



### 1. Environmental Taxes

#### Definition and objectives

Environmental taxes - or ‘eco-taxes’ as they are commonly called- are taxes with a potentially positive environmental impact (EEA 2006). They can be collected from businesses, consumers or any other organisation. They usually have both an environmental and a revenue raising effect. The environmental effect arises from internalising environmental costs (‘getting the prices right’) and implementing the polluter-pays-principle by inducing consumers and producers to adopt more environmentally compatible behaviour. The revenue effect is created by the additional governmental income through the new tax, although proposals to implement environmental taxes are often accompanied by reductions in other taxes or recycling of revenues to support environmental objectives. Furthermore the revenue effects tend to decrease over time with the environmental benefits increasing.

#### Mode of operation

While environmental taxes are primarily levied on businesses, they induce behavioural changes in all sectors, including the consumer, through transmitted price signals. All authorities with fiscal responsibilities, including local and regional governments, can in principle apply eco-taxes. The most effective level of government to apply eco-taxes will depend on the nature of the environmental problem to be addressed and its causes. For problems concerning only people in a clearly demarcated area, local eco-taxes can be applied whereas regional, national or international level problems will require involvement of higher levels of government.

A variety of parameters needs to be decided on when setting up an environmental tax:

Parameter	Issues to consider
<b>Tax base</b> <sup>1</sup>	Taxes can be applied to different activities, resources, emissions or goods. The tax base should be decided on according to policy objective and feasibility. For example, if emissions cannot be taxed directly due to monitoring problems, a “process input” tax can be a substitute.
	<b>Emission tax:</b> Payments are directly related to the measurement (or estimation) of the pollution (i.e. air or water pollution, land contamination, noise) caused (EEA 2006).
	<b>Product tax:</b> Payments are levied on the units of harmful substance contained in products: for instance, a carbon tax is based on the carbon content of each particular fossil fuel. The product tax may also be levied per unit of the product, if the objective is to reduce usage of the product generally (e.g. a tax on pesticides) (EEA 2006).
	<b>Natural resources:</b> Payments accrue according to use of natural resources, e.g. water, land, raw-materials, energy carriers, etc...
<b>Tax rate</b>	Setting the right tax rate is crucial and information either on price elasticity or the marginal damage inflicted by external effects is needed to set it right.
<b>Taxpayer</b>	Tax revenue can be collected at the level of businesses or private consumers. The person or organisation paying a tax may not necessarily carry the burden in the end, depending on how prices and markets react to the introduction of the tax. The point of intervention in the market will also need to be carefully selected in light of the capacity of targeted actors to act on the financial incentives to achieve the desired outcome.

<sup>1</sup> The following text mainly considers emission taxes, but similarly applies to other types of environmental taxes as well.

<b>Revenue allocation</b>	The collected revenue can either be channelled to the general budget or be allocated for a specific purpose. This “revenue earmarking” can be for environmental expenditures, for financing transition costs or for compensatory cross subsidies. Revenues raised can also be used to compensate for reductions in other less desirable taxes.
<b>Exemptions</b>	Some actors can be partly or fully exempted from the tax, e.g. due to concerns regarding redistribution between different groups or competitiveness of specific industries. As exemptions might compromise the efficiency of eco-taxes, they should be applied with care.
<b>Institutional setup</b>	Different governmental departments can be responsible for collecting the tax revenue, monitoring compliance and sanctioning in case taxes are not paid. An important consideration in the design of environmental taxes are technical emission measurement requirements, the number of targeted actors and opportunities for tax evasion, which can result in significant tax collection costs for government.

