UN environment programme

GREEN economy

Policy Brief

Reducing pollution and health impacts through fiscal policies

KEY MESSAGES

- Addressing pollution and associated health impacts is central to the Sustainable Development Goals. A comprehensive mix of policies and measures are needed to address this complex challenge.
- Fiscal policies can play an important role in the policy toolkit, helping to reduce different forms of pollution in a cost-effective way and accelerating efforts towards a pollution-free planet.
- Taxes on polluting activities and substances can discourage the use of harmful pollutants while raising public revenues. Subsidies can encourage the use of alternatives to pollutants by reducing their price.
- Reforming fiscal policies, such as ill-targeted subsidies for fertilizers and pesticides, can trigger a shift in behaviour that reduces pollution, while freeing up public funds for other priorities including infrastructure and health.
- Careful design of fiscal policy instruments, including a clear, broad tax-base, setting an optimal tax rate, using pre-announced escalators, estimating the costs of subsidies, monitoring and regular review can ensure such instruments are fit for purpose and achieve maximum effect.
- Clear communication and consideration of political economy concerns, including targeted use of compensation measures for affected groups are other key design features.

INTRODUCTION

Pollution is one of the major challenges of our time, affecting human health, damaging the environment and leading to significant socio-economic costs. Preventing and addressing pollution and associated health impacts is central to the 2030 Agenda for Sustainable Development and is reflected in several Sustainable Development Goals (SDGs) including SDG 3.9 which strives to reduce the number of deaths and illnesses from hazardous chemicals, air, water and soil pollution and SDG 12.4 which seeks to achieve environmentally sound management of chemicals and wastes.

A comprehensive mix of policies and measures are needed to address and reduce pollution. Fiscal policies are among the most cost-effective approaches to reduce pollution and can help accelerate efforts towards a pollution-free planet. Taxes, charges and targeted subsidies can create incentives to discourage polluting activities/products and encourage the uptake of less polluting alternatives. Removing price distortions, such as environmentally harmful subsidies, can trigger a shift in behaviour that reduces pollution and improves health outcomes (UNEP 2018). At the same time, such fiscal instruments generate public revenues which can be used for different purposes from supporting investments in infrastructure, health and education, to compensating affected groups, among other options. Fiscal policies can be designed to target different types of pollution (i.e. air, chemicals, waste, water), from various sources (e.g. industry, transport, agriculture) at different levels (local, national, regional and global).

FISCAL POLICIES TO ADDRESS AIR POLLUTION

Air pollution is among the deadliest sources of pollution. According to the World Health Organisation (2019), the combined effects of outdoor and indoor air pollution cause around seven million premature deaths every year. Air pollution also has economic costs linked to effects on labour productivity, health expenditures, crop yield losses and ecosystem damage among others. Air pollution-related premature death, illness and health expenditures negatively affect a country's GDP with a disproportionate effect on the poor and vulnerable. According to WHO estimates, the economic cost of premature deaths from air pollution in 54 European countries in 2005 and 2010 amounted to as much as 29.5 percent of GDP in Bulgaria and 33.5 percent in Serbia (WHO 2015).

Fiscal instruments can play an important role in the policy mix to address air pollution, contributing to investment needs, supporting clean technologies, shifting investment decisions and consumer behaviour. The role of fiscal instruments in supporting action on air pollution is increasingly recognized with several countries and cities taking innovative action in this area (UNEP, 2019).

Box 1: Congestion charging in Stockholm, Sweden

A congestion pricing zone (CPZ) was introduced in Stockholm in 2007 to reduce traffic congestion in the city centre. The congestion charge has reduced traffic levels, congestion and emissions with ambient air pollution falling by 5-15 percent. This has resulted in a significant decrease in acute asthma attacks among young children with the number of asthma cases in young children in the CPZ falling by 47 percent. The congestion charge is also expected to lead to 20-25 fewer premature deaths per year in the inner city and 25-30 less premature deaths annually in the metropolitan area.

