POLICIES TO ENHANCE SUSTAINABLE DEVELOPMENT

MEETING OF THE OECD COUNCIL AT MINISTERIAL LEVEL, 2001

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ORGANISATION FOR ECONOMIC COOPERATION AND DEVELOPMENT

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- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

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Preface

In May 1998, OECD Ministers agreed "… that the achievement of sustainable development is a key priority for OECD countries. They encouraged the elaboration of a strategy … in the areas of climate change, technological development, sustainability indicators, and the environmental impact of subsidies". They also agreed "… to interpret the term 'sustainable' as including social and environmental, as well as economic, considerations", and in a context of "… integrating economic, environmental and social policies to enhance welfare". Finally, they "… stressed the importance of promoting effective integration of environmental considerations in the multilateral [trade and investment] system". A report, including policy recommendations, was anticipated in 2001.

The report *Policies to enhance sustainable development* responds to that mandate. It draws mainly on recent work done by the OECD and its affiliate Organisations[1] on various themes related to sustainable development. It also uses other appropriate sources to complete the discussion of these themes. Consistent with the mandate for the project, the report makes no attempt to be comprehensive in its treatment of sustainable development. Rather, it focuses on policy options available to OECD countries to improve the integration of environmental considerations into the working of the economic system, and to address some of the social consequences of better integration. While many of these policy options are well-known, their actual implementation in Member countries has often fallen short of what is desired. This report stresses that high priority needs to be put on building stronger support within governments, and society more broadly, for comprehensive implementation of sustainable development policies, both domestically and internationally.

A range of government agencies, international organisations and groups in civil society are actively promoting the sustainable development agenda. What the OECD brings to these efforts is its *economic perspective* to these issues and its *multidisciplinary expertise*. Implementing policies in practice that promote sustainable development requires the strong involvement of both economic and other policy communities, as well as ongoing efforts to build bridges among these communities.

Policies specifically aimed at securing sustained economic growth, a healthy environment or an inclusive social development are important in their own right for sustainable development. Although these policies are not extensively discussed in this report, related OECD documents on economic growth (OECD, 2001*b*), on an environmental strategy for the next decade (OECD, 2001*d*), and on guidelines for poverty reduction in developing countries (OECD, 2001*a*) contribute to the analysis of policies in these other areas. These reports are also highly relevant for the broader discussion on sustainable development.

The policy report, *Policies to Enhance Sustainable Development*, builds upon, and is complemented by, a more detailed analytical report on sustainable development (OECD, 2001*e*). It is provided as background for the OECD Council Ministerial Meeting in May 2001, and is published under the responsibility of the Secretary-General. Other related publications generated during the course of the OECD Project on Sustainable Development are listed below.

Other* OECD *publications released in the context of the three-year project on sustainable development

OECD (2001), *Sustainable Development: Critical Issues*, Paris, forthcoming.

OECD (2001), *OECD Environmental Outlook*, Paris.

OECD (2001), *The Well-being of Nations: The Role of Human and Social Capital*, Paris.

OECD (2001), *International Science and Technology Co-operation. Towards Sustainable Development*, Paris.

OECD (2000), "Special Issue on Sustainable Development", *Science, Technology and Industry Review*, No. 25, Paris.

OECD (2000), *Frameworks to Measure Sustainable Development: An OECD Expert Workshop*, Paris.

OECD (2000), *Towards Sustainable Development: Indicators to Measure Progress: Proceedings of the Rome Conference*, Paris.

OECD (2000), *Governance for Sustainable Development: Case Studies of Canada, Germany, Japan, Netherlands and United Kingdom*, Paris.

OECD (2000), *Transition to Responsible Fisheries: Economic and Policy Implications*, Paris.

OECD (1999), *Action Against Climate Change: The Kyoto Protocol and Beyond*, Paris.

OECD (1999), *National Climate Policies and the Kyoto Protocol*, Paris.

OECD (1999), *Technology and Environment: Towards Policy Integration*, Paris.

OECD (1999), *Framework to Measure Sustainable Development*, Paris.

IEA (1999),*World Energy Outlook: Looking at Energy Subsidies: Getting the Prices Right*, Paris.

NEA (2000), *Nuclear Energy in a Sustainable Development Perspective*, Paris.

Key Challenges and Policy Responses

Introduction

OECD countries routinely refer to economic growth as a measure of increasing human welfare. That economic growth is used as a proxy for welfare is not surprising. After all, consumption possibilities are a major component of welfare as the public understands it. But that same public is also aware that economic growth alone cannot fully describe its needs and wants. It is reminded of this by some of the negative consequences of economic activity – health risks from transport emissions and ozone depletion, declining bio-diversity from loss of habitat, and new forms of inequality associated with changes in technologies and production patterns. This is the context in which the concept of *sustainable development* has taken root – *i.e.* that of linking the economic, social and environmental objectives of societies in a balanced way. 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" (WCED, 1987).

Concern for the interests of future generations will, for many people, be reason enough to look beyond economic growth as an indicator of welfare. But there are other reasons as well. The long term sustainability of economic growth itself depends on maintaining basic ecosystem services, a healthy environment and cohesive societies. Balancing these elements will require stronger co-operation with developing and transition countries – which already represent over 80% of the world population, and which will account for virtually all of its future increase – because risks of disintegration and exclusion affect all countries, as do opportunities to benefit from participation in a growing global economy. Hence the importance of taking a broader view of what welfare entails, a longer-term view about the consequences of today's activities, and of greater emphasis on international co-operation to reach viable solutions. Ten years after the Rio Conference on the Environment and Development,[2] the concept of sustainable development is firmly rooted in standard economic analysis (Box 1). But for all the work at the conceptual level, its implementation in practice remains muted and uneven. Given the urgency with which the case for sustainability is often made, why have concrete actions lagged behind?

Box 1. Key concepts

Sustainable development can be interpreted in economic terms as "development that lasts" (Pearce and Barbier, 2000) – *i.e.* a path along which the *maximisation of human well-being for today's generations does not lead to declines in future well-being*. This report interprets human well-being as including not only the satisfaction of economic needs, but also aspirations for a clean and healthy environment, and preferences in terms of social development. Types of capital that sustain well-being – because of their levels and distribution – include man-made, natural, human and social capital. Their "adequacy" to support well-being depends on the interaction among them, as well as on the size of the population, its characteristics and preferences. Different types of capital provide one of the main mechanisms through which generations are connected to each other – as their stocks are influenced by current investment decisions, but their lives span several generations.

