

An OECD Framework for Effective and Efficient Environmental Policies: Overview



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AN OECD FRAMEWORK FOR EFFECTIVE AND EFFICIENT ENVIRONMENTAL POLICIES: OVERVIEW [ENV/EPOC(2008)6/FINAL]

Background

OECD countries have long advocated the strong integration of environmental and economic policies as a pragmatic contribution to “sustainable development”. Broadly, sustainable development requires that an appropriate balance be struck between economic, environmental and social goals. Economic activity that is built on a degrading environment is not likely to be sustainable; nor is it likely that environmental quality will be maintained for very long in the absence of a healthy economy, or when environmental policies work against basic social objectives.

Finding the right balance among these complex and often conflicting goals is not easy, but is most likely to be achieved if an “integrated perspective” is used in the policy formulation and implementation processes. The search for better environment-economy-equity integration has therefore underlain many of the recent developments in the environmental policy sphere – certainly, it has been the focus of most OECD work on environmental policies over the years. In turn, effective and efficient policy integration implies the institutionalisation of solid procedures for setting objectives, for identifying and analysing available options, for consulting with stakeholders, and for carrying out regular *ex post* analysis of both policy objectives and instruments.

There has been considerable progress made in recent decades toward better integration of economic and environmental objectives. This progress has led to environmental policies that are increasingly efficient, as well as to economic and sectoral policies that are increasingly sensitive to underlying environmental realities. Two obvious examples are the now widespread application of environmental impact assessment procedures and the increasing use of economic-based approaches to environmental policies (e.g. tradable permit systems to control environmental pollutants).

However, much remains to be done, especially in the context of a rapidly-changing and globalising economy. The scope of many environmental problems is widening. Many of these problems are urgent and largely irreversible, involving significant costs of inaction. Despite many improvements in the environmental pressures imposed *per unit* of economic output, the *absolute scale* of economic activity continues to increase, placing additional pressures on the environment.

With the globalisation of economic activity, much of the focus in environmental policy is also shifting toward transboundary environmental problems, such as climate change and biodiversity loss. Not only are these problems likely to be more costly to resolve than many domestic environmental problems, it will also be difficult to reach cost-effective international agreements to resolve them.

Fortunately, the level of environmental ambition is growing in many countries. This increasing ambition is partly a reflection of the growing public understanding of the threats to society from urgent environmental challenges -- and thus, the large welfare benefits to be derived from ambitious and efficient environmental policies. It is also partly a response to the increased incomes that global consumers possess – more affluent consumers tend to demand higher levels of environmental protection.

However, increasing ambitions also amplify the need to choose most cost-effective policy solutions – otherwise, the *cost* of resolving environmental problems could increase in the years ahead. For example, air and water pollution control costs could rise, as tighter air quality controls are imposed, and as new water infrastructure investments are made. On the other hand, more integrated approaches to policy design and implementation, as well as new technological progress (in part stimulated by the new policies and instruments that are being applied) could help in limiting these costs.

As both the costs and benefits of environmental protection expand, the need for stronger integration of environmental and economic policies will therefore also expand, as will the stakes for individual consumers and producers in the society – all of whose incomes and other framework conditions will increasingly be affected by policies aimed at protecting environmental quality.

The OECD has provided considerable leadership in the past toward strong environment-economy policy integration. There are many examples of this leadership, but three in particular can be cited here:

- The (1972) OECD Council *Recommendation on Guiding Principles Concerning International Economic Aspects of Environmental Policies* [C(72)128]. This *Recommendation* established the “Polluter Pays Principle”, which has since evolved in many countries into formal recognition that polluters should bear the full economic costs of any environmental degradation they create.
- The (1991) OECD Council *Recommendation on the Use of Economic Instruments in Environmental Policy* [C(90)177/FINAL]. This *Recommendation* provided detailed guidance on the application of economic instruments to environmental policy – and thus, as a vector for improved policy integration.
- When OECD Environment Ministers met in 1991, and then again in 1996, they devoted a considerable part of their discussion to how public policies could be made more environmentally effective and more economically efficient. One key result was that the principle of “policy integration” underpinned the *OECD Environmental Strategy for the First Decade of the 21st Century* that emerged in 2001. That *Strategy* emphasised the importance of integrating environmental quality and economic development objectives among OECD countries; it also focused on the need for OECD countries to strengthen their co-operation with non-OECD countries.

