

# What is the role of carbon pricing in reaching net zero?

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**CIOT/IFS online debate, 21 October 2021**

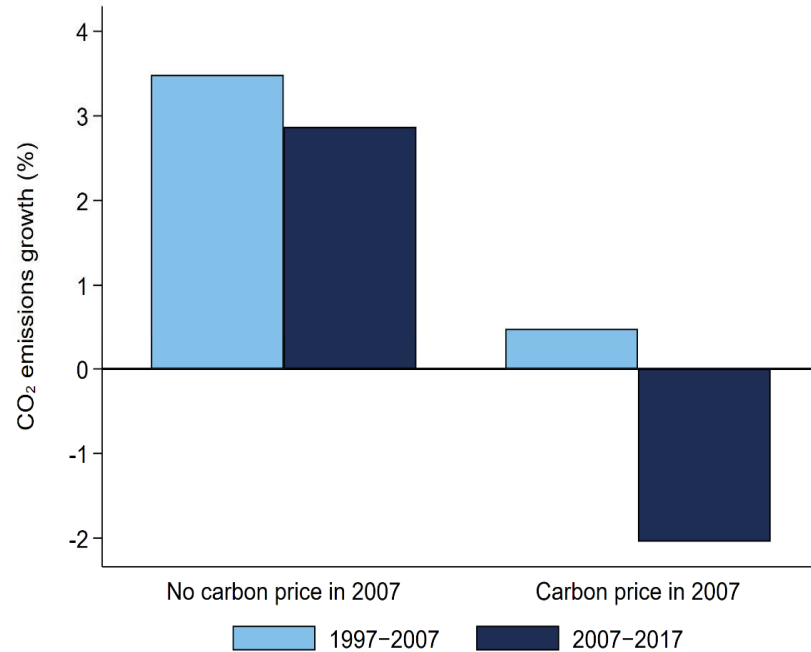


# Carbon pricing works

- the average annual growth rate of CO<sub>2</sub> emissions from fuel combustion lower in countries that have had a carbon price
- an additional euro per tonne of CO<sub>2</sub> is associated with a reduction in the subsequent annual emissions growth rate of approximately 0.3% points, all else equal.

(Best, Bird and Jotzo (2020): Carbon pricing efficacy: Cross-country evidence. CCEP Working Paper 2004, May. Crawford School of Public Policy, The Australian National University)

Figure 1. Average annual CO<sub>2</sub> emissions growth rate, %

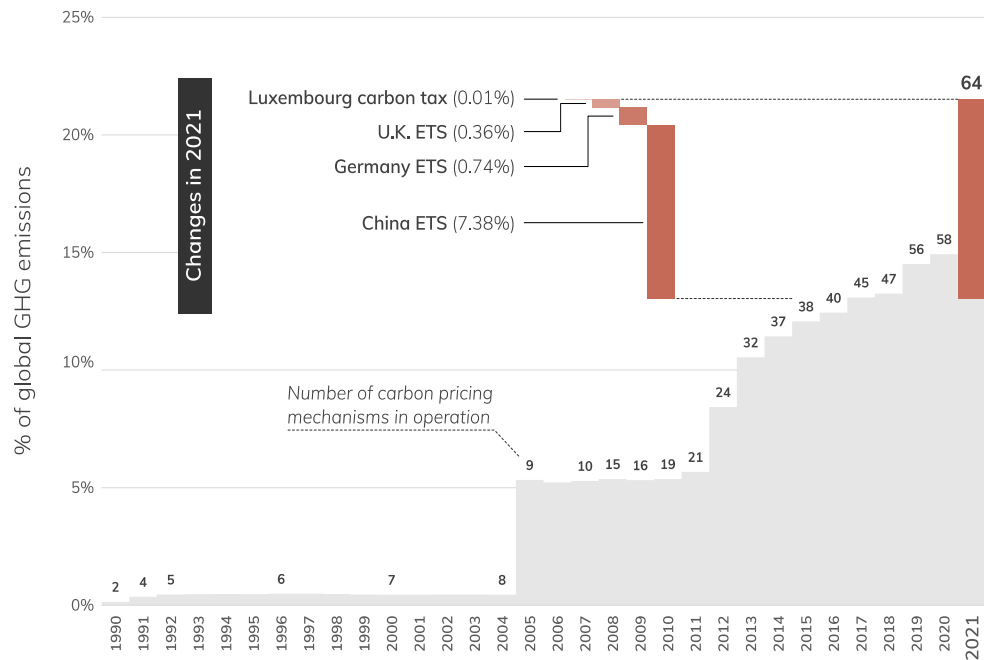


Notes: Emissions are from fuel combustion. The columns on the left show the annual average for countries without a carbon price in 2007. The columns on the right show the annual average for countries with a carbon price in 2007. 137 countries for which data are available for both 1997-2007 and 2007-2017 are included. Of these, 30 countries had carbon prices in 2007. The association is similar when using an earlier reference year. Data: International Energy Agency (2019); World Bank and Ecofys (2018).