A key issue for sustainable development is the extent to which different types of capital can be substituted for each other. When substitution at the margin is possible, depletion of one type of capital is consistent with sustainability if it can be offset by an increase in other types. However, substitution between different types of capital is not always possible. For example, in the presence of critical thresholds for some resources, the cost of further degradation may escalate rapidly, calling for policies that maintain the quality and resilience of these resources. In the case of resources where critical thresholds can be defined, more stringent criteria for sustainability will apply (Box 2).

The policy report identifies some of the key challenges and barriers – conceptual and practical – that stand in the way of progress, and some of the areas where concrete government actions in Member countries would allow better integration of environmental, economic and social goals. The agenda that sustainable development espouses is both complex and broad. Hence the importance of focusing on only *some* of the key areas – those where the risks of non-sustainability are highest. This report concentrates on risks of irreversible depletion and degradation of a range of natural and environmental resources, and suggests a comprehensive set of measures to respond to those risks. Although opportunities to contribute to long term sustainability via economic and social policies are clearly important, comprehensive sets of policies in these two domains are – at least in OECD countries – relatively well established.[3] So are the linkages between economic[4] and social policies.[5] In contrast, environmental policies, and their linkages with both economic and social policies, are generally less well understood. These linkages need to be strengthened to support sustainable development. Because of these considerations, much of the focus of the policy report is on the environment-economy link, partly because the stakes in this

area are especially high, and partly because less is known about the environmental-social connection. Improving the coherence between economic and environmental policies would contribute to removing those inappropriate incentives that are leading towards unsustainable resource depletion and environmental degradation.

The measures described in this report cover four broad areas for action:

- The use of the price system to encourage individual agents to take the full costs of environmental degradation into account in their decisions.
- The reform of governments' decision-making processes to allow more integrative approaches to the full range of consequences of their policies.
- The use of technology policies to help de-couple environmental degradation from economic growth.
- The strengthening of the contribution of the international trade and investment systems to sustainable development world-wide.

Recommendations in each of these areas are presented at the end of this text and are supported by more detailed analysis in the full policy report. These cross-cutting recommendations are then applied to two specific issues – climate change and natural resource management – where the risks of non sustainability appear to be particularly high. In addressing these areas for action, policy-makers need to take into account a number of important elements that can contribute to the design and implementation of sustainable development policies (Box 2).

Box 2. Important elements of sustainable development policies

The discussion presented in this report highlights the importance of a number of cross-cutting elements to guide policies towards sustainable development. These include:

long term planning horizons. In the absence of an adequate framework for assessing the impact of policies on different types of resources, measures targeted at short-term objectives may be selected even if they have negative long term impacts. While trade-offs between different goals may prevail in the short term, in the long term man-made, natural, human and social capital will complement each other in supporting welfare improvements.

Pricing. For markets to support sustainable outcomes, prices should reflect the full costs and benefits to societies of the goods and services being produced. This may require the elimination of incentives to over-use natural resources and to degrade the environment, or the introduction of new incentives to improve the environment.

Box 2. **Important elements of sustainable development policies** (*cont.*)

Delivery of public goods. Many of the benefits from government interventions needed to promote sustainable development have the characteristics of public goods (basic research, information, health and education). Also, many of these public goods are global, as they will benefit several countries (*e.g.* information on the state of global ecosystems). Effective delivery of these public goods requires overcoming obstacles to co-ordination, through burden-sharing rules that recognise the different responsibilities and response capacities of individual countries.

Cost-effectiveness. Policies should aim at minimising their economic cost. This will require ensuring that the costs of each extra resource spent are equal across the range of possible interventions. Cost-effectiveness allows the minimisation of aggregate costs and the setting of more ambitious targets in the future.

Environmental effectiveness. Policies should secure: *i*) *regeneration* – *i.e.* renewable resources should be used efficiently and their use should not be permitted to exceed their long term rates of natural regeneration; *ii*) *substitutability* – *i.e.* non renewable resources should be used efficiently, and their use limited to levels that can be offset by renewable resources or other forms of capital; *iii*) *assimilation* – *i.e.* releases of hazardous or polluting substances to the environment should not exceed its assimilative capacity, and concentrations should be kept below established critical levels necessary for the protection of human health and the environment. When assimilative capacity is effectively zero, zero release of such substances is required to avoid their accumulation in the environment; *iv*) *avoiding irreversibility* – *i.e.* irreversible adverse effects of human activities on ecosystems and on bio-geochemical and hydrological cycles should be avoided. The natural processes capable of maintaining or restoring the integrity of ecosystems should be safeguarded from adverse impacts of human activities. The differing levels of resilience and carrying capacity of ecosystems should be considered, in order to conserve their populations of threatened, endangered and critical species.

Policy integration. Unsustainable practices may result from incoherent policies in different domains. Sectoral policies, in particular, are often introduced without due regard for the externalities being targeted by environmental policies, leading to inconsistencies and spill-over effects. Improving policy coherence requires better integration of economic, environmental, and social goals in different policies.

Precaution. Threats of exceeding critical thresholds in the regenerative capacity of the environment are subject to uncertainty. Accordingly, when designing policies for sustainable development, countries should apply precaution as appropriate in situations where there is lack of scientific certainty.

International co-operation. With deepening international interdependency, spill-overs become more pervasive. A narrow focus on national self-interest is not viable when countries are confronted with a range of environmental and social threats that have global implications.

Transparency and accountability. A participatory approach is important to successfully meeting the challenge of sustainable development, as the criteria for sustainability cannot be defined in purely technical terms. This requires that the process through which decisions are reached is informed by the full range of possible consequences, and is accountable to the public.

De-coupling environmental pressures from economic growth: key challenges

Are we on a sustainable path? Not without considerable changes aimed at de-coupling a range of environmental pressures from economic growth, so as to ensure that continued economic growth does not result in further environmental degradation. The interaction between economic growth and the natural environment that supports it lies at the core of sustainable development. Economic growth contributes to higher levels of human well-being, and provides the resources to address a range of environmental objectives. However, economic growth can also lead to excessive degradation of environmental and natural resources – when incentives to their use are inappropriate, and external effects are not internalised. Historically, economic growth has meant transforming much of societies' stocks of natural resources into other forms of capital. Today, maintaining functioning ecosystems that can support economic and social development is recognised as crucial for development to last, especially when no substitutes are available.