To help ensure that this leadership continues, and to reinforce the importance of environment-economy policy integration for both OECD and non-OECD countries, the OECD has developed a *Framework for Effective and Efficient Environmental Policies*.

The main objective of the *Framework* is to encourage policy-makers to ask appropriate questions about their environment-related policies and institutions (including the integration of environmental concerns in other policy fields), as a way of moving toward more effective and efficient (*i.e.* integrated) outcomes over time. The *Framework* is therefore intended as a guide to governments in their search for effective and efficient policies related to the environment, aimed at finding the right balance among environmental, economic, and social policy objectives.

The *Framework* is not a series of ready-made prescriptions; nor is it binding. It is intended only to provide a flexible tool that governments at all levels can use as a “checklist” in their pursuit of sustainable development, *inter alia* by internalising environmental externalities in the prices facing firms and households. The *Framework* can be used in various ways in different contexts. For example, it could form a key input to peer review processes. It could also be used to encourage more effective and efficient approaches to environmental problems in the design and implementation of economic and sectoral policies, or as a vehicle for promoting co-operation with non-OECD countries on environmental issues of mutual interest.

The *Framework* focuses first on the establishment of effective and efficient policies. It then examines opportunities related to the implementation of these policies (with emphasis on the various policy instruments that are available), as well as on the subsequent monitoring of progress. Links to several other policy domains, such as economic policy, trade, investment and development co-operation, are also covered at this point. And finally, it discusses a few ways of addressing concerns about the sectoral competitiveness or income distribution impacts of environmental policies.

The main concern of the *Framework* is how to address environmental externalities – regardless of whether these are related to pollution or to natural resource management. In other words, environmental externalities that occur in the extraction, use or disposal of natural resources are covered by the *Framework*, but no attempt is made to discuss the optimal extraction and allocation of natural resources *per se*.

Elements of the Framework

Setting Environmental Objectives – Environmental policies make important contributions to social welfare (e.g. by protecting the natural basis of production and by improving human health). Achieving these objectives should cause the targets of environment-related policies to alter their decisions in ways that reflect environmental realities (i.e. “internalising externalities”). However, these policies can also entail significant economic costs. It is therefore important to carefully consider whether the additional benefits of environmental improvements, and the additional costs to society of achieving these improvements, balance reasonably well. This implies the need to assess, on a regular basis, the costs and benefits of objectives that are set for environmental policy. When feasible, this assessment should include monetary valuation of the changes in environmental quality in question.

Box 1. Costs and benefits of the Clean Air Interstate Rule in the US

US EPA has estimated that the *Clean Air Interstate Rule*, which will significantly reduce emissions of SO₂ and NO_x in the US, will result in *net* benefits of \$71.4 or \$60.4 in 2010 and \$98.5 or \$83.2 billion in 2015. The (gross) benefits were primarily due to fewer fatalities, non-fatal heart attacks, cases of chronic bronchitis and asthma due to reductions in particulate matter and ozone.

Links to Economic Policies – Policies that affect the environment are typically “cross-cutting” – several governmental organisations are responsible for different parts of the environmental problem. Policy design and implementation therefore need to be well integrated with key economic and sectoral policies – both vertically (international, national, sub-national) and horizontally (inter-sectorally). In other words, environmental goals should be reflected in sectoral and economic policies, and *vice versa*.

Box 2. OECD Council Recommendation on Common Approaches on the Environment and Officially Supported Export Credits

On 12 June 2007, The OECD Council agreed a Recommendation that Members, before taking decisions on officially supported export credits, apply a set of common approaches for addressing environmental issues relating to exports of capital goods and services and the locations to which these are destined. A general objective of the recommendation is to promote coherence between policies regarding officially supported export credits and policies for the protection of the environment, including relevant international agreements and conventions, thereby contributing towards sustainable development.

Box 3. Transparency regarding recipients of farm subsidies in EU member states

Many member States of the European Union have recently started to publish information on who receives what amounts of subsidies under the Common Agricultural Policy (CAP). This has revealed that a significant share of the subsidies goes to a limited number of farmers – which in turn has strengthened demands for reform of the CAP.

Direct Environmental Regulation – Direct regulatory instruments (e.g. laws or regulations stipulating environmental quality standards or limits on emissions from various pollutions) represent a major proportion of all instruments currently being used for environmental policy in OECD countries, and they will continue to play a key role in the future. While the environmental effectiveness of direct regulatory approaches is often very good, the main challenge is to avoid undue inflexibilities in these regulations that might limit their environmental effectiveness and/or economic efficiency.

