and necessary to achieve the longer-term objective of stabilising global concentrations. But securing limitation commitments from developing countries means that these countries must be persuaded that such commitments serve their self-interest.

30. Sustainable development must be seen in a dynamic and long-term perspective. Integrating sustainability criteria and objectives into economic strategies, in particular into investment decisions, requires integration of the time dimension, for instance by applying an appropriate discount rate. Current conventional discounting practices should therefore be re-assessed.

THE HUMAN CAPITAL AND SOCIAL DIMENSION

31. Work on the human capital and social dimensions of sustainable development is particularly important in view of:

- The changing nature of OECD jobs, with rising skill requirements, worsening employment opportunities for low-skilled workers, and the need for substantial investment in human capital formation.

- The chronic under-utilisation of human resources evidenced by high and persistent unemployment in many countries.

- The importance of minimising poverty and social exclusion.

- The implications of the ageing populations in OECD countries for prospective living standards, income and wealth distribution, and government expenditures.

These phenomena have significant, but as yet not fully understood, effects on trends in consumption which, given their environmental impact, deserve further exploration.

32. An integrated approach to policy is important in the area of social and human capital. One partial approach, often used in the assessment of social insurance programmes, defines sustainability in narrow financial terms, e.g. that anticipated payments should be covered by anticipated contributions to the scheme. From the perspective of sustainability, other concerns, such as social expectations, the effectiveness of social programmes, and their efficiency and employment impacts, should be taken into account. "Balance" is essential for the sustainability of social programmes: too little social expenditure may perpetuate poverty and inadequate human capital formation; excessive social expenditure could provide public benefits that reduce incentives for private provision and work.

33. The equity/efficiency trade-off perceived by many countries in setting their social, education and labour market policies is central to the identification of sustainable policies. This trade-off is one of the major social policy issues facing OECD countries, and one which was discussed by Social Policy Ministers at their meeting at the OECD on 23-24 June 1998. However, the policy choices are more complex as equity goals -- adequate income, health care and learning opportunities for all -- cannot be met in a shrinking economy. And growth in aggregate incomes from which significant sectors of society are excluded would be problematic should a growing pall of insecurity and social tension lead to a consensus that society is regressing, not progressing.

34. An important challenge is to identify as precisely as possible key points of sustainability, which will differ between countries on the basis of their prevailing social institutions, social norms and employment experiences. A substantial body of work is now available on the nature, effectiveness and deficiencies of education, labour market and social policies:

- In education, positive links have been found between investment in skills and economic growth and social cohesion, although there is uncertainty over the nature of the linkages. Lower unemployment, higher productivity, better health, more environmentally responsible behaviour, lower crime and higher levels of social participation are all associated with more education and training. Long-term economic growth is not sustainable without major and continued efforts by individuals, organisations and governments to invest in human capital through lifelong learning. To produce substantial benefits for individuals and society, education and training investments must be directed towards a broader range of economic and social goals.

- The follow-up to the OECD Jobs Study has produced detailed recommendations for countries to reduce high and persistent unemployment and tackle the problems of low pay and poverty; these recommendations assign major roles to education and training, labour market and social policies. Implementation is being monitored by a range of OECD committees.

35. We now have a good understanding of the nature of social programmes and recent reforms in OECD countries, as a result of the Caring World synthesis project and the on-going social assistance reviews in selected countries.

THE ENVIRONMENTAL DIMENSION

36. OECD Member countries have made significant achievements in environmental policy in recent decades. Reductions in emissions of sulphur dioxide and ozone-depleting CFCs, for instance, reflect successful national and international policy-making processes, informed by careful scientific research. However, major environmental difficulties remain to be solved. Energy use and associated CO_2 emissions of several OECD countries show an upward trend. A variety of local problems remain concerning waste disposal, water supply and water pollution. Globally, deforestation and the depletion of some fish stocks continues.

37. The ecosystem is a life-support system whose functioning is essential to human and other species' survival. The need to maintain its integrity for present and future generations, as expressed in the Brundtland Report, provides a set of boundary conditions for economic development. These conditions centre on ensuring that disturbances to ecosystems do not exceed such bounds and do not thereby adversely influence economic, social and environmental conditions. This has led to the following principles for setting policy:

- Limiting the release of substances to rates within the absorptive capacity of the environment -- this principle has been applied, for example, in international agreements on sulphur emissions, national regulations on water pollution, and national regulations on radioactive emissions based on international guidance.

- Managing renewable resources in a manner that ensures maintenance of their ecological functions -- this principle has been applied, in some cases, to forestry and fish stocks.

- Managing non-renewable resources in a manner that preserves their ecological function within the potential of renewable resources to replace them -- this principle is beginning to be applied, for example, to soil management in some countries.

38. The application of these principles requires the identification of the levels of resource use or pollution that would lead to irreversible damage to human health or ecosystems. The causal links between some economic activities and their environmental and human health impacts have been clearly demonstrated, for example, in the case of lead from gasoline or CFCs. Others remain the subject of scientific uncertainty. The Precautionary Principle, which formed part of the 1992 Rio Declaration signed by virtually all the world's nations, provides a basis for coping with this uncertainty. Lack of full scientific certainty about threats of serious or irreversible damage should not be a reason for inaction.

39. In a sustainable development perspective, environmental protection has to be balanced with economic growth when these are in conflict, although policy should be aimed at integrating environmental concerns with economic and social imperatives and, whenever possible, exploiting complementarities. Hence, the application of environmental principles must be put into a cost-benefit framework, because ecosystems and natural resources cannot be protected regardless of the cost to society. The overarching objective is to maximise human welfare, and provide a sound economic, social and environmental base for future generations.

40. A mix of different instruments will be necessary to ensure the most cost-effective means of achieving such aims. As mentioned in the remarks on the economic dimension, the presence of environmental externalities and hence the divergence between private and social costs requires a range of measures which attempt to take account of these factors. Since the OECD Council's recommendation in 1972 on the application of the Polluter Pays Principle, numerous OECD reports have examined its practical implications, and reviewed experience with economic and other instruments.

41. A considerable effort has been made in Member countries and in the Organisation to develop methods for evaluating environmental damage costs or externalities. These costs can be internalised through environmental taxes. Placing values on environmental goods and services also allows, in theory, for their inclusion in national accounts, forming a better basis for policy strategies. Alternatively, risk analysis allows the application of concepts such as environmental "options" or "insurance". Environmental criteria can also be introduced into economic processes as boundary conditions. In this case, the most common policy solution so far has been regulation, although there is also an important role for economic instruments in ensuring that such constraints never bind. Again, the OECD has carried out a great deal of analysis of the theory and practice of the various policy instruments.

42. Several horizontal OECD studies have to some extent examined the relationship between environmental, economic and social priorities with regard to specific issues. These include the work on employment and the environment, trade and the environment, agriculture and the environment, sustainable fisheries, "Regulatory Reform", "Linkages" and "Globalisation".

Chapter 3. ACTIVITIES IN RELATION TO NON-MEMBERS

43. Sustainable development has been a growing element of OECD's co-operation with non-members. OECD's policy dialogue with non-members, its analytical work and development co-operation activities have been addressing the economic, environmental and social dimensions of the development of non-members, including the "Big Five" (Brazil, China, India, Indonesia and Russia).

CO-OPERATIVE RELATIONS WITH NON-MEMBERS

44. Co-operative relations with non-members on environment has involved:

- Environmental performance reviews of a number of transition economies (a review of Russia is underway).
- Policy dialogue with a wide range of emerging and transition economies, including through participation in the Climate Change Forum (the “Big Five”, and some other Asian and Africa countries attended the last Forum), as well as in sectoral meetings covering sustainable agriculture and rural development policies.
- Development of a series of DAC Guidelines on Aid and Environment to promote best practices in strengthening the capacity of developing countries to address environmental challenges and implement their national strategies for sustainable development.
- Serving since 1993 as the Secretariat to a Task Force to implement an Environmental Action Programme for Central and Eastern Europe.
- Research and modelling, including maintenance by the Development Centre of the OECD's "GREEN Model".

45. Further OECD work on sustainable development will involve increasing co-operation with non-member countries. As discussed in *The World in 2020*, the “Big Five”, along with the United States, Japan and Germany, could disproportionately shape future global environmental trends. Together these countries already account for more than half the world's population, and of its economic output, carbon emissions and forests.