Economic and demographic projections heighten the importance of more ambitious policies to respond to the challenge of de-coupling. The volume of world GDP is projected to expand by 75% in the 1995-2020 period, with two-thirds of this increase in OECD countries. Over the same period, world energy demand could increase by 57% (IEA, 2000), and motor vehicle kilometres travelled by around 80% (OECD, 2001*c*) – with, respectively, around three fourths and two thirds of this increase occurring in non-OECD countries.[6] On the demographic side, the global population, having tripled in the past 50 years, is expected to increase over the next 50 years by another 20-75% – according to different UN assumptions on fertility and mortality rates – with much of this increase occurring in metropolitan areas of less-developed countries. The increased economic weight of non-OECD countries[7] implies that these countries will play a progressively larger role in shaping global environmental conditions. Consumption patterns prevailing in OECD countries are already imposing a large burden on the global environment, through demands for food and other natural resources.[8] The prospect of increased competition for scarce resources, and of greater pressures on the environment that would follow from the extension of these consumption patterns to the world population, underscores the importance of achieving more sustainable patterns of consumption world-wide.

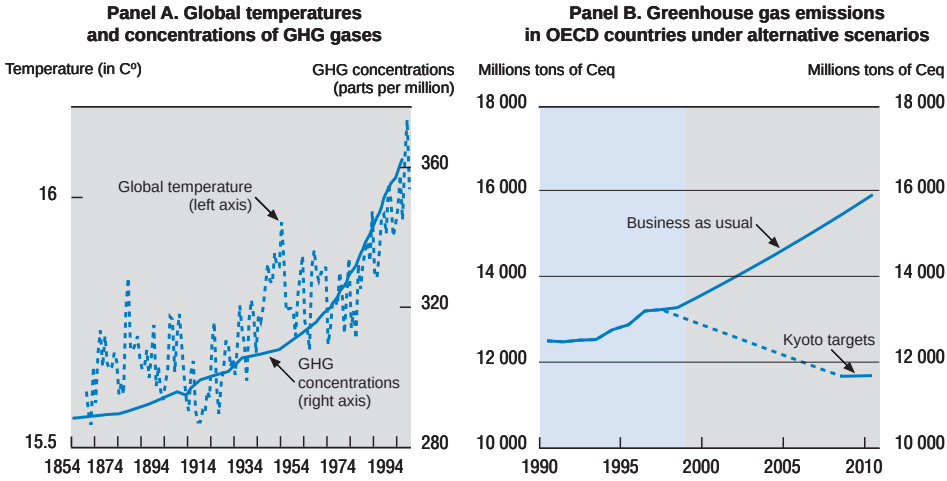
H*uman interference with the climate system* is one area where de-coupling is particularly important. There are no alternatives to many of the climate services provided by nature, and several of the changes prompted by increasing concentrations of greenhouse gases in the atmosphere may prove to be irreversible. Human activities have contributed to higher concentrations of greenhouse gases *via* the burning of fossil fuels (which account for about 85% of global emissions) and

a range of other economic activities. New scientific evidence suggests that most of the warming observed over the past half-century is attributable to human activities (IPCC, 2001*a*). A continuation of these trends could double concentrations of greenhouse gases by the end of the century, increase temperatures, alter precipitation patterns, raise sea levels, and interfere with atmospheric and oceanic circulation. Effects could also include inundation of coastal areas, loss of forests and coral reefs, endangerment of species, reduction in crop yields, impacts on irrigation, higher levels of air pollution, health impacts of heat waves, and the spread of infectious diseases (IPCC, 2001*b*). In the short term, most OECD countries have committed themselves to significantly reducing their emissions of greenhouse gases (Figure 1). In the long term, participation of developing countries in the abatement effort will be essential to limit climate change. Even if OECD countries were to reduce their emissions to zero, further increases in the global concentration of greenhouse gases will occur unless growth in emissions elsewhere is not reduced. The divergence between past responsibilities for greenhouse gas emissions (mainly in industrialised countries), future pressures (which include some large non-OECD countries), and vulnerability to climate impacts (in some of the poorer developing countries) makes issues of equity between countries central for climate policies.

Risks that current patterns of production and consumption could compromise the life-supporting services on which human well-being depends also extend to other aspects of the global ecosystem. Resource management in OECD countries has traditionally focused on the market-based values of natural resources while largely ignoring values that are not captured by markets. Sustainable development requires considering all ecosystem services, which are a function of both the quantity (total stock) and the quality (resilience) of the resources involved. Management systems in place in most countries are gradually starting to recognise this broader perspective, in particular in the areas of biodiversity, farmland, forests, water and living marine resources. The international community has introduced several conventions and treaties over the past two decades aimed at addressing these challenges. Non-ratification, however, has often undermined the credibility of this treaty process.[9]

It is difficult to measure the significance of changes in ecosystems, but analysis of selected vertebrate species living in forests, freshwater and marine ecosystems suggests that their numbers may have declined by about one-third over the last thirty years.[10] Marine resources are exposed to especially large pressures. Around one-quarter of major fish stocks were over-exploited in 1996; while they are now recovering in some areas, they will not return to levels consistent with their single-species maximum sustainable yields[11] without further reductions in fishing activity (OECD, 2000). More generally, biodiversity reduction is driven by over-exploitation of native species, impairment of their habitat, and introduction and spread of invasive species. Since the extinction of an individual species is

Figure 1. **Global temperatures and emissions of greenhouse gases in OECD countries**



Note: Data on GHG concentrations are based on records from ice-core data up to 1960, and from observations at the Mona Loa Observatory, Hawaii, since 1960.

Sources: Panel A: GHG concentrations. are from C.D. Keeling and T.P. Whorf, Scripps Institution of Oceanography, University of California, United States, for measurements taken at Mauna Loa Observatory, Hawaii; and Atmospheric Environment Service, Environment Canada for records from Alert, NWT, Canada. Global temperatures are from Jones *et al.* (1999) and Parker *et al.* (1995). Panel B: GHG emissions include emissions of carbon dioxide, methane and nitrous oxide and are for the OECD GREEN model.

irreversible, actions taken to prevent extinction should be regarded as insurance against the loss of resources that could be valuable in the future – either on their own or because of the raw material they could provide in such areas as pharmaceutical, agricultural, and industrial processes.