Box 4. Optimising Regulatory Instruments: Better Regulation Initiatives

Many OECD countries have launched major initiatives to change their regulatory culture in order to achieve the same or better results, including environmental ones, more efficiently. The “Better Regulation” initiative is a centrepiece of the European Commission’s “Partnership for Growth and Jobs”, launched in 2005. Its key objective is to ensure that the regulatory environment is simple and of high quality, since the regulatory framework in which businesses operate is a key factor of their competitiveness, growth, and employment performance.

As part of the simplification initiative in the Netherlands, the Environment Ministry, in close co-operation with industry groups and local authorities, is integrating 25 different permitting systems into one system, starting in 2008. Simultaneously, the Government plans to reduce the number of enterprises that are required to have (individual) environmental permits from 100,000 to 40,000 by expanding the use of “generic” rules, that are binding for all firms.

Environmentally Related Taxes – Many environmental objectives could be met in a more cost-effective manner by using market-based instruments, such as environmentally related taxes. These taxes provide incentives for polluters and resource users to change their behaviour today. They also provide long-term incentives to innovate for a more environmentally friendly future tomorrow. Although environmentally related taxes are not strongly supported by the public in all contexts, there are various ways in which this support can be increased over time (e.g. through measures to limit negative impacts on the competitiveness of certain sectors and/or on income distribution).

Box 5. Increased motor fuel taxes in Turkey

Tax rates on petrol and diesel have increased strongly in Turkey since the late 1990. This has led to a rapid decrease in the use of such fuels per unit of GDP. Given that many low-income households in Turkey do not own cars at all, this reform has also generated progressive impacts on overall income distribution (i.e., richer households pay more in tax than poorer households).

Box 6. Differentiation of tax rates according to the sulphur content of fuels

A number of countries have introduced a differentiation in their motor fuel tax rates according to the sulphur content of the fuels. This has given oil companies a strong incentive to develop fuel varieties with low sulphur content, and the high-sulphur varieties have rapidly disappeared from the market. This has also, indirectly, allowed better control technologies for NO_x emissions to be installed in the cars.

Tradable Permits – Tradable permits systems provide similar flexibility as taxes do for polluters/resource users to choose the method by which they will achieve a given environmental goal. By establishing caps or promoting direct investment in environmentally beneficial outcomes, they also emphasise the achievement of environmental goals. Their use in OECD countries has therefore grown significantly in recent years. Nevertheless, there are several issues that need to be considered when using this approach, in order to increase the environmental effectiveness and economic efficiency of permit trading (e.g. the choice between a cap-and-trade system and a baseline-and-credit system; the initial allocation of the emission allowances; and ways of limiting the transaction costs associated with the permit trading system).

Box 7. Emission trading systems reduce abatement costs

The first tradable permit system used for environmental policy in the US (1983-1987) addressed lead used as an additive in petrol. The flexibility provided by this form of regulation has contributed to a significant reduction in abatement costs. The (later) trading system for SO₂ emission allowances in the US also contributed to significant reductions in abatement costs – and to a shift towards innovations that provide larger environmental improvements than were available before trading was allowed.

In recent years, several European countries have also introduced various domestic emission trading systems (e.g. the UK has introduced trading systems for packaging recovery, for CO₂ emissions, and for the landfilling of biodegradable household waste; a common trading system for CO₂ emissions in selected industrial sectors has also been introduced across the European Union). There are clear indications of significant emission reductions and significant cost savings in response to several of these trading systems.

Box 8. Tradable SO₂ emission permits in the US made inventors focus more on environmental effectiveness

It has been demonstrated that the introduction of tradable permits for SO₂ emissions in the US (with the Clean Air Act Amendments in 1990) did not increase the relevant patenting activity, compared to the case of “command-and-control”-based regulation. However, the direction of the innovation activity shifted – previous regulations requiring plants to install scrubbers created incentives for innovation that lowered the costs of operating scrubbers, but did little to improve the environmental effectiveness of the technology. In comparison, innovations occurring since 1990 have served to improve the removal efficiency of scrubbers.

Public Financial Support for Environmental Goods and Services – Most countries use public financial support to encourage environmentally friendly practices and to finance environmental infrastructure investments. While such support can certainly trigger significant environmental improvements, it is important to make sure that it is provided only in cases where *public goods* are expected to be generated, and to consider whether such support really is the most economically efficient way of reaching a given environmental target. In particular, taxing or regulating environmental “bads” will reduce the risk of unintended subsidisation of environmentally harmful alternatives, as well as reducing the need for public funding.

