

# HARNESSING ECONOMIC INSTRUMENTS TO TACKLE THE CLIMATE CRISIS

Experience from Finland shows that cutting emissions while supporting innovations and fiscal revenue can be achieved

Climate change is an existential threat to humanity and our planet. We have the technologies and the measures to cut emissions, but we need to employ them more effectively. If we fail to do so, the cost of climate change will far outweigh the cost of action.

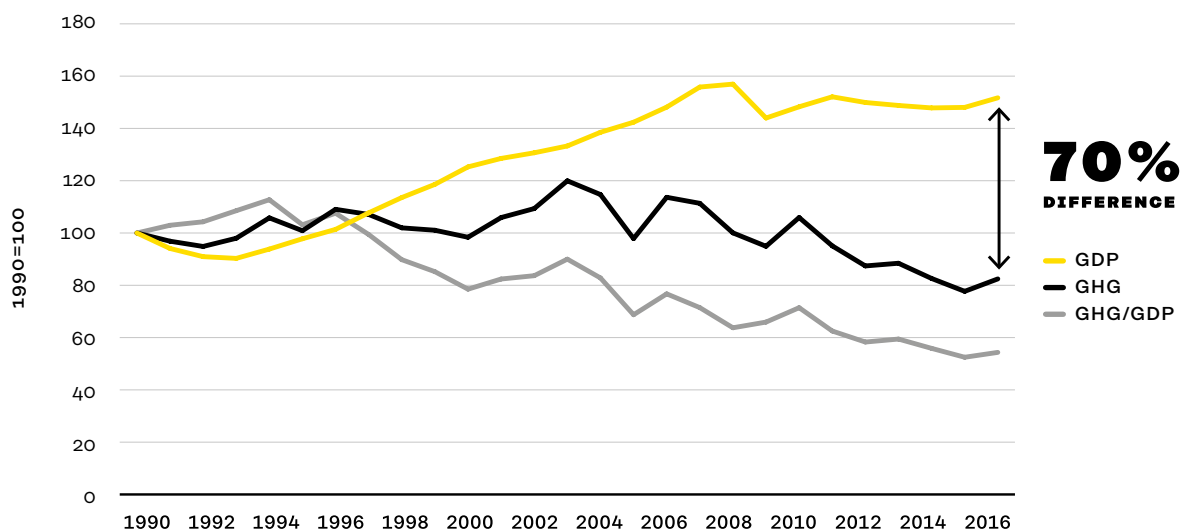
Economic instruments can efficiently reduce emissions and raise fiscal revenue while supporting innovations, but good policy design is essential. Finance ministers can and should play a key role in harnessing these economic instruments to tackle the climate crisis.

Finland has been a forerunner in using economic instruments to cut emissions. Finland was the first

country to introduce a carbon tax, in 1990, and since then Finland has also introduced other green economic instruments that have helped decouple economic growth from national emissions' growth. Environmental taxes amounted to 3.1% of GDP in 2016, significantly higher than the EU average (2.4% of GDP).

Finland has also participated in the EU Emissions Trading Scheme (EU ETS) since 2005. It covers 46% of Finnish emissions. EU ETS has led to substantial cuts in emissions. In Finland, emissions in the EU ETS sectors have decreased by 24% between 2005 and 2017.

## FINNISH GREENHOUSE GAS EMISSIONS RELATIVE TO GDP 1990–2016, EXCLUDING THE LULUCF SECTOR



Source: Statistics Finland. LULUCF= Land Use, Land-Use Change, and Forestry.

# FINNISH GREEN ECONOMIC INSTRUMENTS AND THEIR IMPACTS

Finland's experience shows that economic instruments can reduce emissions, raise tax revenue and boost green innovations. The impacts of the instruments depend on policy design, especially at the level, targets and complementarity of the instruments. Companies often respond to price signals stronger than consumers.

Emission cuts in the Finnish transport sector have been more challenging than in non-transport sectors, but the decline in low-emission vehicle prices could support future emission reductions. Subsidy schemes for renewable energy and energy efficiency can boost emission cuts, but they need to be designed very carefully to achieve economical emission reductions. Targeting primary energy consumption has proven to be the most efficient way to introduce a CO<sub>2</sub> tax.

**“Finance ministers should play a key role in climate action. We can use taxation to influence consumer and company decisions, and the budget to manage cash flows in the public sector. Acting on climate change must be a central guiding principle in all budget matters.”**

**Petteri Orpo,  
Minister of Finance, Finland**

## Summary of the effects of Finnish national green economic instruments 1990–2018

Instrument	Fiscal budget size (2017)	Fiscal effect	CO <sub>2</sub> effect	Innovation effect
<b>Tax instruments and payments</b>				
CO <sub>2</sub> tax (motor fuels, coal and gas)	0.6%/GDP (1340 mEUR)	↑↑	↓ (Ind.)	↑ (Ind.)
Energy content tax (also electricity)	1.5%/GDP (3320 mEUR)	↑↑	↓ (Ind.)	↑ (Ind.)
Annual vehicle and new car sales tax	0.9%/GDP (2180 mEUR)	↓/○	↓/○	↑ (Ind.)
Waste tax and excise duty on beverage packaging	12 mEUR + 16 mEUR	↑	↓/○ (Ind.)	↑ (Ind.)
<b>Subsidies and other instruments</b>				
Blending requirement for motor fuels	-	○	↓↓	↑/○ (Ind.)
Feed-in tariff for renewable energy	0.3% of GE (170 mEUR)	↓	↓↓	↑ (Ind.)
Energy Aid programmes	0.1% of GE (60–70 mEUR)	↓	n.a.	↑ (Ind.)