Similar concerns are justified by the rate at which water resources are being used and degraded. Human activities have increased water withdrawals and pollution of water bodies. While freshwater resources are still globally abundant, they are unevenly distributed across and within countries. One in five people in the world does not have access to safe and affordable drinking water, and half do not have access to adequate sanitation. About one-third of the world's population is estimated to be living in countries suffering medium-high to high water stress,[12] and the proportion is projected to double by 2025.

Many of these trends are compromising the ability of nature to support future well-being. They are also imposing a large burden on the well-being of today's generation because of their impacts on human health. Environmental damage may already be responsible for 2% to 6% of the total burden of disease in OECD countries, and for 8% to 13% in non-OECD countries (OECD, 2001*c*). The health effects of environmental degradation are a critical component of the social-environment interface.[13] Better understanding and quantification of the burden that environmental hazards impose on today's well-being could prove crucial to adopting more ambitious environmental policies over the long term.

The social dimension of sustainable development

A coherent approach is required to address these environmental threats in a manner that is consistent with the development and social priorities of different countries. It is particularly important in the light of the global nature of many of the challenges described above. In some cases, such as climate change, countries cannot individually reverse adverse trends. In others, such as biodiversity and water shortages, consequences of continued degradation spill over national borders. Globalisation of economic activity and changes in countries' relative economic weights have also shifted policy priorities from the local and national levels to the regional and global ones. As a result, national policies in many areas have become less effective on their own, prompting calls for new multilateral responses. International co-operation, however, requires shared priorities for action and criteria for sharing its costs. It is difficult to reach agreement on these priorities when large disparities exist in economic conditions among countries.

This result is all the more likely when a large number of people – mainly in developing countries – cannot satisfy their fundamental needs because of poverty, malnutrition, illiteracy and inadequate access to basic services. The consequences of poverty often persist over time, and spread across countries in the form of conflicts, migration and disease.[14] Poverty reduction is therefore integral to the pursuit of sustainable development world-wide. Stronger efforts from governments, business, civil society, and the community of donor countries are required to meet this goal. Building on resolutions from a number of UN conferences in the 1990s, donor countries have agreed to focus on seven international development goals that, if achieved over the next 15 years, would improve the lives of millions of poor people in developing countries.[15]

There are also important synergies between the goals of poverty reduction and better environmental protection. Rural populations, for instance, depend directly on their surrounding ecosystems – pastures, forests, wetlands and coastal fisheries – to meet their needs for food, fuel, shelter, fodder and medical plants.

And in both rural and urban areas, the importance of environmental factors for the health status of those living in developing countries is similar to that for malnutrition and other preventable risk factors (World Bank, 2000). More generally, environmental sustainability can only be achieved within a broad development strategy, encompassing sustained economic growth, financial solvency, institutional development, improved governance, effective investment in education and health, and poverty reduction.

OECD countries can play an important role in helping developing countries achieve these goals, by providing increased access to needed investment flows and to their own markets. Liberalisation of international trade and investment helps developing countries enhance their economic growth and has the potential to lift large numbers of people out of poverty. It can also improve environmental protection in developing countries through the diffusion and implementation of cleaner technologies, co-operation to develop good governance systems, and assistance to producers in developing countries to enable them to meet consumers' demands for goods produced in a sustainable manner. However, globalisation will not deliver its full potential benefits if new technologies, capital and export markets only benefit those countries where the conditions to effectively exploit these opportunities are present, while marginalising those countries where these conditions do not yet exist. Development co-operation contributes by helping developing countries, especially the poorest ones, build their capacity to take full advantage of globalisation's potential to reduce poverty.

Social considerations are also important for the pursuit of sustainable development in OECD countries. Most OECD countries have made significant progress in establishing extensive safety nets, education and health systems, alongside well-developed governmental, legal and institutional apparatus for delivering these services to their citizens. Social policy in OECD countries has long been motivated by concerns about equity and the social externalities of poverty, unemployment, inadequate skills or ill health. Policies in these areas need to adapt to changing circumstances and are continuously under review, but a framework already exists for addressing a broad range of social needs. Such policies testify to an on-going concern about current needs and future prospects, even if this concern is not always phrased in sustainable development terms. Social protection systems, however, may need to adjust so as to contribute to creating the necessary conditions for more determined action to preserve long term "environmental commons", and to address the structural adjustment that policy reforms entail.

The level of wealth, institutional infrastructure and social safety nets in place in OECD countries may appear to make the goal of environmental sustainability a more attainable one in those countries. However, recent experience has demonstrated that the required changes in policies and behaviour may be difficult to

achieve in the face of ignorance, inertia, and vested interests. In recent years, the notion of "social capital" has gained prominence to describe those features of societies and communities that facilitate collective action and, in particular, the kinds of difficult changes that will be needed to ensure environmental sustainability (Box 3).

Box 3. Social capital

Social capital, according to the preferred OECD definition, refers to networks, shared norms, values and understandings that facilitate co-operation within and among groups. Communities or societies with high social capital are thought to be characterised by higher levels of mutual trust, reciprocity, unwritten and unspoken agreement about societal rules, and social cohesion. Such societies may also be more effective at achieving collective goals – including those for environmental protection. In developing countries, where the role of formal institutions is less developed, informal arrangements provided by families, friends and local communities may be crucial in ensuring well-being and, indeed, survival. While the notion of social capital is relevant for both developed and developing countries, it seems especially important in the context of development and poverty eradication, and has been given much prominence in recent World Bank work.

In practice, the concept of social capital is difficult to make operational and to measure. Putnam (2001) has developed proxy measures based on statistics of: *i*) the amount of involvement in community and organisational life; *ii*) public engagement (*e.g.* voting); *iii*) volunteer community activities; *iv*) informal sociability (*e.g.* visiting friends); and *v*) reported levels of interpersonal trust. A number of studies suggest that social connectedness is correlated with physical and emotional health, lower crime rates, and performance of government institutions.

It is not always clear how policy can foster the accumulation of social capital, as it is mainly an attribute of communities. Government support for voluntary initiatives and community organisations has been suggested as one option, but the effectiveness of such measures in enhancing social capital is less obvious than, for example, increasing access to higher education for enhancing human capital. Whether social sustainability depends on the amount and composition of social capital is impossible to judge at this stage of development of the concept and its measurement.