Furthermore, as the emissions reductions are concentrated in the most densely populated areas, the effects of the congestion charge are approximately three times larger than what could be achieved from a more general policy measure to reduce emissions of a similar magnitude.

Sources: Simeonova et al., 2018; Forsberg et al., 2006; Eliasson and Hugosson, 2006.

Countries have adopted innovative designs of air pollution taxes to enhance their effectiveness. For example, in **Chile**, the air pollution tax rate is designed to reflect the social costs of emissions in specific localities. Such fiscal policies are often part of a toolbox of complementary policies, which together stimulate the systemic and behavioural changes needed to prevent and reduce pollution. For example, in **Thailand**, the Government adopted a package of measures to phase out leaded petrol including fiscal incentives, regulation, information tools, strengthened traffic management measures, vehicle maintenance and inspections which led to an improvement in air quality and a decline in blood lead levels among the public, with estimated health benefits amounting to US$ 280 million annually (Cottrell et al. 2016).

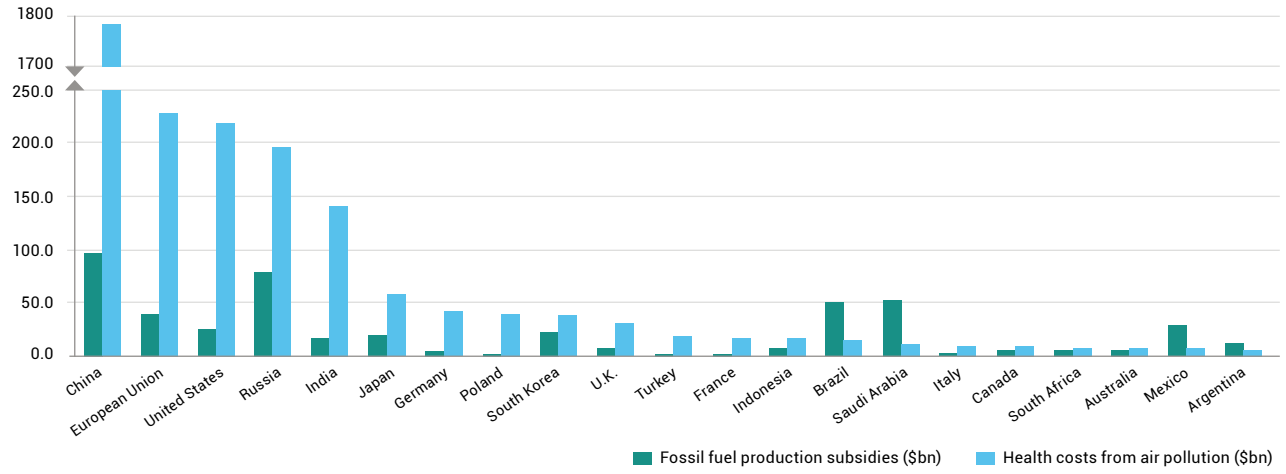
Box 2: Taxing local pollution in Chile

A General Tax Reform Bill adopted in September 2014 introduced a tax on local pollutants (Particulate Matter (PM), Nitrogen Oxide (NOx) and Sulphur dioxide (SO2) from stationary sources with boilers or turbines. The tax is set at a variable rate based on a formula that tries to capture the environmental damage associated with emissions in a specific locality or municipality. The legislation set a per capita rate for each contaminant and calculates the tax rate based on a formula dependent on the per capita rate, the number of inhabitants in the local municipality, and a coefficient for carrying capacity in each zone. Thus, the tax reflects environmental costs of local pollution and creates an economic incentive to reduce pollution. Given the recent introduction of the tax, further research is needed to evaluate its impact, nonetheless, together with other pollution taxes introduced at the same time, it has had an important signalling effect in the economy, stimulating efficiency, technological innovation and encouraging a shift in business behaviour, for example with facilities introducing abatement equipment to reduce emissions.