Box 9. Auctioning of subsidies for greenhouse gas abatement in the UK

Aiming to achieve as much greenhouse gas abatement as possible for a given amount of subsidies (GBP 215 million), the UK Government (in 2002) allowed firms to offer abatement of their UK emissions over the period 2002–2006 (as against baseline emissions in 1998–2000), in exchange for a subsidy per tonne abated. Firms entering the auction were required to commit to a specified level of abatement in 2006, and to make phased progress towards it in the intermediate years 2002–2005. The auction closing price of GBP 53.37 per tonne of CO₂-equivalent abatement in 2006 represents a subsidy payment of GBP 17.79 per tonne of CO₂-equivalent abatement in a single year.

Promoting Technological Development – Low-emission technologies offer considerable promise for facilitating the decoupling of economic growth from long-term environmental degradation. Failures in the operation of markets tend to produce smaller amounts of these technologies than would otherwise be considered optimal, and there is no guarantee that the “right” environmental innovations will appear when and where they are most needed -- or at an acceptable cost to society. Several types of policy instruments can promote further technological development: *directly* -- through public financial support (e.g. grants, soft loans or preferential tax treatment); or *indirectly* -- through various constraints placed on environmentally harmful products or behaviour, through direct regulation (e.g. standard-setting), or through the economic incentives provided by taxes or trading systems. However, these instruments need to be carefully designed, in order for them to be as effective and efficient as possible.

Box 10. Environmental policy and innovation

Recent OECD work has confirmed that environmental policy does have a positive effect on technological innovation. For instance, in a case study on renewable energy, it was found that the implementation of different policy measures had a measurable impact on innovation, with tax measures and quota obligations being clear determinants of patent activity.

Changes in relative prices also induce particular kinds of innovation. In a case study of motor vehicle emissions abatement, it was found that changes in fuel prices encouraged investment in “integrated” innovation (in which fuel efficiency gains also arose), but not in “post-combustion” innovation. In the case of renewable energy, changing electricity prices were rarely found to be significant for changes in patenting activity, except for solar energy.

Other market forces can also be important determinants of innovation. In a case study of bleaching technologies in the pulping process, for example, public concerns about the environment appear to have spurred the development of low-emission technologies, predating the introduction of regulatory standards. Interestingly, eco-labelling did *not* appear to influence innovation in this case.

Other Instruments (Information-based and Voluntary Approaches) – A typical market failure in the environmental domain is the lack of relevant information among firms and households. Environmental policies that focus on “better information” can help to overcome this problem. Agreements between government and particular economic sectors or industries can also contribute to the positive evolution of environmental policy. The environmental effectiveness of negotiated approaches would be enhanced if governments indicate that follow-up action could be taken, in the event that the negotiated targets are not actually met. Involving third parties in the process of setting environmental targets, as well as in monitoring performance, can also increase the environmental effectiveness – and the credibility – of voluntary approaches.

Box 11. Collection of mercury switches in the US

To reduce mercury emissions from electric arc furnaces that consume scrap from recycled automobiles, the US has encouraged the removal of mercury-containing switches from scrap automobiles prior to recycling. (Nearly all obsolete automobiles in the US are dismantled and shredded, in order to recycle the metal.) The US *Clean Air Act* gives the US EPA authority to regulate the steel mills – but not the car dismantlers. However, there is little the steel producers can do about the mercury problem, other than installing expensive end-of-pipe cleaning equipment. The car dismantlers can relatively easily take out the switches before the cars are flattened – but have no incentive to do so, due to the low value of the mercury metal and the additional costs of soot extra procedure. Hence, the 2006 US *National Vehicle Mercury Switch Removal Program* is a voluntary programme – involving automobile and steel manufacturers, scrap recycling, vehicle dismantling, environmental groups and the States – aimed at reducing the presence of mercury-containing switches originating from automobile convenience lighting and anti-lock brake systems from the scrap metal supply chain. This programme is expected to prevent up to 75 tons of mercury emissions over the next 15 years.

Box 12. Load-Reduction Agreements in New South Wales

New South Wales (Australia) introduced a licensing system in 1999, setting limits on the pollutant loads emitted by holders of environment protection licenses, and linking license fees to the size of the emissions permitted. In order to promote voluntary pollution reduction measures, polluters may enter into Load-Reduction Agreements with the Department of Environment and Conservation. The agreements stipulate an “agreed load” (lower than the actual pollution load) that the polluter commits to reach within three years. The nature of the abatement works to be undertaken is at the discretion of the licensee. During this period, the license fee payments will be based on the lower “agreed load” – thus freeing up financial resources for the polluter to invest in pollution abatement technologies. In the event the agreed emission reduction is not reached, the polluter would have to repay the fee reduction it had benefited from, with interest. Hence, a credible “threat” is in place that should enhance the probability of compliance.