An OECD study on the role of human and social capital for sustained growth and development (OECD, 2001*f*) reviews the origins of the concept, its relation to human capital, its measurement and impacts on well-being.

Inadequate responses: knowledge and implementation gaps

Policies in place have so far failed to match the urgency of the challenges described above. This gap reflects both knowledge and implementation problems. Lack of knowledge often accounts for the difficulties in valuing external effects, or in decisions about the supply of public goods. For example, important gaps exist in understanding the pressures exercised by human activities on terrestrial and marine ecosystems, in valuing a range of ecosystem services, and in quantifying the health implications of various environmental hazards. Risks of serious or irreversible damage call for precaution[16] in policy-making, yet inadequate information on the size of the risks involved – or on the point where critical thresholds are reached – has often complicated decisions about how much "insurance" (in an economic sense) is justified. Filling in these gaps is crucial for designing more credible policy targets, and for gaining broad support for their implementation. OECD governments, *via* their extensive research capabilities, have important responsibilities in this regard.

The difficulty in providing comprehensive and concise information about sustainable development is also part of this knowledge gap. Gross domestic product

Box 4. **Measuring sustainable development**

Much recent work on measuring progress towards sustainable development has addressed specific issues, such as measuring climate change or the environmental and social impacts of particular sectors (*e.g.* agriculture, energy and transport). Measuring sustainable development at an aggregate level, however, requires a broad integration of indicators of economic, environmental, and social changes.

One way to achieve this integration is to extend the traditional framework used for measuring economic activity – the National Accounts. Extensions of the National Accounts to the environmental area currently underway. These extensions are aimed at recording changes in environmental assets, and at highlighting environment-related transactions (*e.g.* pollution abatement and control expenditure). Extensions to the social area may also allow the linking of accounts measuring employment, human capital, and the distribution of household income and consumption among various socio-economic groups. Measuring natural and human capital requires both monetary and physical data. While work in these fields has progressed,[1] the application of a fully extended National Accounts framework remains a medium- to long term objective. In the shorter term, complementary approaches to achieve such integration are required.

Box 4. Measuring sustainable development (*cont.*)

Since indicators in each of the three dimensions of sustainable development are well developed, one approach is to select a small set of indicators pertaining to each of these dimensions to capture key sustainable development trends. Some OECD countries already use this approach. A preliminary set of such indicators for OECD countries is described in OECD (2001*e*). These are grouped as *resource indicators* (measuring levels and changes in economic, environmental and social assets[2]); and *outcome indicators* (covering the quantity and quality of development across a broad range of perspectives, including income distribution, health and environmental quality[3]). This list provides an illustration of this approach, based on available indicators for most OECD countries, that could be used in OECD work (including in performance reviews). It is not meant to be a prescriptive, definitive, set to be applied in each country, but as a basis for further work.

A limited set of indicators can complement single measures based on aggregation of indicators. Some aggregate indicators use physical or subjective weights to combine trends in different variables (*e.g.* the *Living Planet Index*, WWF *et al.*, 2000). Others rely on monetary valuation of different assets and flows, and are closely linked to the national accounting framework. Examples of the latter include measures of "green GDP" and "genuine savings". Genuine savings deduct from the traditional definition of savings the estimated costs of depletion and degradation of a range of environmental assets, and add on estimates of investment in human capital. One advantage of the genuine savings approach is that persistently negative values can be interpreted as evidence of unsustainable trends. However, this approach suffers from the difficulty of attaching monetary value to the depletion and degradation of a range of resources.

1. The OECD and other agencies are co-operating in the preparation of a revised manual for the compilation of *System of Economic and Environmental Accounting*, to be released in 2001.
2. The *resource indicators* selected in OECD (2001*e*) cover change in air quality (changes in emissions of CO_2 or GHG, NO_x and SO_x); changes in water resources (intensity of water use), changes in land and ecosystems (changes in land use); changes in biodiversity (protected areas); changes in use of energy resources (growth in consumption of energy resources); net changes in produced assets (change in value of the net capital stock); net changes in financial assets (current account balance to GDP ratio); technological change (multi-factor productivity growth rate); changes in the stock of human capital (changes in the proportion of the population with upper secondary/tertiary qualifications); investment in human capital (growth in expenditure on education); depreciation of human capital (standardised unemployment rates).
3. The *outcome indicators* selected in OECD (2001*e*) cover consumption (household final consumption expenditure per capita); sustainable consumption (waste generation intensities); income distribution (D9/D1 decile ratio/Gini coefficient); health (life expectancy/ disability free life expectancy, environment related health expenditure); work status/employment (employment to population ratio); education (enrolment rates).

(GDP) is today recognised as only a partial measure of human well-being, as some of the activities that contribute to GDP lower well-being (*e.g.* pollution), while others may reduce resources beyond their reproduction limits – if they are not managed in a sustainable manner. This recognition, however, has not yet translated into the establishment of comprehensive measures combining information on different types of assets and income flows. While a range of approaches and indicators has been developed (Box 4), an authoritative set of data that combines these different strands of work does not yet exist. Its development and use in the context of peer-review process are key priorities for increasing awareness in the general public, and to identify critical pressure points.

In many areas enough information is already available to serve as the basis for policies. However, action remains inadequate. Several factors contribute to these *implementation gaps*:

- For common resources – such as climate, biodiversity, marine resources and (in some cases) freshwater resources – there may be little incentive for any one country to take unilateral action, as the costs would be borne by the country involved, while the benefits would accrue to all. Co-operation across countries, according to their common but differentiated responsibilities, is therefore required for effective implementation.

- Concerns about the short-term consequences of policies to protect the environment on the distribution of household income (*i.e.* the possibility they may disproportionately affect those with lower income), on employment (in particular when employment losses are locally concentrated), and on the competitiveness of individual firms and sectors, have also delayed implementation. Practical options to deal with these problems are presented in the policy report. These concerns are not unique to policies addressing challenges to sustainability. As in other areas, the structural adjustment that these policies imply will be easier to implement in countries that have been most successful in addressing pressing social needs.