46. Looking ahead to 2020, a large shift in economic weight from the OECD area towards non-OECD economies is in prospect. This shift has the potential to promote sustainable development if economic growth can be decoupled from pollution generation and resource consumption. This could occur, for example, through a shift of production from ‘materials-based’ manufacturing to ‘knowledge-based’ services; through development and diffusion of cleaner technologies; by the alleviation of poverty and its associated environmental effects; by the achievement of agricultural sustainability and the sound management of resources; and by the generation of additional wealth to finance environmental improvement. However, to the extent that this potential is not realised, overall resource consumption and pollution will increase.

47. Thus, non-OECD countries will likely account for a growing share of the world's environmental challenges. For example, a high growth scenario could see a doubling of greenhouse gas emissions from 1992 to 2020. The “Big Five” could account for over 40 per cent of this increase in emissions, and the non-OECD area for over three-quarters of it, unless action is taken. Non-OECD economies may also add to environmental pressures regionally, nationally and locally. This may occur through rising volumes of hazardous and other wastes, the concentration of populations in "mega-cities", more intensive agriculture, timber and fisheries exploitation, and growing demands for fresh water resources[2]. There are already indications that these pressures could intensify insecurity and conflict within and between countries.

48. The Organisation's co-operation with non-OECD economies on sustainable development could take the form of strengthening policy dialogue activities, particularly with the “Big Five”, placing initial emphasis on their national sustainable development priorities in order to create the confidence required for deepening co-operation on global challenges, such as climate change; continuing research and improving quantitative measures of sustainable development through use of the GREEN model; and examining mechanisms to facilitate the diffusion of cleaner technologies in non-OECD economies. It will be important to strengthen co-operation and links with multilateral financial institutions, notably the World Bank, and others working with non-OECD economies, drawing on OECD's accumulated experience and networks in environmental management co-operation.

DEVELOPMENT CO-OPERATION

49. Policy co-ordination in development co-operation is geared to OECD's Partnership Strategy for the 21st Century. Adopted by the DAC in May 1996, the strategy incorporates long-range goals for economic well-being, social development and environmental sustainability. It recognises that developing countries have an even more unforgiving margin of error than OECD countries in balancing these goals. More exchange of experience on how best to achieve this integrated balance is needed.

50. The Partnership Strategy seeks to help developing countries to play their part both in responding to global sustainability problems, and in building their own human, institutional and financial capacities. The political choice and public policy management needed to promote sustainable development put a premium on good governance, effective participation, and conflict management. Advancing global strategic goals for sustainable development goals will be the focus of the Organisation's development co-operation work. Progress will be monitored with the help of a preliminary set of core indicators worked out by DAC, the World Bank, UN and others. (See also Chapter 7.)

51. The Club du Sahel provides support for the formulation of coherent policies in a vulnerable sub-region. These efforts focus on the dimensions of sustainable rural development, integrating natural resource management, food security issues and agricultural change, including the implementation of the Desertification Convention. Impact indicators, yet to be developed, are seen as important tools to address the regional concern for sustainability of natural resource use.

[2] Around 80 per cent of increased food demand over the next twenty years could originate from the non-OECD countries, with half of it coming from China and India alone.

Chapter 4. WORK PROGRAMME ON CLIMATE CHANGE

52. The OECD is committed to helping Member countries and the international community to move faster along the path to sustainability. Climate change has the potential to undermine progress towards sustainable development by harming the global ecosystem and the planet's life-support systems; and by inflicting large and unpredictable costs on economies and communities, especially those dependent on natural resources.

53. In December 1997, more than 150 countries agreed to the Kyoto Protocol, which establishes a framework for emission reduction in industrialised countries[3] through the beginning of the next century. The Protocol calls for at least a five per cent reduction in emissions by industrialised countries of greenhouse gases (GHG) compared to 1990 levels. This is equivalent to a reduction of more than 20 per cent below "business as usual" emission levels in the period 2008-2012. Implementation of the Protocol will require new policy action, leadership and co-operation among OECD countries.

54. While the Protocol is an important step, achieving the Kyoto targets will make only a modest contribution to the overall objective of the UN Framework Convention on Climate Change. Action by industrialised countries alone will be insufficient to stabilise concentrations of GHG. Longer term stabilisation of these concentrations will require additional action by industrialised countries and participation by developing countries.

OBJECTIVES AND APPROACHES

55. In the short term, the horizontal project on climate change will assess possible response strategies and help design mitigation policies, thereby assisting Member countries to reach the Kyoto targets. The project will also develop policy recommendations to further longer term progress under the Convention.

56. The three year project will address three main themes:

- *Issues of clarification and implementation of the Kyoto Protocol and the Convention.*
- *Effects of achieving the Kyoto targets.*
- *Moving beyond Kyoto.*

[3] The term "industrialised" countries refers to countries listed in Annex I of the UN Framework Convention on Climate Change. Annex I includes: all OECD countries, except Korea and Mexico; newly industrialised states (Belarus, Russia and the Ukraine); and central and eastern European countries. Turkey is formally listed in Annex I of the Convention but has never ratified the Convention and does not have an emission target under the Kyoto Protocol.

57. The project will include strategies for international co-operation and domestic policy assessment. It will explore macroeconomic, microeconomic and sector policy issues. Assessment of the macroeconomic effects of alternative policy strategies is being led by OECD's Economics Department and its Development Centre. Sectoral policy analysis is spread across several directorates and affiliates. Main contributions and recent developments are summarised below.

Issues of clarification and implementation of the Kyoto Protocol and the Convention

International issues and strategies

58. Implementation of the Kyoto Protocol depends in the first instance on clarification by international negotiators of many technical issues. The OECD and IEA are observers in the international negotiations on climate change. Their analyses aim to inform the negotiations and to advance climate change policy decisions. Contributions so far in the 1990's have helped to clarify the economic debate on long term response strategies and outlined main policy options that remain relevant. The OECD and the IEA also assist all Parties to meet reporting obligations through direct support for the Intergovernmental Panel on Climate Change (IPCC) national GHG inventories programme.

59. The Protocol establishes differentiated emission reduction targets for industrialised countries. It also creates three new mechanisms: international emission trading, joint implementation, and the clean development mechanism. The design of the new mechanisms will, to a large extent, determine the overall costs and effectiveness of the Protocol.

60. An important near term focus of OECD and IEA work is the assessment of design options for the new mechanisms, including the macroeconomic effects of alternative formulations and practical implementation issues. Emission trading and joint implementation is restricted to countries with emission targets. For emission trading, the challenge is to design a simple international system with strong market incentives that invites wide participation. Key design issues include eligibility rules, liability, compliance and competition. Effective use of joint implementation will hinge on clear guidance for environmental accountability, including assessment of additional GHG benefits resulting from individual projects. Maximising the cost effectiveness of these mechanisms will require open and transparent markets, supported by strong information and compliance systems.

61. The clean development mechanism is set apart from the other mechanisms as it aims to assist developing countries to achieve sustainable development goals and the objectives of the Convention. The IEA, in co-operation with the United Nations Environment Programme (UNEP), is hosting a series of workshops in regions around the world to explore different design issues associated with the clean development mechanism. The results of these workshops will be available for COP4.

62. In 1998/1999 DAC will inventory development co-operation activities in the area of climate change. This will be followed by an analysis of how development co-operation helps countries implement the Climate Change Convention. Finally, the results and insights from this work will be tested and refined through a dialogue involving developing countries, other stakeholders and OECD contributing directorates.

63. Establishing strong compliance systems under the Convention and the Protocol is another key international issue. It will be the focus of a number of analytical products in 1998 and 1999. Analyses will include monitoring, reporting, review and verification functions, concentrating on data reliability. Assessment will also consider possible responses to non-compliance, the level of action (international versus domestic), and the type, severity and timing of possible responses for different compliance problems.

Assessment of domestic strategies and policies

64. Implementation of the Convention, and eventually of the Protocol, is supported through a variety of OECD sectoral and cross-cutting policy assessments aiming to identify cost-effective ways to reduce emissions of GHG. Sustainable energy, transport, and agriculture policies, integrated and consistent with overall policies on climate change, are key to effective domestic responses. The IEA, NEA, the ECMT and OECD are working with Member countries to assess policy options and packages. Eco-efficiency and extended producer responsibility are being explored. In addition, the horizontal project on the impact of support measures, taxes and resource pricing is examining the potential to reform subsidies and fiscal policies to achieve climate change objectives. Domestic tradable permit systems may also play a role.