Sources: Britlebank 2014; Chile, Ministry of Environment 2017a, 2017b, 2017c; Pizarro, 2019a, 2019b.

Traditionally, subsidies have been used to incentivise activities that generate pollution. This is still the case today, with many countries subsidising the use of certain fuels and harmful pollutants. For example, in 2014, G20 governments spent US$ 444 billion subsidising fossil fuel companies, while the use of fossil fuels resulted in estimated health costs of at least US$ 2.76 trillion (see Figure 1). Removing such harmful subsidies would be a major step towards ensuring fiscal policy supports pollution reduction and improves health outcomes. According to IMF estimates, removing fossil fuel subsidies and adopting efficient fossil fuel pricing would increase government revenue by US$2.8 trillion while reducing global carbon emissions by 28 percent and air pollution related deaths by 46 percent (Coady, Parry, Le, Shang 2019). These resource savings could be used to benefit public health. For example, in Indonesia, savings from fossil fuel subsidy reforms have supported investments in infrastructure (including improved drinking water) and social welfare programmes (including improved health care).

Figure 1: Health costs of fossil fuels in relation to fossil fuel subsidies in G20 countries



Source: HEAL 2017.

FISCAL POLICIES TO ADDRESS CHEMICAL POLLUTION FROM PESTICIDES AND FERTILIZERS

Chemical pollution poses a major public health risk through multiple exposure pathways. In the agriculture sector, the over- and misuse of chemical fertilizers and pesticides can have adverse effects on the environment and human health. The WHO (2016) estimates that three million cases of pesticide poisoning occur every year, causing as many as 250,000 deaths. Moreover, inappropriate use of chemical fertilizers and pesticides leads to chemical run-off and leaching, resulting in water contamination, which can also have consequences on health with corresponding economic costs.

Fiscal policies can affect the over- and misuse of certain pesticides and fertilizers (see UNEP 2020). Subsidies to agricultural inputs such as pesticides and fertilizers lower the cost of such inputs and create incentives for increasing intensity. Overall, subsidies for fertilizers have been found to increase nitrogen runoff at farm level and lead to subsequent deterioration of water quality and increases in GHG emissions at the national level (Henderson and Lankoski 2019). Poorly designed input subsidies can also lead to wider socio-economic impacts. Available evidence suggests subsidy programs benefit larger farms (often headed by men) more than small farmers which are often owned by women and landless tenants, have limited effect on reducing poverty among smallholder farm households, and have generally failed to accomplish widespread distributional benefits. Other policy instruments, such as investments in R&D and infrastructure may be more effective in reaching poverty reduction objectives (Ricker-Gilbert et al. 2011). Furthermore, input subsidies account for a large share of public resources. Reforming such ineffective and unsustainable agricultural input subsidies would lead to significant fiscal savings and opportunities to repurpose such agricultural subsidies to support a transition to a more sustainable and resilient food system.

Box 3: Phasing out pesticide subsidies in Indonesia

In Indonesia, public expenditure on pesticide subsidies rose from US$50 million per year in the 1970s to over US$150 million in the mid-1980s. In the 1980s, the Government reduced support to the agriculture sector including the removal of pesticide subsidies. The reform was accompanied by a programme of Integrated Pest Management (IPM) to maintain rice production and farm incomes and introduced an innovative Farmer Field School based on agro-ecosystem-based experiential learning.

Following the reform, pesticide applications halved in the country, reducing toxin releases in the environment and negative impacts on biodiversity and human health. At the same time, rice production grew by three million tons over four years. The reform also led to US$ 100 million in fiscal savings for the Government. However, government support for the program wavered after 1999, leading to a surge in pesticide imports and high pesticide use by rice farmers which correlated with a resurgence of pest outbreaks and significant crop losses, highlighting the importance of designing measures with a long-term horizon.