Table 1: Parameters for environmental taxes

The process of implementing an eco-tax can be characterised by five distinctive steps:

Step	Issues to consider
<b>Initial research and design</b>	The problem needs to be clearly identified and its causes understood. This is important to plan the right measures as well as to secure public support.
<b>Policy formulation</b>	Governments need to formulate a coherent policy framework embedding the eco-tax. It shall cover the main parameters as outlined below.
<b>Dialogue and information</b>	Dialogue with different stakeholders on the objectives and measures of the policy framework is needed to check the consistency and feasibility of the policy and raise support for its implementation.
<b>Enforcement</b>	Emissions need to be measured; the tax to be paid determined and collected. In cases of non-compliance, sanctions have to be imposed.
<b>Monitoring &amp; Revision</b>	Measures are required to check whether environmental and economic aims of the tax are achieved, and what corrective actions can be taken to improve the effectiveness of the tax. Eco-taxes need to be periodically revised, as environmental or economic conditions might change in a way that requires an adaptation of the policy.

Table 2: Steps and issues to be considered for establishing an eco-tax

## Strengths & weaknesses

Eco-taxes have both an environmental and a revenue effect. They are generally perceived as advantageous as they can achieve environmental goals in an efficient way, raise governmental revenue and simultaneously improve the tax structure of an economy. It should be noted however that tax revenues are likely to decrease as an eco-tax replaces a more traditional tax on goods or products and results in reduced pollution and in turn reduced tax revenues. Relatively high price elasticity can result in heavily reduced consumption after applying the tax. It is the nature of an environmental tax that the more effective it is the less revenue will be generated through it over time.

Strengths	Weaknesses
<p><b>Environmental goals are achieved at lower costs</b></p> <p>Environmental improvements happen in the best place and with the best technology that yields the environmental goal with the lowest costs. Practical experience confirms that eco-taxes indeed reduce the costs of achieving a given environmental goal, and this often enables more ambitious environmental goals than under command and control type regulation.</p>	<p><b>Reinforce informal economic activity</b></p> <p>In some cases eco-taxes can also reinforce informal economic activity. If tax revenues are collected from formal actors only, and government fails to control illegal or informal operators, imbalances might occur that favour additional informal activities (GTZ 2004c).</p>

**Promote long-term resource efficiency activities**

Eco-taxes promote long-term resource efficiency activities and provide continuous incentives for research in environmental technologies, especially if the businesses perceive the tax to persist in the long term.

**Mobilisation of revenue**

Especially for developing countries that have a small tax base and face difficulties in raising government revenues, eco-taxes can be an attractive option to mobilise government revenues and align environmental and economic goals.

**Reduce distortions**

Eco-taxes can be a relatively harmless way to raise government revenues in terms of economic efficiency, allowing reductions of other more harmful taxes that cause more distortions, especially taxes on human labour (Kerr 2001:6). Eco-taxes may thus help to make the tax structure more efficient, thereby raising national competitiveness and overall societal welfare.

**Evasive actions**

Re-locating activities to places outside of the regulated area remains probably the most frequent evasive action taken, leading to economic losses and undermining the environmental effect, especially as activities are likely to be shifted to a country with lower environmental standards.

**Illicit behaviour and corruption**

Companies can try to avoid the eco-tax by illicit behaviour, e.g. the falsification of pollution records or engagement in corruption with government officials.

**Information gaps and political influence**

In order for the policy to achieve its objectives in an efficient way, polluters from as wide a range as possible need to be included. This can be hindered by data gaps on emission sources and resistance from influential lobbies leading to potential exclusion of critical industry sectors or exclusion of a large informal economy from the tax.

**Contradictions with subsidies**

Eco-taxes can contradict subsidies provided for important but scarce environmental goods (like water) for social policy reasons<sup>2</sup>. An eco-tax in this case could be perceived as reducing redistribution and might face political opposition.