65. Significant and lasting GHG reductions in OECD countries will also require changes in consumption patterns. Urban travel is the largest single source of GHG emissions. Curbing the demand for urban travel requires adapting to new ways of living and working and to new patterns of land use. Urban policies can promote a better use of existing urban space and control the development of peripheral areas, through global strategies and practical innovations. A wide range of policy instruments targeting consumer behaviour, including education and information, local goal setting, urban planning and economic instruments are being explored. Early OECD and IEA work demonstrates the need for a cost-effective set of complementary policies, including a range of market, regulatory and information measures, to provide consistent signals to industry and consumers.

66. More broadly, although approximately one-third of all emissions from fossil fuel combustion are attributable to transport activity, OECD countries are struggling to find policies to effectively curb emissions from this sector. ECMT is working to advance understanding of how countries can respond to transport-related CO_2 emissions, by monitoring national policy developments, analysing policy options, and working with industry on ways to reduce CO_2 from new cars. ECMT considers CO_2 a priority on its environmental agenda. OECD is also working with Member countries to develop scenarios and assess policies that might achieve environmentally sustainable transport goals including GHG emission reduction.

67. The OECD country peer review process, which is regularly conducted by various directorates and affiliates, also provides important insights for successful domestic policy strategies. Climate change objectives are addressed in reviews covering energy, transport, agricultural and environmental policies. The Environmental Performance Reviews of Member countries are evaluating progress in regard to the control of GHG emissions and developing recommendations for further progress and related actions; in 1998 a review of the Russian Federation will be conducted. IEA reviews energy and environment policies and also assess progress with respect to climate change objectives. In 1999, OECD Economic Surveys will begin to include reviews of how countries are moving towards sustainable development, with particular reference to the environmental dimension, including through the policies pursued to implement the Kyoto Protocol. The analytical framework for these country reviews will draw on work by a number of directorates. Appropriate linkages will be made with the sustainable development indicators project. Starting in 2000, the cross-country implications of the reviews of individual countries will be assessed. Conclusions from this work, and results from the other relevant reviews, will feed into the integrated report on climate change and into the report on sustainable development for the 2001 OECD Ministerial Council Meeting.

Technology innovation and assessment

68. Successful domestic strategies to mitigate climate change are intertwined with technology innovation. As noted in Chapter 6, key policy issues to be addressed in the horizontal project on technology and sustainable development include the contribution of technology to eco-efficiency and resource productivity; barriers to the development and use of clean technologies in enterprises; strategies to enhance public understanding of science and technology; and the role of technology co-operation in helping developing countries to acquire and incorporate appropriate technologies. Results from the technology project will figure prominently in the OECD's assessment of near- and long-term strategies to respond to climate change.

69. The IEA assesses the performance of individual energy technologies, promotes research and development on longer-term technology options and advances policies and mechanisms to enhance world-wide deployment of near-term technologies to limit GHG. IEA contributions concentrate on energy efficient, clean fossil fuel and renewable energy technologies. The ECMT is also active on the motor vehicle technology front. As called for in its 1995 joint declaration with the car industry, ECMT is monitoring CO_2 emissions of new cars until a system is developed by the European Union.

70. The role of nuclear power in domestic climate change response strategies will also be addressed. NEA contributions to the project focus on the technical aspects of plant ageing and the identification of R&D needs and priorities in this area. Key issues are the licensing aspects of ageing plants, license extension and renewal, and safety inspections. Additional work will consider the economic aspects of plant life management, and the specific effects of the current de-regulation of the electricity sector on the maintenance and potential replacement of nuclear generating capacity.

Effects of achieving the Kyoto Targets

71. The assessment of the macroeconomic effects of policies to mitigate GHG emissions will draw on technical and analytical work pursued in the context of the horizontal project on quantification of the economic aspects of climate change described below. In addition, work in this area, to be reported in spring 1999, will include a general evaluation of the Kyoto agreement as well as a review of implementation issues (see above).

72. A report on the implications of the Kyoto Protocol for agriculture and forestry will be prepared. The effects of achieving the Kyoto targets for the agriculture sector will be also be assessed, including the development of indicators of agricultural GHG emissions and sinks.

Quantifying the economic aspects of climate change

73. Climate change involves complex physical and economic manifestations. Increasingly sophisticated models are being used to investigate climate change and to assess the impacts of policies to mitigate GHG emissions. In addition, effort is being applied to integrate physical and economic models in order to capture the feedback between climate change and economic growth. This will permit climate modelling work to contribute to policy analyses of broader sustainable development objectives, not just those related to climate change.

74. The signing of the Protocol prompted the OECD to renew its model-based analysis of the economic impacts of climate change policies. Given the relatively short time horizon of the Protocol, economic models can be particularly useful in assessing actions to meet emission reduction targets. The OECD and its affiliates have set up a separate group working on the development and use of models relating to the economic aspects of climate change. Work by this group, while supporting and feeding into the broader OECD contribution on climate change, should lead to a number of specific intermediate products.

75. Drawing on previous and ongoing work in the IEA and the OECD[4], the main objectives of the renewed climate change modelling effort of the OECD are to:

- Assess the economic consequences of implementing the Kyoto Protocol (e.g. relative losses and gains across regions, changing patterns of production and trade, etc.), their potential impact on GHG concentrations and, if feasible, the cost of alleviating the damages resulting from climate change.

- Examine the economic implications of the flexibility mechanisms and other economic instruments identified in the Kyoto Protocol and how they could contribute to improve economic efficiency.

- Analyse the scope for, and consequences of, increasing the abatement effort beyond Kyoto levels and/or expanding country participation in that abatement effort.

- Enhance communication between the modelling community and policy makers.

76. The initial phase of this work will concentrate on integrating and validating a new 1995 data set; modelling carbon sinks and the other greenhouse gases included in the Kyoto Protocol; and developing a simplified sub-module to link emissions and concentrations of GHG, which are among the key factors driving climate change.

77. OECD's modelling work will also reflect results and policy implications from the work of other institutions, for example in the realm of damage assessment and the benefit side of alleviating climate change.

78. In parallel, GHG emission factors will be incorporated into the AGLINK model of the agricultural sector. The two key GHGs emitted in the agricultural sector are methane and nitrous oxide, mainly from livestock and rice production. Both account for a significant share of greenhouse gas emissions. The planned work includes the use of AGLINK to examine the effects on agriculture of scenarios of meeting various GHG (especially methane) targets; the GHG implications of various projections for agricultural commodities; and the use of the "Policy Evaluation Matrix" framework to explore the GHG effects of different policy measures.

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[4] In the early 1990s the OECD was an active participant in the debate on the economic aspects of climate change, particularly with regard to the economic assessment of the costs of reducing energy-related carbon emissions. ECO developed a global dynamic applied general equilibrium (AGE) model with a focus on energy markets and energy-related carbon emissions. Since 1994, this model, known as GREEN, has been made available for outside users to undertake their own carbon reduction policy scenarios. Within the OECD, occasional use has been made of the GREEN model for simulation analysis. A more recent version of the model -- with an updated and extended database -- was used to project carbon emissions through the year 2020 for the Linkages II Study. (See OECD (1997), *The World in 2020: Towards a New Global Age.*)

79. IEA's modelling work will concentrate on two main areas in 1999.[5] The first is end-user price responses of energy markets (especially the distinction between short-term and long-term effects) and the impacts of energy subsidies on energy demand and on CO_2. The second, Energy-2050, will focus on the dynamics of the energy sector in the period up to 2050.

80. While models are essential to develop policy responses to global climate change, their usefulness is tempered by a significant degree of uncertainty. For example, although new energy technologies play a key role in determining the economic costs of carbon abatement schemes, it is not possible to predict with certainty when and to what extent these new technologies will be in place. Model results should therefore be complemented by judgements drawn from microeconomic and sectoral studies, and other analyses of the factors that influence policy decisions.

Moving beyond Kyoto

81. Moving beyond Kyoto to achieve the longer term objectives of the Convention will require participation of rapidly developing countries. An assessment will be made of incentives that could induce a wider set of countries to participate in future agreements. The assessment will consider the implications for global and regional costs of GHG reduction of involving non-Annex I countries in a global trading scheme, as well as the scope for low-cost GHG reduction measures (e.g., through energy policy reforms and adoption of cleaner technologies) in major non-Annex I and Annex I countries. In the area of development co-operation, studies of a few major non-Annex I countries will aim to identify and cost potential GHG reduction options in major energy-using sectors, and to examine the economy-wide impacts of measures to achieve different GHG "stabilisation" or "growth reduction" scenarios.