- Governments are not always well-equipped to deal with the cross-cutting and long term nature of many of these challenges. Sustainable development policies typically involve the responsibility of several ministries, implying the need for better integration of economic, social and environmental objectives (*e.g.* in specific sectors depending on natural resources). The long term nature of some of the threats to sustainable development also requires reflecting possible irreversible effects (*e.g.* disposal of toxic waste, species extinction, etc.) and extreme events (*e.g.* floods, storms) in policy decisions. Risk assessment and risk management are important to the design of policies leading to sustainable development.

- Although OECD governments have important responsibilities in promoting sustainable development, progress will be enhanced by participation and support from the general public, consumers, business, and civil society. Business can play an important role in adopting and diffusing sustainable practices world-wide, and in many instances appears to be ahead of governments in implementation. Organised groups in civil society can also play a role in identifying key challenges and in facilitating adaptation. Providing consumers with information about the environmental characteristics of the goods and services they buy, and making them aware of the consequences of their decisions, will facilitate change in consumption patterns. Governments have an important responsibility in setting up the conditions necessary to encourage changes in behaviour that favour sustainable development, and in providing access to the information needed for effective participation.

A framework for sustainable development policies: key policy responses

A comprehensive strategy is needed to overcome these knowledge and implementation gaps. OECD governments need to show leadership. In particular, they need to make their policy tool-kit more market-oriented, more integrative, and more inclusive of developing-country interests. Progress also requires a focused agenda, with special priority given to areas where the risks of non-sustainable patterns of development are highest – such as climate change and the management of other natural resources. Recommendations to improve the effectiveness of policy interventions are provided below, and developed in more detail in the full policy report. Not all of the recommendations apply to all OECD countries, nor in all circumstances. Different priorities and institutional conditions will need to be taken into account when considering their effective implementation. Nevertheless, when comprehensively applied, these recommendations provide a practical framework for progress towards sustainable development.

Responsibility for implementation clearly rests with Member countries. However, the OECD itself can play an important role in supporting these efforts. The OECD provides a forum for "without prejudice" discussions, where common positions among Members can be developed outside negotiating fora. It can also assist in tracking progress towards sustainable development; in collecting comparable information in key areas, such as indicators of subsidies and their effects; in developing recommendations on the characteristics of sustainable development policies; in analysing the socio-economic and environmental effects of different policies; and in periodically reviewing progress in the implementation of domestic policies, via its peer-review system.

Making markets work for sustainable development

There is significant scope throughout the OECD area to expand the use of market-based instruments and to reform support programmes so as to make price signals more coherent with the goal of de-coupling environmental pressures from economic growth. Several environmental objectives could be achieved in a more cost-effective way using market-based instruments. This would include removing externalities and market failures through greater use of environment-related taxes and tradable permit systems, and addressing policy failures by reforming environmentally damaging subsidies. Obstacles to these reforms can be overcome by improved international co-ordination; by targeted interventions, such as compensating those most affected by reforms in a way that does not undermine the environmental effectiveness of market-based instruments; and by general measures, such as phasing in reforms and programmes to build public acceptance. In practice, market-based instruments will need to be combined with other interventions such as regulations, voluntary agreements and information. Opportunities exist to increase the effectiveness of all these tools.

- Take account of externalities and market failures through greater use of environment-related taxes and tradable permits. While the choice and design of instrument will vary depending on national circumstances and on the problem being addressed, this implies:
  - Setting tax rates that are consistent with environmental targets, *e.g.* by introducing new taxes on some products and processes (especially those that are currently tax-exempt), and by better targeting existing taxes.
  - Expanding the use of tradable permit systems to address global (*e.g.* climate change), regional (*e.g.* eutrophication), or domestic (*e.g.* local air pollution) concerns.
  - Reducing exemptions to environmental taxes and restrictions to tradable permit systems that undermine their effectiveness.
  - Using the revenues from these instruments in line with national priorities. This could include policies to facilitate adjustment and to gain public support for these instruments, giving priority to reducing other more distortionary taxes. If these revenues are used to finance specific environmental programmes, review these arrangements periodically to ensure that they do not distort spending priorities. Similarly, limit the grandfathering of tradable permits in time, in order to minimise distortions to competition.

- Correct policy failures through reforms of environmentally damaging support programmes by:
  - Phasing-out subsidies that are environmentally damaging, and making the remaining ones consistent with specific improvements in environmental performance.
  - Ensuring that benefits from support payments for environmental services meet the cost of provision, and making the valuation of the costs and benefits transparent.
- Improve the effectiveness of other measures by:
  - Considering all economic, environmental and social benefits and costs expected from proposed regulations.
  - Strengthening the environmental effectiveness of voluntary arrangements, through provisions for follow-up, verification, and control.
  - Educating and informing producers and consumers to increase awareness of the environmental and social consequences of their choices, taking care to avoid creating unintended trade effects.
- Address the possible effects of more ambitious environmental policies on employment and income distribution, and assist the redeployment of workers affected by these policy reforms through labour market measures (*e.g.* income support, job-search assistance and retraining) and other interventions that increase flexibility and well-functioning labour markets.

Strengthening decision-making

Governments also need to "lead by example" in promoting sustainable development. Governments should therefore focus their internal policy design and implementation processes on more effectively integrating the three dimensions of sustainable development (economic, environmental, and social); improving their own capacity to support sustainable development; and developing transparent and productive mechanisms for interacting with civil society.

- Improve the capacity for policy integration at all levels of government by:
  - Ensuring that key economic, environmental and social considerations are integrated into sectoral policy analysis, design and implementation, before decisions are taken, using tools such as environmental, social and regulatory impact assessments, as well as cost-benefit analysis.
  - Ensuring that the best scientific advice on sustainability issues is co-ordinated at the highest possible level within government, and communicated in a timely manner to decision-makers.

- Co-operating internationally to develop common approaches for making economic, environmental and social policies mutually supportive.
- Assessing the coherence of their international engagements, to improve international policy-making processes.
- Clearly identifying sustainable development policy targets and timetables and conducting regular reviews of progress (including through peer review).
- Develop the capacity within government to use information and communication technology to co-ordinate effectively across government.

- Improve transparency and public participation at all levels of government by:
  - Enabling effective participation of firms, workers, consumers and non-government organisations in policy discussions on production and consumption patterns, thereby facilitating the transition to sustainable development.
  - Providing the public with access to information and to effective means of challenge (*e.g.* judicial processes).