Table 3: Strengths and weaknesses of eco-taxes

	Before eco-tax	After eco-tax	Revenue effect of eco-tax
<b>Tax rate</b>	16%	20%	--
<b>Consumption</b>	1,000,000	500,000	--
<b>Revenue</b>	160,000	100,000	60,000 reduced revenue

Table 4: Example for decreasing tax revenue due to high price elasticity

Evidence shows the administrative costs of eco-taxes to be slightly above average when compared to other taxes. Eco-taxes being raised in conjunction with product taxes tend to have particularly low administrative costs, as existing structures for tax collection can be used. The costs related to an eco-tax can be summarised as follows:

Category	Description	Faced by
<b>Policy formulation</b>	...for establishing the tax system as outlined above	Government
<b>Abatement</b>	...for obtaining information on abatement options. ...for paying required eco-taxes and undertaking activities to reduce emissions	Businesses/ consumers
<b>Monitoring</b>	...for monitoring and reporting	Businesses
<b>Sanctioning</b>	...for assessing compliance and sanctioning	Government

Table 5: Costs associated with eco-taxes

<sup>2</sup> However, the redistribution element of subsidies might be low, non-existing or even negative even if perceived differently by society (World Bank 2005). Thus, while redistribution might be preferred from an environmental perspective, it might be advisable to use alternatives to subsidies on environmental goods, both for fiscal and environmental reasons.

## Success factors

Applying an eco-tax requires specific governmental resources and capabilities at different stages. Governments thus need considerable regulatory capacities, which makes eco-taxes an unsuitable substitute if regulatory policies have failed or are likely to fail due to a lack of enforcement capacity and/or political commitment.

First, the nature of the environmental problem needs to possess certain characteristics to be effectively addressed by an eco-tax:

- The impact caused by the emission should be the same or similar for each unit;
- The impact should be more or less uniformly distributed;
- It should not involve serious health problems for humans that need immediate action;
- The pollutant should be measurable in quantitative terms.

Second, general economic and political framework conditions need to be supportive of an eco-tax. This covers a range of legal, fiscal and economic issues, including capacities within governments. While some are directly under governmental influence and can be addressed in the short term, others require more long-term oriented action by governments:

Success factor	Justification
<b>Rule of law and low corruption levels</b>	...to ensure that tax revenue is actually collected and sanctions are applied. A large informal sector and incomplete record keeping of businesses can also result in implementation gaps.
<b>Proper enforcement of property rights</b>	...to give businesses an incentive to invest in pollution abatement installations.
<b>A functioning judiciary system</b>	...allowing governmental offices to get judicial support for imposing fines and giving third parties the possibility to sue businesses not in the state of compliance.
<b>Functioning reporting systems</b>	...to allow governments to determine the tax to be paid in a consistent manner. Incomplete information regarding the tax base can lead to inefficiencies and unequal treatment of different actors.
<b>Governmental capacity</b>	...is needed at all stages of the process described above. Governments need to gather sound data to set appropriate tax rates, handle the emission data submitted by companies and finally administer the revenue collection.

Table 6: Success factors of eco-taxes

## Key Literature and Case Studies

**GTZ (1995):** *Market-Based Instruments in Environmental Policy in Developing Countries: Framework for Policy Planning and Institutional Development in the Environment*. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH, Eschborn 1995

**OECD DAC (2005):** *Environmental Fiscal Reform for Poverty Reduction*. DAC Guidelines and Reference Series, Organisation for Economic Co-operation and Development

**World Bank (2005):** *Environmental Fiscal Reform – What Should Be Done and How to Achieve It*. The International Bank for Reconstruction and Development / The World Bank

Case Studies / Examples	Link
Environmental taxes – EEA Reports on market-based instruments in Europe that contain a number of Case Studies on Environmental Taxes	<a href="http://reports.eea.europa.eu/technical_report_2005_8/en">http://reports.eea.europa.eu/technical_report_2005_8/en</a> <a href="http://reports.eea.europa.eu/eea_report_2006_1/en">http://reports.eea.europa.eu/eea_report_2006_1/en</a>
Clinch, J.P. and Gooch, M.: „Economic Instruments in Environmental Policy”	<a href="http://www.economicinstruments.com">http://www.economicinstruments.com</a>