82. Another strand of work will develop long term scenarios of possible paths for installed nuclear capacity in order to identify the issues arising for nuclear policies (resource constraints, industrial capacities, etc.). This work will be pursued by the NEA in collaboration with the IAEA and with US, Japanese and Russian modellers.

KEY PRODUCTS

International Climate Change Modellers Workshop (1998)

83. The OECD will sponsor an international climate change modellers Workshop on 17-18 September 1998. The workshop will discuss and compare the differences across model results in terms of achieving the Kyoto targets, and the extent to which these differences can be reconciled; exchange views on how best to model the main implementation issues associated with the protocol; and assess the state of the art in economic modelling of climate change, including advances in integrated assessment models and convergence between top-down and bottom-up approaches.

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[5] Between the First Conference of the Parties and the negotiation of the Kyoto Protocol, the IEA organised three "modelling seminars." Main insights from the three seminars were in the following areas: the economic implications of various types of quantified emission commitments, including the so-called "where" and "when" flexibility questions; clarification of the notion of no-regret policies with a focus on the potential for cost-effective reductions in sectors like electricity, other stationary heat uses and transportation, which are not well handled by large global models; the modelling of uncertainty in the context of UNFCCC long term objectives.

The Fourth Conference of the Parties to UN FCCC (COP4, 1998)

84. The Fourth Conference of the Parties to the UN Framework Convention on Climate Change (COP4) will meet in Buenos Aires in November, 1998. The OECD and the IEA will be present at COP4 as observers. A short integrated report will be prepared by the OECD Secretariat for COP4, highlighting OECD and IEA planned work. The report will draw on the results of the modelling workshop as well as on other facets of OECD and IEA's work in the climate change area, also to be presented as supplements at COP4.

Intermediate product in 1999 and the Fifth Conference of the Parties to the UN FCCC (COP5, 1999)

85. An intermediate document, prepared as an input to the interim report on sustainable development to the 1999 OECD Ministerial Council, will develop a conceptual framework for the final product and provide interim results. This intermediate document could serve as the basis for a submission from the OECD and the IEA to COP5 (likely to be late in 1999).

Final product on climate change (2000)

86. A final document on climate change is planned for late 2000. It will aim to provide an integrated view on the key policy challenges and opportunities to respond to climate change in the near and longer term, building on earlier integrated products. This document will be used as an input on climate change to the report on sustainable development planned for the OECD Council Ministerial in 2001.

Chapter 5. WORK PROGRAMME ON THE IMPACT OF SUPPORT MEASURES, TAXES AND RESOURCE PRICING

87. This horizontal project is focusing on "getting prices and signals right" through the reform of support measures and the internalisation of external costs. As noted in Chapter 2, "getting prices right" is essential to improve the allocation of resources in the light of economic, social and environmental considerations. Various policies can be used to achieve these objectives, including regulations, the use of tradable permits, the reform of direct and indirect support[6], and the levying of fees, charges or taxes. While previous work has concentrated on support reduction and the internalisation of externalities, this horizontal project recognises the need to consider the effects of these policies concurrently.

88. Various OECD directorates, the IEA and ECMT have undertaken considerable work in the past on the levels and effects of support and tax incentives to various economic sectors, mainly from a trade liberalisation or economic efficiency perspective. As called for in *Improving the Environment through Reducing Subsidies*, priority areas for further work are:

- Increasing the transparency of existing measures.
- Developing and monitoring indicators of these policies in sectors where information is scarce, and differentiating them according to their potential social and environmental effects.
- Decoupling support from the use of particular environmentally-harmful practices, inputs or factors of production.
- Encouraging closer multilateral co-operation aimed at reforming those support measures, resource pricing or tax polices that run counter to shared environmental objectives (such as those indicated in the Kyoto Protocol and the UN Framework Convention on Biological Diversity), and whose removal would contribute to a loss of sectoral competitiveness for the country that carried out reforms unilaterally.

OBJECTIVES AND APPROACHES

89. While independent studies will be conducted across the OECD and its affiliates under this horizontal programme, they will share the following objectives:

- *Data collection*. Data gathering on support measures, environmentally related taxes and resource pricing methods -- notably in the fields of agriculture, fisheries and energy -- will be continued and expanded to include some new activities.

[6] Including the reduction or removal of support that is environmentally damaging and the implementation of support that is environmentally beneficial.

- *Integrated analysis*. The effects of support, taxes and resource prices on environmental, social and economic outcomes vary according to the incentives they provide, the prevailing policy settings, and site and country specific circumstances, such as the carrying capacity of the environment. The project will aim at further developing analytical instruments which, taking these considerations into account, allow generalised conclusions on how these policy measures affect economic decisions; and identifying those measures that have the greatest positive or negative bearing on different policy objectives. In addition, case studies will examine how these measures interact with other policies and country and site specific circumstances to affect the environment, the economy and social objectives.

- *Policy advice.* The OECD can contribute to enhancing the effectiveness of these policies through peer reviews, sharing of experience on domestic policies, and advancing international co-operation.

90. The environmental benefits of policy reforms need to be considered in light of the benefits or costs of the reforms, including consideration of any potential economic or social (particularly employment or equity) benefits or losses that might result.

ACTIVITIES

91. The horizontal project on the impact of support measures, taxes and resource pricing will draw on several ongoing or planned activities, which are described below.

Ongoing and future activities

Agriculture

92. The OECD publishes annual data on the level and composition of support to agriculture for all OECD Member countries, calculated using Producer and Consumer Subsidy Equivalents (PSEs and CSEs) and published in *Agricultural Policies in OECD Countries: Measurement of Support and Background Information* and *Monitoring and Evaluation.* Work is also ongoing to develop a classification of agri-environmental policy measures linked to further developments in the PSE/CSE classifications. The modelling framework of the Policy Evaluation Matrix, which can be used to analyse the effects of different agricultural support policies on the economy and employment, will be expanded and revised to incorporate environmental effects. It will be used to develop case studies on North America, the EU and Japan. The Joint Working Party on Agriculture and Environment, meeting in July 1998, is expected to agree on further work on agricultural subsidies and the environment.

Fisheries

93. A major study on the "Impact on Fisheries Resources Sustainability of Government Financial Transfers" is being undertaken as part of the project on "The Economic Impact of a Transition Towards Responsible Fisheries". The study, due in 1999, will examine how government financial transfers affect fishing capacity and effort. Several countries have started work on case studies and more will follow over the coming months. The annual *Review of Fisheries in OECD Countries* provides some country information on support to fisheries. A parallel project is examining the social implications of a transition to responsible fisheries, with a final report expected in 1999. This work will be an input to the integrated report on sustainable development to the OECD Ministerial Council.

Energy

94. At its meeting on 6-7 May 1998, the Joint Session of Trade and Environment Experts agreed to study the environmental effects of liberalising trade in fossil fuels. The study will provide an overview of the prevalence and magnitude of the various trade-distorting measures for the three major primary energy sources; examine policies affecting the large stationary sources (i.e., excluding transport); and identify the global, rather than local, environmental effects of these measures. Case studies and modelling of the effects of trade liberalisation could be undertaken as further stages.

95. In its *Energy Policies of IEA Countries* and *Coal Information* reports, the IEA provides annual estimates of support to coal producers and to energy research and development in selected IEA countries, and makes policy recommendations regarding this support and regulatory reform in energy markets. Work is underway on the environmental effects of liberalising the electricity sector. A major new project starting in September 1998 will examine energy pricing practices in IEA countries, including subsidies, and establish their effects on energy demand, efficiency and climate change.

96. The NEA organised a Seminar on Externalities on 11 June 1998 to discuss external costs of electricity generation chains and investigate their impact on the contribution from nuclear power in sustainable energy mixes.

Transport

97. ECMT and the OECD have been working on a report due in mid-1998 on "Financial and Fiscal Distortions in Road Freight Transport" in four countries; France, Germany, the Netherlands and Switzerland. This report will categorise support and taxation in the transport sector and develop an indicator of support to different transport modes based on net effective taxation at the margin. This work will be extended to other countries and transport modes in 1999. In addition, as a follow-up to the recent report *Efficient Travel for Europe: Policies for Internalisation of External Costs*, the ECMT is organising a seminar with tax and finance experts early next year to discuss the tax changes recommended in the report. A further study (to be completed in 2001) will evaluate the implementation of the ECMT draft resolution on internalisation. A report to be published in 1999 on "Differentiation and Variabilisation of Transport Charges" will provide a quantitative assessment of the effectiveness of incentives for internalisation created by pricing differentiation between transport modes.