Harnessing science and technology

Scientific progress and technological development are major forces underlying improvements in productivity and living standards. New technologies offer considerable promise for de-coupling economic growth from long term environmental degradation. But there is no guarantee that innovations will appear when and where they are most needed, or at a price that reflects all environmental and social externalities associated with their deployment. Governments need to create a policy environment that provides the right signals to innovators and users of technology processes, both domestically and internationally; to fund basic research; and to support private initiatives in an appropriate manner.

- Provide permanent incentives to innovate and diffuse technologies that support sustainable development objectives, by expanding the use of market-based approaches in environmental policy. When market-based instruments are not appropriate, use performance standards in preference to measures that prescribe and support specific technologies.
- Support long term basic research through funding and efforts to build capacity (*e.g.* development of centres of excellence). Increase research on ecosystems, the value of the services they provide, the long term impact of human activity on the environment, and the employment effects of new technologies.
- Address unintended environmental and social consequences of technology, by separating technology *promotion* responsibilities from those on health, safety, and environmental *protection* within governments.

- Support applied research activities when they are clearly in the public interest (*e.g.* protection of public health and environment) and unlikely to be provided by the private sector by:
  - Co-operating with the private sector to develop and diffuse new technologies.
  - Facilitating public-private and inter-firm collaboration with the innovators of cleaner technologies and practices.
  - Seeking out opportunities for greater international collaboration on research, especially on issues critical for sustainable development.
  - Allowing competition among technologies that can meet the same policy objective, and equal access to "learning opportunities" (*e.g.* protected niche markets and similar schemes) by foreign as well as domestic investors.

Managing linkages with the global economy

International trade and capital flows contribute to long term economic growth and development, and provide a foundation for achieving environmental and social goals. When trade and investment policies and environmental and social policies are mutually supportive, the contribution of each to sustainable development is enhanced. OECD countries should reinforce this coherence, both in their domestic arrangements and in international negotiations. To grow in a way that is environmentally and socially sustainable, developing countries need improved access to OECD markets and active support from OECD countries for their capacity building efforts.

- Strengthen coherence among trade, investment, environmental, and social policies by:
  - Reforming domestic policies that are both trade-distorting and environmentally-damaging.
  - Assessing the environmental and social impacts of trade and investment liberalisation and of incentive measures aimed at attracting foreign direct investment, and developing or refining suitable methodologies to this end.
  - Developing practical approaches for ensuring that trade and investment disciplines and environmental and social policy instruments remain mutually supportive.
  - Encouraging the use of environmental and social codes of conduct in the private sector; providing a supportive regulatory and institutional framework for private sector activity; and promoting awareness and effective implementation of OECD instruments dealing with multinational enterprises, corporate governance, and bribery.

- Support opportunities and capacities for developing countries to grow in a way that reinforces environmental protection and social development by:
  - Increasing market access for developing countries, especially in sectors where sustainable development is likely to benefit most from economic liberalisation.
  - Reviewing economic and environmental policies from the perspective of the goal of poverty reduction.
  - Promoting implementation of the international development goals reflected in the DAC Report "Shaping the 21st Century: The Contribution of Development Co-operation". In working toward these goals, most OECD countries are guided by the widely accepted target of 0.7% of GNP as an appropriate objective for ODA levels.
  - Continuing to help the poorest countries improve their capacity to participate in the sustainable development of the global economy. This includes establishing the policy and institutional frameworks needed to attract private capital flows to those countries, while minimising adverse environmental or social impacts associated with such flows, and providing appropriate support for technology co-operation.
  - Where development co-operation resources are used to support the provision of global public goods (*e.g.* climate change), focusing on those activities that have clear local benefits, and which also generate ancillary benefits at the regional and global levels.

Responding to climate change

Addressing climate change is a particularly urgent challenge, requiring strong international co-operation as well as leadership from OECD countries to act rapidly to achieve the mitigation levels envisaged under the Kyoto Protocol. OECD countries need to better align their domestic policies with climate change objectives. They also need to introduce market-based measures, such as emission trading systems, carbon taxes and subsidy reforms, and to combine these policies with focused programmes for technology development and diffusion (*e.g.* low carbon-emissions energy sources). And finally, they need to develop long term mitigation policies and to strengthen their partnerships with developing countries, in order to stabilise concentrations at levels that avoid dangerous interference with the climate system.

- Use a comprehensive approach to climate mitigation by:
  - Extending mitigation to all sources of greenhouse gases and carbon removal through sinks.

- Incorporating into climate policies both the ancillary benefits of mitigation policies, and the climate benefits of other policies (*e.g.* energy efficiency and diversification).
- Reforming subsidies that increase emissions or reduce uptake by sinks, especially in transport, energy and agriculture, and consider measures to ease adjustment.
- Assessing and reporting on the implications for emissions of greenhouse gases of assistance provided by Export Credit Agencies.
- Supporting research and technology projects that remove barriers to the uptake of more energy-efficient technologies and less carbon-intensive energy sources, as well as research on the social adjustments likely to arise from policy changes.
- Developing consistent approaches for monitoring and tracking emissions, to enable transparent reporting, verification and review, and to enhance compliance.
- Developing adaptation strategies to reduce exposure to risks of climate change and to facilitate the transition to patterns of living that are less vulnerable to climate impacts.
- Raising awareness of climate change, its impacts, costs and the benefits of policy actions, through information and dialogue with the communities and sectors most affected, so as to facilitate the transition to new forms of work and consumption.

• Develop policies to guide mitigation over the long term, for stabilising concentrations at levels that avoid dangerous interference with the climate system by:

- Identifying and evaluating emission limits consistent with the objectives of the Framework Convention on Climate Change.
- Encouraging participation of developing countries in mitigation policies – an essential step for reducing climate change over the longer term.
- Using various forms of financial and technical support to assist developing countries to enhance their capacity to implement climate mitigation and adaptation policies.

Managing natural resources

Natural resources provide the raw materials necessary for economic activity, as well as the foundations for life itself. However, many of the ecosystem services provided by natural resources cannot easily be reflected in market prices. Sustainable management of natural resources requires getting their prices right, by taking fully into account both their use and non-use values. Governments should

examine current policies with a view to making markets better serve conservation aims and to strengthening their research, monitoring and enforcement capabilities. They should also increase their efforts to help developing countries improve their capacity to manage their own natural resources in a sustainable manner.