Mixes of Policy Instruments – Environmental policy instruments usually operate as part of a mix of instruments (e.g. several instruments are often applied to the same environmental problem). It is the *net* contribution of the instrument mix to social welfare that matters most. The environmental effectiveness and economic efficiency of these mixes can be enhanced by adhering to many of the same principles that guide the use of individual instruments, and by explicitly considering the way in which different instruments interact.

Box 13. Energy taxes and labels promoting energy-efficient refrigerators in Denmark

A study of the combination of (i) rapidly increasing electricity taxes and (ii) a labelling scheme to indicate the fuel efficiency of refrigerators in Denmark in the 1990s found that the two policy instruments did in fact underpin each other. The impacts of both instruments were further enhanced by e.g. special training provided to about 20% of all sales staff connected with retail sales of “white goods”.

Monitoring, Compliance and Enforcement – No environmental policy instrument will be environmentally effective or economically efficient without appropriate compliance assurance mechanisms. These mechanisms in turn generate both costs and benefits, both of which need to be explicitly considered when deciding how much monitoring, compliance and enforcement are needed, in particular circumstances.

Box 14. Regulatory enforcement pyramid

A good way of achieving an optimum mix of persuasion and coercion, aimed ultimately at compliance is the “regulatory enforcement pyramid”. Under this approach, regulators start first at the bottom of the pyramid, and assume that polluters are willing to comply voluntarily. However, they also make provision for circumstances where this assumption proves to be incorrect, by including provisions that would ultimately escalate the sanctions, in the event of non-compliance. For example, the enforcement pyramid might begin with advice and written recommendations; move later to issuing administrative notices and on-the-spot fines; and then escalate to prosecutions, with increasingly serious consequences. The stronger the sanctions at the disposal of the enforcer, the more it is likely that the environmental objective can be achieved via “soft” means.

Environmental Policy and Competitiveness – There is no convincing evidence that environmental policy *harms* overall economic competitiveness. Ambitious national policies can have a negative impact on the competitiveness of certain sectors, and under particular circumstances, but these negative effects usually find positive offsets elsewhere in the economy. Moreover, where competitiveness concerns *do* exist for individual sectors or firms, there are often practical ways of reducing these concerns. On the other hand, there is no convincing evidence that *stringent* environmental policy directly *improves* economic competitiveness for the country as a whole either – even though it may lead to new market opportunities for individual firms (and thus, to improved profitability). It may even be the case that *lax* environmental standards detract from (rather than contribute to) national economic competitiveness, particularly in the longer-term.

Box 15. Limiting the competitiveness impacts of the charge on NO_x emissions in Sweden

Firms in Sweden that produce more than a certain amount of energy have to pay a charge on measured NO_x emissions. In order not to distort competition with plants producing amounts of energy below the set limit, the revenues raised are returned to the firms covered by the charge – based on the quantity of energy each produces. Plants with low emissions per unit of energy produced are “net winners”, while firms with high emissions are “net losers”. The scheme has led to significant technological developments, and emissions per unit of energy produced have been reduced more than 50% since when the charge was first announced. While the refund system alleviates the competitiveness problem that a charge without refunds could have caused, it provides no incentives for the customers of the plants covered by the charge to buy fewer of the products that (still) cause (some) pollution.

Environmental Policy and Low-income Households – Like all public policies, environmental policies imply different benefits for, and different burdens on, different groups in society (e.g. groupings according to income classes, age, regions, or ethnicity). Environmental policies can, for example, sometimes weigh more heavily on low-income households than they do on the richer parts of society. There are several possible ways of ensuring that these individuals do not slip through the social safety net.

Box 16. Compensation for low-income households in the Netherlands

In 1996 the Netherlands introduced a regulatory energy tax (RET) on the use of natural gas and electricity. The rates of the RET have been raised several times, and – as a compensation – the rate of the first bracket of the personal income tax has been reduced, explicitly to redress in part the distributional impact of the RET. The administrative costs associated with this compensation mechanism were negligible, since the compensation measures were a part of the annual revision of the personal income tax rate structure.