Ind. = Indicative research results or mixed results on the topic. (↑)↑ = (strong) positive effect from the tax/subsidy; ○ = no effect; (↓)↓ = (strong) negative effect from the tax/subsidy; n.a. = effect not known. GE = Government Expenditure

## TAX INSTRUMENTS AND PAYMENTS

### CO<sub>2</sub> and energy content taxes on motor fuels, coal, gas and electricity (1990)

Excellent for fiscal revenue and has the potential to cut emissions and boost innovations

- Paid by consumers and the transport service sector, with intermediate inputs in industry exempted.
- The main purpose of the taxes is fiscal: they bring a substantial tax yield of around 2.1% of GDP.
- Major CO<sub>2</sub> emission reductions are not expected in the short run, but the taxes can lead to energy efficiency investment and CO<sub>2</sub> emission reductions in the long run, especially if low-emission vehicles become cheaper.
- Significant CO<sub>2</sub> reductions associated with energy taxes in Finland when they covered all primary energy use in the 1990s.

### Annual vehicle and one-off car sales tax (2008)

Good potential to cut emissions if the price of low-emission vehicles continues to decline

- Both taxes are based on the CO<sub>2</sub> emissions of the vehicles.
- The tax benefit for low-emission cars is extensive, but the share of the vehicle fleet is low as a result of high pre-tax prices.
- The average CO<sub>2</sub> emissions of new vehicles has fallen by some 30% since 2008, but the majority of the decrease is a result of EU-level emissions standards regulation.
- Vehicle tax reform in 2008 reduced the tax yield. The estimated cost to the public sector per tCO<sub>2</sub> reduced is relatively high.

### Waste tax (1996) and excise duty on beverage packaging (2004)

Have improved recycling

- Tax levied on all waste deposited at landfill sites.
- The waste tax has increased the reuse of waste and supported the creation of a private waste industry, but the actual impact on GHG emissions is unknown.
- The measures lead to a relatively low tax yield.
- Finland has a deposit-based recycling system for bottles, covering 85–95% of beverage packaging; excise duty imposed on packaging is not included in the system. The duty is likely to have increased the use of the system and therefore the recycling of beverage packages.

## SUBSIDIES AND OTHER INSTRUMENTS

### Requirement to blend 10% of biofuels into fossil motor fuels (2008)

Has significantly decreased transport sector emissions

- Has potentially facilitated investment in new biofuel technologies and factories.
- Is estimated to cut around 2.6% of total Finnish emissions annually (or 10% of transport sector emissions).
- Will be followed by an increased blending obligation of 20% in 2020, with a 30% blending obligation under consideration.

## Feed-in tariff scheme (price guarantee to support renewable energy, 2011)

Has decreased emissions and increased wind power investment, but with a relatively high cost

- Has likely boosted investment in wind power, with a rapid increase in capacity.
- Has reduced total CO<sub>2</sub> emissions by some 1–2% annually, but the cost per tCO<sub>2</sub> reduced is higher than the EU ETS auction price.
- In 2018 a government decision was made to use renewable energy auctions to support further renewable energy investments.

## Energy Aid programmes (1990s)

Have decreased emissions and increased wind power investment, but with a relatively high cost

- The programmes offer investment support for renewable energy and energy-saving projects.
- The CO<sub>2</sub> impacts of the programmes are not well researched, but there is potential to increase innovations and low-carbon investments, especially in smaller firms.

### FINLAND AT THE FOREFRONT OF SUSTAINABLE DEVELOPMENT BUDGETING

Finland is one of the first countries in the world to incorporate sustainable development in its annual budget. Descriptions of how sustainable development is to be put into effect in the different branches of government were included for the first time in the 2018 government budget submission.

Finland's priority areas, a carbon-neutral and resource-wise Finland, and a non-discriminating, equal and highly skilled Finland, as well as the 2030 Agenda connections are all covered. Main taxation questions that are significant in terms of the goal of a carbon-neutral and resource-wise Finland are also examined.

Ideas about how sustainable development could be better taken into account in the budget have been sought jointly by officials, stakeholders and civil society organisations. The aim is to make an effective tool out of sustainable development budget planning, which Finland can then promote internationally.

If interested in the sustainable development budgeting, please contact Johanna von Knorring, Ministerial Adviser at the Ministry of Finance, [firstname.lastname@vm.fi](mailto:firstname.lastname@vm.fi).

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The findings are based on a literature survey analysing the impacts of Finnish green economic instruments historically: Tamminen S., Haanperä O. and Hietaniemi T. (2018): "Harnessing economic instruments to tackle the climate crisis – Finland's experiences with economic instruments applied in climate policy", Sitra Memorandum (forthcoming).

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