



Summary

Water pollution is harmful to all water-dependent life. Depending on its scale, it can have catastrophic effects; it causes diseases, disrupts food chains, and destroys ecosystems. This Tool introduces how effluent charges can be applied to reduce water pollution, discusses alternatives to water pollution charges, and highlights key considerations from experience of implementing polluting charges in practice.

What are Water Pollution Charges?

Pollution charges are defined as “a fee or tax on the amount of pollution that a firm or source generates” (Stavins, 2002, 4). It is recommended that the charge should be upon: (1) the amount of pollution the firm generates (not its pollution-generating activities) and/or; (2) the expected or potential quantity of pollution. There is not a generally accepted taxonomy of pollution charges, however, some of the most widely known are effluent charges, user charges, product charges, administrative charges, and tax differentiation (Stavins, 1992).

For water resources management, we focus on “effluent charges”. These are designed to reflect the financial and economic costs imposed on society and the environment from discharging wastes and pollutants into water bodies. This has been enshrined in the widely accepted Polluter Pays Principle. An effluent charge should be differentiated from a wastewater or treatment charge (Tool C4.01), which is a payment for services rendered in restoring the wastewater to a quality acceptable for releasing it into the environment.

Effluents charges are believed to be an effective market-based instrument because (Stavins and

Whitehead, 1992; USEPA, 2021):

- They generate a behavior change in firms to reduce pollution discharges into water courses by modifying their decision making: if it is less expensive to adopt a technology solution, firms will reduce pollution; if it is more expensive, they will pay the effluent charge.
- In that way, effluent charges make firms to internalise the negative externalities they generate with their production. In other words, the charge represents a way to make explicit the costs societies assume for polluting activities.
- From a financial perspective, effluent charges provide a strong incentive for firms to adopt new technologies that allow them to control pollution and reduce the impact of its payment on the balance sheets.

The Mechanics of Effluent Charges

Effluent charges can be levied on specified pollutant discharges on the basis of load and/or

concentration (e.g., biological oxygen demand (BOD), total dissolved solids (TSS)) and can reflect environmental damage imposed by pollutants. However, levying charges on diffuse (non-point) water pollution (e.g., from farms) is difficult to carry out directly, and tends to be done by proxy (according to acreage, number of cattle, etc.) or by taxing products responsible for the pollution (e.g., tax on fertiliser and other agricultural chemicals).

Though pollution charges give an incentive for the reduction of polluting discharges, most of the established schemes have the collection of revenue to finance pollution abatement programmes as their main aim. In theory, if the level of the charge is at the economic level that equals the cost to society of this pollution, society should be indifferent whether the pollution continues (with charges fully compensating for the damage to the environment) or ceases. The assumption here is that the costs of pollution can be fully assessed, and that restitution of the original environmental quality can be and will be done.

In practice, governments do not know what the abatement cost for particular pollution is. Thus, pollution charges tend to be below this economic level, which is difficult to estimate. It should be noted that if pollution taxes are too high, polluters are being excessively penalised. The aim of zero pollution is likely to be uneconomic and unaffordable, if the cost of pollution abatement exceeds the cost of the pollution itself. However, even sub-optimal charges will have some impact on the behaviour of polluters.

Alternatives to Effluent Charges

The main alternative to effluent charges, outside of trading schemes (Tool C4.03), are so-called command and control (C&C) regulations, which stipulate the kind and amount of water pollution that can or cannot be discharged (Tools B1). A charging system has the advantage over C&C regulation in that it permits some flexibility in the way firms or other polluters respond. A system combining charges and standards may be best of all since standards provide a greater certainty of outcome than prices alone. Such a system might include a discharge prohibition of particularly noxious substances and set maximum limits on others while imposing charges on pollutants up to those limits.

Success factors for the implementation of a charge system also include a competent authority to legislate, monitor, and enforce the charge. Therefore, a functioning administrative or communal system to collect and enforce the charges is necessary. This is especially true regarding systems with high price levels and/or volumetric measurement.

Key Considerations from Practical Experience

Based on existing practical experience (Box 1), here are few key considerations to take into account in the process of designing and implementing effluent charges:

- Pollution charges should be set at levels high enough to encourage firms to spend sufficient money on pollution abatement to meet pollution standards, but the existence of a charge, even at a low level, provides some incentive and may be helpful in raising awareness of the costs of pollution.
- Pollution charges need to be administered as part of an overall system of regulation that includes maximum permitted releases and concentrations of noxious elements in discharges (Tools B1).
- A precondition for successful pollution charges is the presence of a well-developed measurement, inspection, and enforcement system (Tool B1.01).
- Planned progressive increases in charges are useful in allowing dischargers to adjust their technological processes over a given time period.
- Public enterprises and municipalities are often major water polluters. Where they have “soft

budget constraints” they may be able to pass the cost of pollution charges back to their government sponsors.

- Revenues from environmental charges are often earmarked for environment/conservation, which can bolster public support for the charges.

Box 1. OECD experience with Effluent Charges for Water Pollution Control. Source: OECD (2021)

In 2016, OECD members agreed on a Recommendation on Water which sets out several measures that should be considered so that water management contributes to sustainable growth and development. In particular, the recommendation encourages members to set “water pollution charges for surface and groundwater use and pollution or charges for wastewater discharge at a sufficient level to have a significant incentive effect to prevent and control pollution”.

An OECD Implementation Survey carried out in 2019 found out that 15 out of 26 Adherents to the Recommendation have an **effluent discharge tax**. They are levied based on either the volume discharged only, proportion exceeding a certain threshold, or also based on the effluent’s pollution content (related for instance to the oxygen demand and suspended solids, nutrients, heavy metals and persistent chemicals). Some of the most important findings are:

- Colombia taxes discharge of total suspended solids and BOD.
- The high level of emissions taxes set in the Netherlands in the 1970s helped drastically reduce total organic emissions and industrial organic emissions.
- High emissions taxes have been implemented in Germany, the Czech Republic (ground and surface water), and Slovenia, to encourage behavioural change and reduce water pollution.
- In Australia, there are fees for some water pollutants in certain catchments and charges on land-based sewage discharge in the Great Barrier Reef area.
- An additional tariff was set for polluting plants in Israel to ensure that the effluent quality is sufficiently high to be reused for irrigation purposes.
- Only a few, mostly EU member states, report using water pollution charges in agriculture.

Levying **charges on diffuse water pollution** tends to be done by using approximations for example based on acreage, number of cattle, or by taxing products responsible for the pollution (e.g., tax on fertiliser and other agricultural chemicals):

- A dozen adherents put an additional price on pesticide use either through a tax, a duty or a control fee (Australia, Denmark, Finland, France, Italy, Mexico, Norway and Sweden).
- Florida (United States) taxes imports of pollutants including pesticides.
- Belgium (Flanders) provides subsidies for the reduction of pesticide and fertiliser use in ornamental crops cultivation.



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Water services

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