Biodiversity

98. A handbook, to be finished late 1998, will provide guidance drawn from the country experiences with incentive measures, including the removal or reform of adverse support measures, for the conservation and sustainable use of biodiversity.

Water pricing

99. Studies on the pricing of water for agricultural, industrial and household use in OECD Member countries, which quite often reveal overt and hidden support measures, will be concluded this year and will be discussed at an *ad hoc* meeting of OECD Water Pricing Experts on 22-23 September 1998. They will constitute an update of the 1989 overview of water pricing in OECD countries. A workshop on Tradable Permits in Environmental Policy, to be held on 24-25 September 1998, will include analysis on the use of such permits for water management, including effluent control schemes, water allocation schemes, salt credits, and fisheries allocations.

Taxation

100. A project is currently underway to collect comparable data on environmentally related taxes. Information is currently being collected on the revenues from such taxes in Member countries and on the definitions of taxes used, tax rates, exemptions, relevant administrative regulations, etc. As an extension of this project, estimates of "effective rates of taxation" for different sectors of the economy will be carried out as a useful base for considering the effects of environmentally related taxes on the relative competitiveness of different sectors of the economy.

Analysis of the environmental dimension of sustainable development in Economic Surveys

101. As noted in Chapter 4, forthcoming Economic Surveys of Member countries may include chapters on how countries pursue their environmental objectives, with particular reference to market mechanisms. This will include analysis of whether subsidies, taxes, resource pricing and other policies are conducive to prices which internalise the cost of economic activities which impact on the environment,. The 1999 economic survey of Norway will act as a pilot project. As a background to this process, a conceptual framework will be elaborated and discussed by Working Party 1 of the Economic Policy Committee, at its meeting in Spring 1999. After a sufficient number of countries have been reviewed, the lessons learnt will be pulled together for discussion by the Economic Development and Review Committee, and Working Party 1 of the Economic Policy Committee in 1999. The Environment Policy Committee and other relevant committees will be involved as appropriate in this process.

Development co-operation for policy reforms

102. Development co-operation is increasingly premised on the commitment of partner countries to policy reform. In sectors such as agriculture, energy, transport and water supply, policy reform includes the introduction of market incentives for environmentally sound development. These include removal of perverse input subsidies (e.g., on pesticides, fertilisers and energy) and the introduction of user fees (e.g., water pricing, irrigation service fees), environmental taxes and other instruments. A synthesis will be prepared of the experience of development co-operation in promoting policy reform in support of environmental improvement, with a view to identifying key success factors and promising approaches.

Further developments

103. In addition to the activities listed above, new projects relating to the effects of support, taxes and resource pricing may be developed in the work programme of OECD and its affiliates. Some of the possible developments and projects that are currently under consideration are indicated below.

The role of subsidy reductions to achieve GHG emission targets

104. The Kyoto Protocol recognises that the reduction of subsidies, stronger fiscal incentives and the correction of market imperfections that encourage the emission of greenhouse gases are tools that signatories may use to meet their reduction targets. A project is planned to examine the role of these measures in cost-effective climate change policies; whether the required reforms would be facilitated by international co-operation (indicating to what degree countries depend on each other in reaping the gains from such policies); and the identification of those measures and sectors for which this would particularly apply. This work could also feed into the project on climate change.

Standardised reporting on the environmental effects of support, taxes and resource pricing policies

105. Recent OECD reports have underlined the importance of increased transparency in support measures, and the monitoring of their levels and composition. Future Environmental Performance Reviews of OECD Member countries may provide a qualitative analysis of the effects of environmentally-harmful support, taxes and resource pricing policies, as well as recommendations for their reform. These reviews will draw on analyses which identify measures with the largest negative impacts on the environment, while also being ineffective in achieving their social or economic goals.

Business and Industry Forum

106. Building on past work on public support to industry, and in parallel with a project on how firms integrate environmental concerns in their decision-making, a "Business and Industry Forum" on sustainable development may be organised in 1999. Bringing together stakeholders, the Forum would consider the environmental impacts of government support programmes with the aim of suggesting policy changes to improve their environmental effectiveness.

Subsidies targeted to environmental improvements

107. Work could be undertaken to assess, as far as possible, the full economic, social and environmental effects of those support measures that aim to encourage environmentally preferred behaviour, notably in agriculture.

KEY PRODUCTS

108. Periodic and integrated documents on the progress achieved in this horizontal programme will be produced over the next three years.

- Intermediate documents, drawing on work conducted in the various OECD directorates, the IEA, ECMT and the NEA, will be prepared as an input to the interim reports on sustainable development for the Ministerial Council meetings in 1999 and 2000.

- A final document on the impact of support, taxes and resource pricing will be produced at the end of the three year programme, outlining applicable instruments for analysing the environmental, economic and social effects of reforms and recommending implementation strategies and priorities. This document will provide inputs to the overall report on sustainable development to the OECD Council Ministerial in 2001.

Chapter 6. WORK PROGRAMME ON TECHNOLOGY AND SUSTAINABLE DEVELOPMENT

109. Technology and innovation can contribute to delinking economic growth from environmental degradation, by increasing resource productivity and eco-efficiency. Significant reductions in energy and materials intensity, pollution and GHG emissions will require more efficient conversion of energy and cleaner manufacturing processes, as well as organisational and behavioural changes. However, these technologies will not be developed and used if the prices and signals built into the system are not right. Effort is needed to ensure that regulation, taxes, subsidies, resource pricing, research and development and innovation systems promote environmental innovation and eco-efficiency.

OBJECTIVES

110. The OECD project on technology and sustainable development will develop policy recommendations to stimulate the development and use of the most effective technologies from the viewpoint of sustainable development. It will examine the role, development and diffusion of categories of technologies which can contribute to sustainable development. The primary aims are to:

- Advance understanding of the concepts of eco-efficiency and resource productivity, including the development of indicators which can be applied to specific sectors and technologies.

- Better understand how enterprises incorporate environmental objectives into their management strategies and the signals needed to stimulate investment in the development and use of clean technologies.

- Develop recommendations for designing environmental and technology policies and related framework conditions which promote the development and widespread use of environmentally-sustainable technologies.

ACTIVITIES

111. This horizontal project will examine five broad categories of questions and issues related to clean technology.

112. *Contribution of technology to eco-efficiency and resource productivity.* This work will illuminate the general advantages of clean technologies, particularly that of improving eco-efficiency. The work will draw on ongoing studies of the environmental goods and services industry as well as analyses of cleaner production processes and products. An OECD conference in Melbourne, Australia in February 1999 will examine case studies of the effects of government policies on eco-efficiency strategies.

113. An important component of this work will be the development of measures of resource productivity in industry, comparing levels of natural resource inputs relative to output. This work will aim at better understanding this concept, its relationship to eco-efficiency and sustainable development more generally, and at identifying indicators. Case studies will aim to relate measures of resource productivity to particular technologies and specific sectors.

114. *Barriers to the development and use of clean technology in enterprises.* Lack of financial, managerial and technical resources and information, particularly in small and medium-sized enterprises, are impediments to greater use of clean technology. This work will improve understanding of how enterprises incorporate environmental objectives into their strategies and the factors -- institutional, economic and technical -- which influence the use of clean technologies. It will feature case studies of how firms evaluate the costs and benefits of clean technology and make decisions on investing in them. This topic could be further explored in a Forum Discussion of the Industry Committee on Sustainable Development, to be held in October 1999.

115. *Government role in development and diffusion of clean technology.* Case studies will examine the effects of environmental policy instruments (subsidies, taxes, regulations, voluntary agreements) on the development and use of clean technologies in industry. Through these studies we will elaborate our existing general analytical framework. A special attempt will be made to deepen understanding of the effects of economic instruments such as taxes and tradable permits on technology development and their optimal design. The role of technology policies in stimulating environmental innovation will also be examined, including trends in research and development spending, public/private research partnerships, technology diffusion programmes, R&D tax incentives, and technology verification/certification schemes. Best practice technology policies for fostering both sustainable development and competitive industries will be identified. A workshop is planned in 1999 on environment and innovation under the auspices of the Working Group on Innovation and Technology Policy of the Committee for Scientific and Technological Policy (CSTP).

116. *Public acceptance of clean technology.* Public resistance to new technologies can be a barrier to use. Governments and the scientific community can enhance public understanding of science and technology, including by involving elements of the public in setting research agendas. This will also stimulate technology development which responds to the needs of society and industry. The analysis will build on work on increasing public understanding of science and technology and on analysis of factors affecting the environment-related choices of consumers. A project, led by the Netherlands, is also being conducted on how governments can increase the interaction of the research system, industry associations and public interest groups in the area of environmental research. A report is due in early 1999.