- Improve the knowledge base for decision-making by:
  - Promoting research on environmental thresholds for renewable resources, on methods for measuring non-market values of natural resources, and on technologies that more efficiently use or recycle natural resources.
  - Developing indicators and techniques for assessing the state of natural resources; their use and the variables bearing on it (*e.g.* prices and subsidies); threats to ecosystems, such as invasive species; the relationships between natural resources and the people who directly depend on them; and the socio-economic impacts of policy reform.
- Make markets better serve conservation aims by:
  - Making greater use of environment-related taxes, tradable permits and other market-based approaches to managing natural resources.
  - Developing improved methods to take ecosystem services into account when making policy decisions affecting natural resources.
  - Encouraging the creation of markets for goods and services produced in a sustainable manner (*e.g.* eco-tourism), by clarifying property rights, disseminating information, and establishing institutions to enforce contracts.
  - Reforming subsidies that encourage the over-exploitation of natural resources, and making cross-subsidies explicit. When considering support for environment-related services from natural resources, clarify the public benefit involved, and make the basis for this support explicit.
  - When planning investments in natural resource infrastructure (*e.g.* irrigation works and public water supplies), use cost-benefit analysis for project appraisal, taking into account the most important impacts, and make full-cost recovery of private benefits a long term goal.
  - Addressing adverse social impacts from changes in resource management policies – such as impacts on income distribution, employment in specific industries – in a way that facilitates structural adjustment. When pricing natural resources, provide direct income support to poorer users rather than cross-subsidies or reduced fees as a means to achieve social objectives.
- Reduce waste flows, for example by raising public awareness of ways to reduce household waste; promoting product innovations (*e.g.*, through prizes) that reduce waste or increase recycling rates; shifting government procurement towards products that generate less waste; setting fees for

waste disposal to reflect full costs; and reducing barriers to the development of markets for recycled goods.

- Increase co-operation with developing countries in building their capacity to manage natural resources by helping them to:
  - Finance training and the acquisition of technologies needed for the sustainable management of natural resources.
  - Clarify property and tenure rights over natural resources, including those of indigenous communities.
  - Identify ways to ensure that the poorest members of society have equitable access to natural resources or to the benefits derived from them.
  - Develop equitable rules for sharing the benefits arising out of the utilisation of genetic resources.

Notes

1. International Energy Agency (IEA); OECD Nuclear Energy Agency (NEA); the European Conference of Ministers of Transport (ECMT); and the OECD Development Centre.
2. The Rio Conference on the Environment and Development (UNCED) in 1992 – which approved Agenda 21, the Rio Declaration and a number of conventions – provided much of the impetus to work on sustainable development at the international, national and local level. Responses included the adoption of Sustainable Development Strategies in several countries, and the establishment of the UN Commission on Sustainable Development to follow up progress in the implementation of the Rio Commitments.
3. For example, policies to establish a robust and dynamic financial system – subject to effective supervision and regulation – make a vital contribution to sustainable development, by contributing to improved economic results and enabling economies to deal with structural problems. See "Financial Markets and Sustainable Development", DAFFE/CMF(2001)7/FINAL, Paris.
4. For example, human capital has been shown to be a significant determinant of economic growth, with one additional year of schooling leading to about 6% higher GDP in the long run (OECD, 2001*b*). The same report argues that policies to adapt the educational and training systems to changing skill requirements, as well as measures to reorganise work within firms, are also essential for countries to take advantage of the growth potential of the new economy.
5. Social policies which give priority to integrating transfer recipients into employment – through investment in their capacities to participate in a modern economy – provide one example of policies to increase the coherence between social and economic goals.
6. In non-OECD countries, energy demand and distance travelled by motor vehicles are expected to increase by 113% and 240%, respectively.
7. Over the period 2000 to 2020, the share of non-OECD countries in world GDP (at market exchange rates) is expected to increase from less than 20% to 25% (OECD, 2001*c*).
8. The "ecological footprint" index of WWF *et al.* (2000) measures the hectares of biologically productive area required to produce the food and wood people consume, to give room for infrastructure, and to absorb the carbon dioxide emitted from burning fossil fuels. By this measure, the ecological footprint of OECD countries, per person, is almost 4 times larger than in non-OECD ones.
9. For example, several international agreements relating to living marine resources, such as the "Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas", have not yet come into force (see OECD, 2000). Similarly, the "Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas", which

forms an integral part of the FAO Code of Conduct for Responsible Fisheries, has so far been ratified by only 19 countries; 25 ratifications are needed.

10. The "Living Planet Index" – developed by WWF, UNEP and other agencies – is a simple average of three indexes measuring changes in the population of animal species in forest, freshwater and marine ecosystems (WWF *et al.*, 2000).
11. The maximum amount of a renewable resource that can be harvested over an indefinite period without causing its stock to be depleted, assuming that removals and natural mortality are balanced by stable reproduction and growth.
12. Water stress is considered medium-high (or high) when the ratio of water withdrawals, minus water returns, to the stock of renewable water resources exceeds 20% (or 40%). (OECD, 2001*c*).
13. Environmental hazards to human health have traditionally been linked to household access to clean water, community sanitation, maternal conditions and nutritional deficiencies. Current health risks are also associated with industrial and agricultural emissions to water, air and food, which lead to respiratory and cardiovascular diseases, cancers and other maladies.
14. Infectious diseases are already imposing a devastating toll on some of the poorest countries. Life expectancy at birth in the 29 African countries most affected by HIV is projected to decline from above 50 year in the early 1980s to 47 in 2000-2005, 9 years less than would have been expected in its absence (*www.popin.org/pop*1998/6.*htm*).
15. These goals cover economic well-being, social development and environmental regeneration. Goals are formulated for halving the proportion of individuals living on less than USD1 per day by 2015; securing universal primary enrolment of children by 2015; eliminating gender disparities in primary and secondary education by 2005; reducing by two-thirds infant and child mortality by 2015; lowering by three-fourths maternal mortality by 2015; providing universal access to reproductive health services by 2015; implementing national sustainable development strategies by 2005, so as to reverse loss of environmental resources by 2015 (IMF *et al.*, 2000*a*).
16. The idea of "precaution" is already referenced in several instruments at the international level. Different terms have arisen in the negotiation of these texts to give effect to this idea (*e.g.* "precautionary *principle*", "precautionary *approaches*", etc.).

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