Sources: Thorburn, 2015.

Some countries apply taxes on the use of pesticides and fertilizers which can help correct certain market failures and reduce the use of the most harmful pesticides and fertilizers. For example, a banded pesticide tax system in **Norway** is considered effective as it encourages the more conservative use of pesticides and provides an incentive to use less harmful

products. Similarly, a pesticide tax in **Denmark** has led to a significant reduction in the sales of pesticides and a reduction in pesticide load on human health, nature and groundwater. Such taxes also raise revenues which can be used to mitigate negative environmental impacts, support more sustainable agriculture practices or reduce other taxes on the agriculture sector among other options. How revenues are used can determine the political acceptability of a measure. For example, in **Denmark**, revenues from the pesticide tax are reimbursed to the agricultural sector which has helped reduce resistance to the tax among farmers. Some countries also use fiscal incentives such as tax reductions and exemptions for organic fertilizers and/or pesticide products applicable under organic practices to encourage use of less polluting products.

INSIGHTS FROM GOOD PRACTICES ON USING FISCAL INSTRUMENTS TO ADDRESS POLLUTION

Fiscal instruments are among the most cost-effective and efficient tools available to reduce pollution and should be considered an essential part of the policy toolbox to address pollution. There are various fiscal instruments which can be used to address different types of pollution. The impacts of these instruments depend on several factors, including elasticity of demand, substitution effect, availability of alternatives and political economy considerations (see Table 1). Well designed fiscal instruments can help to accelerate progress towards a pollution free planet (UNEP 2019a).

Table 1: Synthesis of fiscal policy instruments for pollution reduction

Instrument	Potential environmental and health impact	Fiscal and administrative costs	Political feasibility/ public acceptance	Overall assessment
Pollution tax	Can lead to significant behavioural changes, with potential impacts on environment and health	Generates public revenue that can be used for various purposes including to further environmental and health benefits	Can be difficult to sell given perceived costs to consumers and aversion to new taxes	Most cost effective and efficient fiscal instrument Requires effort in building public support
Subsidies for alternatives	Can help switch preferences with impacts dependent on size of subsidy and precision in targeting beneficiaries	Entails spending from government budget	Enjoys public support and normally reviewed yearly with Government budget	Can alter market prices and drive innovation in certain sectors Requires additional government spending
Tax expenditures	Renders cleaner alternatives cheaper Overall impact constrained by potential rebound effects	Entails foregone revenue	Regarded positively by the public	Reasonable public acceptance Best used as part of a policy package
Reform harmful subsidies	Eliminates distortionary/perverse incentives to pollute	Frees up fiscal space for other priorities	Can be politically challenging to implement Need to mitigate adverse impacts on vulnerable groups	Eliminates perverse incentives to pollute and frees limited public resources Stakeholder consultation crucial to gain public support

Source: UNEP, 2019a.

UNEP'S WORK ON FISCAL POLICIES TO ADDRESS POLLUTION AND IMPROVE HEALTH

UNEP undertakes global research and country analysis to assess the role of fiscal policies in addressing pollution and associated health impacts. This has included global research on the effects of taxes and subsidies on pesticides and fertilizers, an assessment of good practices with the use of fiscal policy instruments to reduce pollution and country analysis in Indonesia on fiscal policies to address air pollution and health impacts. UNEP is also leading a global initiative on fiscal reform for sustainable agriculture which explores the impacts of agricultural support on nature, health, nutrition, climate change and equity, in collaboration with partners including UNDP, FAO, IMF, IFPRI and WHO. UNEP is supporting countries in this process through policy analysis, advice and capacity building on how to repurpose agricultural subsidies and align fiscal incentives with sustainability to support the transition to sustainable, resilient and healthy food systems. UNEP delivers this work in collaboration with partners through existing networks and partnerships such as the Green Fiscal Policy Network, Partnership for Action on Green Economy (PAGE), One Planet Network, and others.

Further reading

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