117. *Application in non-OECD countries.* The role of development co-operation in helping developing countries acquire and incorporate appropriate clean technology will be examined. This will cover the human, institutional, technical and financial capacity-development required to apply cleaner production methods. The OECD has begun a study of donor programmes, policies and strategies promoting cleaner production in developing countries, with a report due in 1999.

118. This work will be co-ordinated with IEA activities which aim to promote the application of technologies to reduce greenhouse gas emissions in non-OECD countries. IEA regional workshops on the clean development mechanism will help to elucidate the role for the mechanism in technology transfer (see Chapter 4 for more details). A Technology Co-operation Agreement Pilot Activity in China in late 1998 will produce guidance on energy optimisation of coal-fired power plants and explore means of collaboration among technical assistance agencies from a range of countries. This work will also be co-ordinated with the *Climate Technology Initiative* activities and workshops aimed at non-OECD countries.

Technology case studies

119. The issues outlined above will be examined in more depth in a set of case studies of particular types of technology.

120. *Biotechnology*. The use of biotechnology or micro-organisms can lead to a reduction of energy and materials consumption as well as to a diminution of emissions and wastes in manufacturing. Current barriers to greater industrial use of biotechnology-based technologies, the role of public trust, and the design of government policies in promoting and regulating biotechnology will be addressed. The CSTP Working Party on Biotechnology recently launched a three-year project, led by Canada, on Biotechnology for Sustainable Industrial Development. A workshop in July 1998 will aim to establish the analytical framework and methodology. A second workshop in May-June 1999 will present sectoral case studies.

121. *Energy Technologies.* This activity, led by the IEA and NEA, will examine the development and market deployment of new and improved energy technology options, including for clean coal conversion, renewable energy sources, hydrocarbon production, nuclear power systems and overall energy efficiency. It will assess the long-term technical and economic potential of key new energy technologies, identifying government policy priorities for R&D and implementation. Particular attention will be given to the issue of public acceptance of energy technology. The work on energy technologies will be closely co-ordinated with the horizontal activity on climate change and its technology component.

122. *Information Technology***.** Information technologies are at the core of most advanced manufacturing techniques, including many cleaner production processes. They have also contributed to advances in design, automation, monitoring, management and delivery, all of which help reduce environmental impacts and increase resource efficiency. The contribution of information technology to sustainable development will be examined through sectoral case studies, such as steel and construction. This activity will also examine the contribution of electronic networks to furthering sustainable development goals.

KEY PRODUCTS

123. All work in the technology and sustainable development project will be conducted jointly by the relevant OECD directorates and affiliates. An intermediate integrated document on technology and sustainable development will be produced in 1999, as input to the interim report on sustainable development to the OECD Ministerial Council Meeting in May next year. A final document on technology and sustainable development will be produced at the end of the three year programme, as an input to the overall integrated report to the OECD Ministerial Council in 2001.

Chapter 7. MEASURES OF PERFORMANCE WORK PROGRAMME ON INDICATORS

124. The OECD has been in the forefront of the development of statistical indicators covering the three key dimensions of sustainable development. Since the emergence of the concept of sustainable development in the late 1980s, work on indicators has been underway in many OECD countries, other international organisations (most notably by the United Nations Commission on Sustainable Development and the World Bank), and non-governmental bodies (such as the Scientific Committee on Problems of the Environment, and the Wüppertal Institute). While most of this work is methodological, some studies have concentrated on identifying and quantifying indicators.

125. Given the diversity of approaches being pursued, several countries have recently expressed the wish to see the OECD identify the most relevant indicators, to play a significant role in helping to rationalise these activities, and to develop a limited set of indicators as a policy aid. This is consistent with the request of the High Level Advisory Group on the Environment to have the OECD "build and extend" on existing work and publish sustainable development indicators by the end of 1999. In response to these recommendations, the OECD Council calls on the OECD to "develop accounting systems and new indicators to enable better assessment of progress towards sustainable development".

OBJECTIVES

126. The main objective for this horizontal project is to develop a limited and manageable set of indicators of sustainable development, building on existing work. The goal is to contribute to analysing trends, monitoring progress and evaluating the effectiveness of policies in promoting sustainable development. The project will:

- *Establish a common framework for the development of sustainable development indicators*, linking its three key dimensions.
- *Determine how further progress can be made on technical aspects of indicator development*, such as measurement (physical and monetary measures) and scales (global, regional, national, local).
- *Advance work on using indicators in policy analysis*, including monitoring and evaluation.

APPROACH AND ACTIVITIES

127. Past experience in the OECD suggests that there are three phases in developing and making operational a set of indicators :

- *Clarify the concepts.*
- *Measure the reality.*
- *Use them in policy analysis*.

128. Recognising this, there will be three corresponding phases in this work programme. While the phases can be seen as discrete, iteration will be inevitable as data constraints or difficulties of application force reconsideration of earlier phases. The first phase in 1998, will begin with an overview and assessment of international efforts to date, leading to the identification of key indicators. In 1999, attention will turn mainly to data compilation and indicator measurement. In 2000 the final phase work will examine, in co-operation with the other task forces, the effectiveness of the indicators in policy analysis, monitoring and evaluation.

129. Outputs from the horizontal work on indicators is expected to feed into the policy analysis of all relevant parts of the OECD, and will be applied in OECD country reviews. The ongoing assessment, within the Economic Surveys, of the economic costs of achieving environmental objectives might provide an early, albeit partial, test for the utility of indicators. At a later stage, the use of indicators should extend to addressing the social dimension of sustainable development.

130. Indicators must accommodate different objectives and levels of analysis. The framework and the indicators being developed should allow assessment of progress at the local, national and regional level.

131. The potential of a given development path to meet the needs of both present and future generations implies the renewal and increase of different types of capital assets. Hence the importance of a "modular" framework, which allows the measurement of stocks of natural, man-made, human and social capital, their use to enhance production, income and social welfare, and the assessment of the impacts of human activities on consumption and re-investment in these stocks.

132. In defining an horizontal work programme on indicators, a central issue is how far to pursue integration of the key dimensions of sustainable development. The degree of integration possible would depend, *inter alia*, on decisions about the substitutability of different types of capital and the trade-offs between economic, environmental and social objectives.

133. The least demanding form of integration is to identify a "core" set of indicators. While this avoids difficult decisions about the aggregation of the various aspects of a multi-dimensional concept, it still implies choices in terms of the optimal size of the set and criteria for the selection of indicators. This approach has been adopted by the OECD, the UN and the World Bank to agree on a core set of indicators of progress towards internationally agreed development goals for developing countries.

134. As a further step, this could be extended to derive a single composite index by combining some or all of the core indicators. Such work has been carried out by universities and research institutes in Australia, Germany, Sweden, the United Kingdom and the United States for example. The "Genuine Progress Indicator"(GPI), published in 1997 by the Australia Institute, takes private consumption, as defined in the National Accounts, as its starting point, and then makes 24 separate additions and subtractions, designed to capture various "goods" and "bads"[7].

[7] The adjustment covers (i) environmental factors, such as natural resources, subsoil assets and pollution, with the latter generally valued at "repair costs"; (ii) social factors, such as unemployment, income distribution, crime costs and traffic accident costs; (iii) economic factors, such as unpaid household production, unemployment, overwork, government services, defensive expenditure. This work, covering the period from 1950 to 1996, shows GPI rising line with GDP up to the early 1980s, but much more slowly since then.

135. A more ambitious goal is integration within the System of National Accounts (SNA). While a "full" integration may not, at the current stage, be feasible, progress may be possible in a number of areas, such as environmental accounting or the treatment of human capital[8]. Regular enhancements to the SNA, for example work to improve measures of real value added for education and health, are contributing to the integration of economic and social measures.

136. The assessment of progress toward sustainable development across its key dimensions is likely to require developing limited and manageable sets of indicators. Our expectation is that, rather than a single, multi-purpose list, progress can best be achieved by establishing a "pyramid" of indicator sets. At the top level, we would aim for a set of key indicators that would have wide intuitive appeal, not be overly technical, and provide a practical and concrete insight into the relationships between economic, social and environmental aspects of development. It is important that these indicators be amenable to comparisons across time and countries. At lower layers, we would see further lists of indicators with more specific functions and greater technical specificity. This would include indicators concerning policies and their impact on the environment and to "non-economic" objectives in sectors such as agriculture, fisheries, forestry, transport and energy.

137. Much of the work on indicators carried out in the OECD and elsewhere tends to focus on measuring progress and performance for each dimension of sustainability. This is an important component of the overall project. In the OECD, this will draw on work carried on environmental, sectoral and sustainable consumption indicators; on agri-environmental indicators; on indicators of human capital, health outcomes and social indicators; on conventional macro-economic indicators; on indicators for sub-national areas covering demographic settlements and migration, economic structure and performance, well-being and cohesion, ecology and amenity; and on various energy related indicators. This work will be complemented by developing indicators highlighting linkages between the three key dimensions of sustainable development. Indicators of the linkages between the economy and the environment may include measures of resource productivity and eco-efficiency, which will be explored in the context of the horizontal project on technology; and indicators on the economic costs of environmental damage (casualties, expenditures). Since sets of indicators highlighting the economy/environment interface are already well advanced, a significant potential output of our work concerns the social dimension of sustainable development and its links with the environmental and economic dimensions. Obvious indicators of the linkage between the environment and the social dimension include measures of the health consequences of different forms of pollution. Other indicators will be developed as the work proceeds.

KEY PRODUCTS

138. The horizontal project on indicators of sustainable development will build on on-going work in different OECD directorates and in affiliates, focusing on the development of indicators for the three separate dimensions of sustainable development. The following steps are envisaged:

- An informal meeting with country representatives and experts from international organisations, bringing together statisticians, analysts and policy makers, is planned for 8-9 October 1998. This will aim to better define the OECD workplan, to get feedback from external observers, and associate partners to our work.

[8] OECD (1998), *Human Capital Investment. An International Comparison,* Paris.

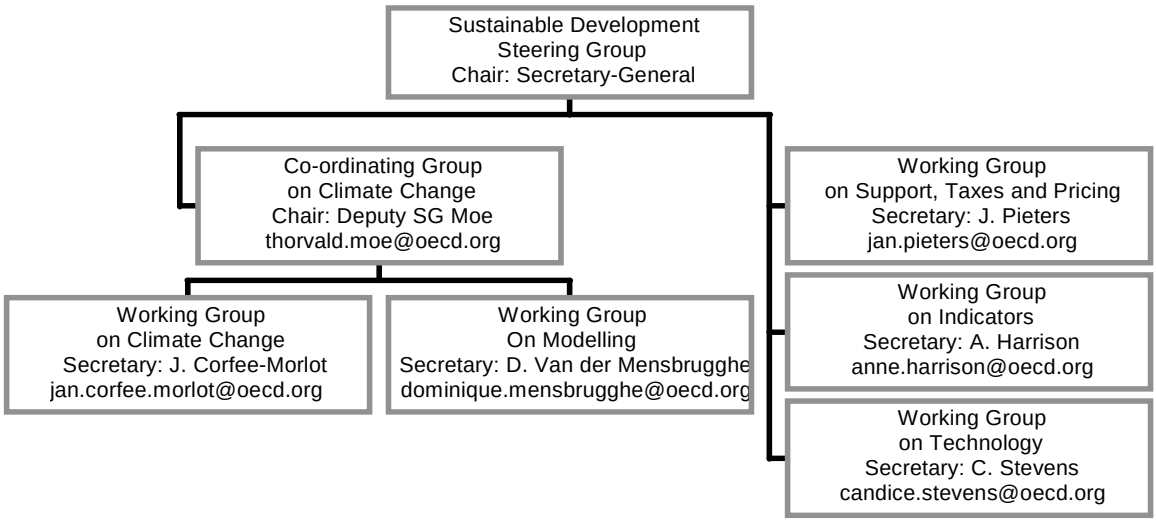
- A first integrated progress report in 1999, by the time of the OECD Council Meeting at Ministerial Level.

- A conference in the second half of 1999, open to other international organisations, OECD government and non-governmental organisations, to discuss the evolution of the project.

- The development of reliable and comparable data sets on macro-economic, sectoral, environmental and social issues, drawing as far as possible on data already available in OECD and other international organisations by mid 2000.

- A final report would be completed as an input to the integrated report to the 2001 Ministerial Council meeting. Together with the contributions from the other horizontal projects, this would feed into a major integrated synthesis report on how sustainable development issues would underpin the future work of the Organisation and the policies of Member- and non-member countries.

Annex I. PROJECT ORGANISATION



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Annex II. FUTURE MEETINGS AND WORKSHOPS

CLIMATE CHANGE

Date	Title/subject	Objective
8-9 September 1998, Moscow (tentative)	*IEA Workshop on joint implementation and emissions trading (possible co-sponsor: EC)*	Discuss with transition countries the practical and policy issues related to the implementation of joint implementation or emission trading
10-11 September 1998	*Annex I Expert Group Meeting*	Emission trading, monitoring, verification and compliance; set out future work and agree on products for COP-4
10-11 September 1998, Shanghai	*Workshop: Towards an Energy Efficient Future for the City of Shanghai*	Raise confidence that the City of Shanghai can improve its global energy efficiency with a view to rationalising its energy structure
17-18 September 1998	*The Economic Modelling of Climate Change: Background Analysis for the Kyoto Protocol*	Informal exchange of views and analysis of the impacts of the Kyoto Protocol. Guidance to future OECD work.
21-22 September 1998, Africa	*IEA Regional Workshop on the Clean Development Mechanism (with UNEP)*	(see above)
24-25 September 1998	*OECD Workshop on Tradable Permits and Environmental Policy*	Explore lessons from the use of tradable permits in environmental policy-making; inventory experience in OECD countries
1-2 October 1998, Brussels (tentative)	*Policy Forum on International GHG Emission Trading (Joint OECD, IEA the EC)*	High level policy discussion of the opportunities and challenges of advancing emission trading under the Kyoto Protocol
5-6 October 1998	*IEA Electric Technologies Workshop*	To collect empirical information on the emissions reductions that can be obtained through the application of electric technologies (both generation and end-use) in developing countries and countries with economies in transition.
7-8 October 1998	*IEA - UNEP Workshop on the Clean Development Mechanism*	Summary of previous regional workshops on the CDM

October 1998, Bonn	*DAC WP/ENV Consultation Meeting with the UNFCCC Secretariat, OECD and IEA*	Review the role of Development Co-operation in implementing the Climate Change Convention
2-11 November 1998	*IEA - UNEP side-event during COP-4 meeting*	Presentation of results from all CDM workshops to COP-4 participants
1998-2000	*Group on Environmental Performance*	Meetings on a number of countries; review of and further recommendations on progress concerning GHG emissions
11 January 1999	*EDRC Review of Norway*	To include a review of progress toward sustainable development, including climate change policies
11-12 March 1999	*ECO-WP1 meeting*	Working Party No. 1 of the OECD Economic Policy Committee will consider analysis of climate change policies as described in ECO work plan.
Early 1999	*OECD and IEA Forum on Climate Change*	Debriefing and priority setting post-COP-4
Early 1999	*Annex I Expert Group Meeting*	Post-COP 4 Work planning
May 1999	*OECD Ministerial Council Meeting*	First integrated progress report to Ministers
Early 1999; date and site to be determined	*ECMT Workshop on economic instruments with transport and finance ministries*	Examine the benefits of taxation approaches to internalise external costs of transport
31 May - 2 June 1999	*Group on Environmental Performance*	Review of the Russian Federation Recommendations
October 1999	*DAC WP/ENV Workshop with Developing Countries*	Assess the role of Development co-operation in support of developing countries' efforts to implement the Rio Conventions on Climate Change, Desertification and Biodiversity
Second half of 1999 and through 2000	*EDRC meetings on a number of countries*	EDRC examinations will include discussions on how countries move towards sustainable development, including the implementation of the Kyoto agreement.
Late 2000, USA	*Nuclear Plant Life Management in the Context of Electricity Sector Re-regulation*	Survey experience and review prospects for maintaining nuclear capacity under new market circumstances

IMPACT OF SUPPORT, TAXES AND RESOURCE PRICING

Date	Title/subject	Objective
11 June 1998, Paris	*Seminar on Externalities*	NEA seminar will discuss the external costs of electricity generation chains and investigate their impact on the contribution from nuclear power in sustainable energy mixes..
22-23 September 1998, Paris	*Ad hoc Meeting of Water Pricing Experts*	ENV/AGR meeting will discuss water pricing methods, particularly with reference to the three sectors of industry, agriculture, and households, and the subsidisation of water usage.
early 1999	*Internalisation and Fiscal Policy Meeting*	This meeting of ECMT and possibly DAFFE and others will examine the recommendations of the ECMT Social Costs Task Force with tax and finance experts.
End 1999, Paris	*Business and Industry Forum Discussion of the Industry Committee on Sustainable Development (to be confirmed)*	Proposed Forum Discussion of the Industry Committee with business on aspects of sustainable development, including possibly the environmental impacts of industrial support programmes.

TECHNOLOGY AND SUSTAINABLE DEVELOPMENT

Date	Title/Subject	Objective
4 June 1998 (Bonn)	*Collaborative Approaches to Deployment of Climate-Friendlier Technologies in Developing Countries*	IEA seminar to examine strategies for increasing the use of climate-friendly technologies in developing countries
4-5 June 1998 (Bonn)	*Capacity Building in Developing Countries*	IEA Climate Technology Initiative workshop to explore capacity building in developing countries to apply cleaner production methods
11 June 1998 (Bonn)	*Technology Diffusion in Developing Countries*	IEA Climate Technology Initiative workshop to discuss diffusion of climate-friendly technologies in developing countries
16-17 July 1998	*Biotechnology for Sustainable Industrial Development: Analytical Framework*	CSTP/Canada workshop to develop analytical framework and methodology for study on biotechnology for sustainable industrial development

September 1998	*Technology and Sustainable Development*	Informal OECD/IEA/World Business Council for Sustainable Development meeting in Paris
11 December 1998 (Budapest)	*Environmental Technology Foresight: Methodologies and Predictions*	OECD/Hungarian Workshop on the environmental technology predictions of current technology foresight activities, including methods and use of results in policy
November/December 1998 (China)	*Technology Co-operation Agreement with China: Pilot Activity*	IEA meeting to explore technical co-operation on coal-fired power plants
February 1999 (Australia)	*Implementing Eco-Efficiency*	ENV Pollution Prevention and Control Group Conference on eco-efficiency strategies
1999 (to be determined)	*Science and Sustainable Development*	Proposed workshop of the CSTP Group on the Science System to explore the contribution of science to achieving environmental goals
May/June 1999	*Biotechnology for Sustainable Industrial Development: Case Studies*	CSTP/Canada workshop to present sectoral case studies of use of biotechnology in clean industrial processes
1999 (to be determined)	*Environment and Innovation*	Proposed workshop of the CSTP Working Group on Innovation and Technology Policy to discuss how technology policies can further environmental aims
End 1999	*Business and Industry Forum Discussion of the Industry Committee on Sustainable Development (to be confirmed)*	Proposed Forum Discussion of the Industry Committee with business on aspects of sustainable development
1999 (to be determined)	*Farming Systems, Technology and Agri-Environmental Policies*	Proposed AGR workshop to explore the environmental implications of the changing nature of agricultural production, including rapid technological developments
September 1999	*AKS-Conference (Agricultural Knowledge System)*	Proposed AGR Conference to convene officials from Agricultural Research, Education and Advisory Services to discuss aspects of agricultural sustainability

INDICATORS OF SUSTAINABLE DEVELOPMENT

22-25 September 1998, York, UK	*Agri-Environmental Indicators Workshop*	ENV/AGR workshop is intended to advance work on developing agri-environmental indicators and to examine approaches for using indicators in policy analysis, including for the monitoring and evaluation of environmental impacts of policies.
8-9 October 1998, Paris	*Expert meeting on indicators of Sustainable Development*	Meeting to refine the OECD workplan, to get feedback from external observers, to associate partners to our work.
February 1999, Korea	*Seminar on sustainable consumption indicators*	ENV
March 1999, Aguascaliente, Mexico	*Seminar on environmental accounting*	ENV and STD
Spring 2000	*Review meeting with UN, World Bank and partner countries on refinements to and use of the core set of Development Indicators agreed in 1998.*	

ANNEX III. SOME RECENT PUBLICATIONS

CLIMATE CHANGE

OECD (1995), *Global Warming: Economic Dimensions and Policy Responses*, Paris.

OECD (1996), *Sustainable Transport Policies: CO_2 from Road Vehicles,* Paris.

OECD (1996), *International Greenhouse Gases Emission Trading,* Paris.

OECD (1996), *Joint Implementation, Transaction Costs and Climate Change,* Paris.

IEA (1996), *World Energy Outlook*, Paris.

OECD (1997), *The World in 2020: Towards a New Global Age*, Paris.

OECD (1997), *Sustainable Development: OECD Policy Approaches for the 21st Century,* Paris.

OECD (1997), *Capacity Development in Environment: Principles in Practice*, Paris.

OECD (1997), *Reforming Energy and Transport Subsidies: Environmental and Economic Implications,* Paris.

OECD (1997), *Ensuring Compliance With a Global Climate Change Agreement,* Paris.

IEA (1997), "Modelling Insights," *IEA Energy Environment Update*, No. 5, Paris.

IEA (1997), *IEA Statistics: CO_2 Emissions from Fuel*, Paris.

IEA (1997), *IEA Source-Book for Kyoto and Beyond,* Paris.

NEA (1997), *Nuclear Energy Data*, Paris.

ECMT (1997), *CO_2 Emissions from Transport*, Paris.

OECD (1998), "The Economics of Climate Change", *Economic Outlook*, No. 63, Chapter 7, Paris.

IEA (1998), *World Energy Prospects to 2020*, Paris.

THE IMPACT OF SUPPORT MEASURE, TAXES AND RESOURCE PRICING

OECD (1995), *Environmental Taxes in OECD Countries,* Paris.

OECD (1996), *Implementation Strategies for Environmental Taxes,* Paris.

OECD (1996), *Public Support to Industry: Report by the Industry Committee to the Council at Ministerial Level,* Paris.

OECD (1996), *Saving Biological Diversity: Economic Incentives,* Paris.

OECD (1996), *Subsidies and Environment: Exploring the Linkages,* Paris.

OECD (1996), *Tax Expenditures: Recent Experiences,* Paris.

OECD (1997), *Environmental Benefits from Agriculture: Issues and Policies: The Helsinki Seminar,* Paris.

OECD (1997), *The Environmental Effects of Agricultural Land Diversion Schemes,* Paris.

OECD (1997*), Environmental Taxes and Green Tax Reform,* Paris.

OECD (1997), *Investing in Biological Diversity: The Cairns Conference,* Paris.

OECD (1997), *Reforming Energy and Transport Subsidies: Environmental and Economic Implications,* Paris.

OECD (1997), *Water Subsidies and the Environment,* Paris.

OECD (1998), *Agriculture and the Environment: Issues and Policies,* Paris.

ECMT (1998), *Efficient Transport for Europe: Policies for the Internalisation of External Costs,* Paris.

OECD (1998*), The Environmental Effects of Reforming Agricultural Policies,* Paris.

OECD (1998*), Improving the Environment, through Reducing Subsidies, Part I and II,* Paris.

OECD (1998), *Sustainable Management of Water in Agriculture: Issues and Policies,* Paris.

OECD (1998), *Water Consumption and Sustainable Water Resources Management,* Paris.

OECD (1998), *Water Management: Performance and Challenges in OECD Countries,* Paris.

TECHNOLOGY AND SUSTAINABLE DEVELOPMENT

OECD (1995), *Technologies for Cleaner Production and Products: Towards Technological Transformation for Sustainable Development* , Paris.

OECD (1995), *Promoting Cleaner Production in Developing Countries -- The Role of Development Co-operation,* Paris.

OECD (1996), *The Global Environmental Goods and Services Industry,* Paris.

OECD (1997), *Key Energy Technologies for the 21st Century* , Paris.

OECD (1998), *Eco-Efficiency,* Paris

OECD (1998), *The Environment Industry Manual: Proposed Guidelines for the Data Collection and Analysis of Data on the Environment Industry,* Paris.

OECD (1998), *Biotechnology for Clean Industrial Products and Processes Towards Industrial Sustainability,* Paris.

NEA (1998), *Radioactive Waste Management Programmes in OECD/NEA Member Countries,* Paris.

INDICATORS OF SUSTAINABLE DEVELOPMENT

OECD (1997), *Environmental indicators for agriculture*, Paris

OECD (1997), *Sustainable development - OECD policy approaches for the 21st Century,* Paris.

IEA (1997), *Indicators of Energy use and Efficiency,* Paris.

OECD (1998), *Towards sustainable development: Environmental Indicators*, Paris.

OECD (1998), *Human Capital Investment: An International Comparison,* Paris.