# Carbon pricing is catching on

Share of global greenhouse gas emissions covered by carbon taxes and emissions trading systems

The World Bank (2021); State and Trends of Carbon Pricing 2021.  
World Bank, Washington, DC



# Carbon pricing uncertainty

- Higher carbon pricing needed for <1.5degC than for <2.0degC: \$150 per tonne CO<sub>2</sub> equiv. in 2030 compared with \$50?
- Uncertainty about just how much effort is required, so "review and revise" regime needed for the carbon price trajectory

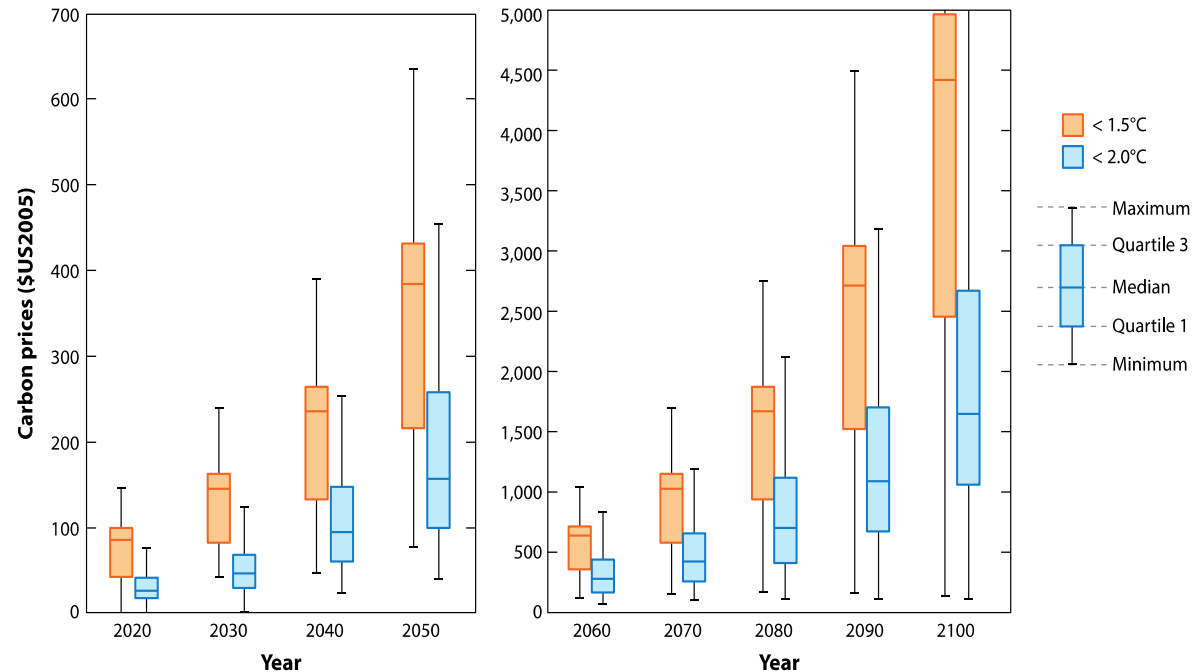
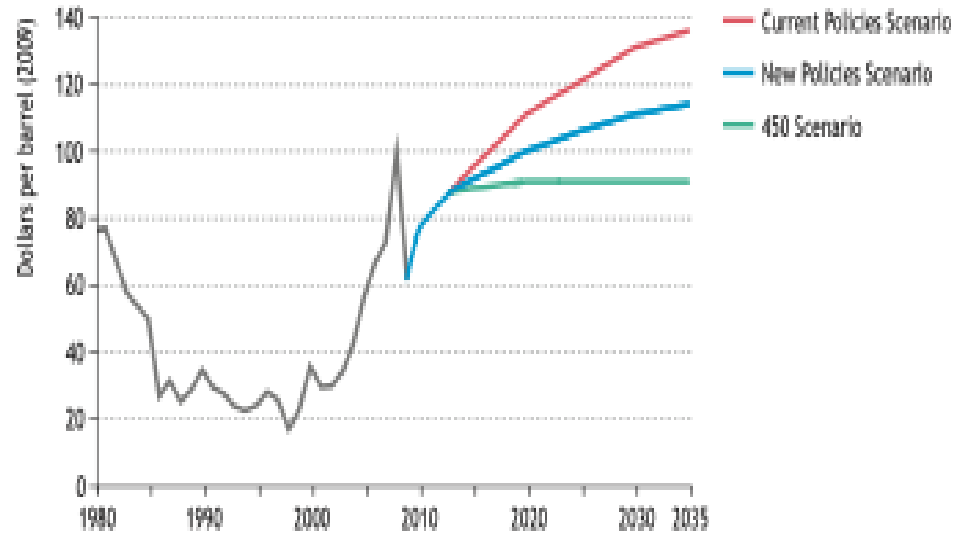


Figure 2

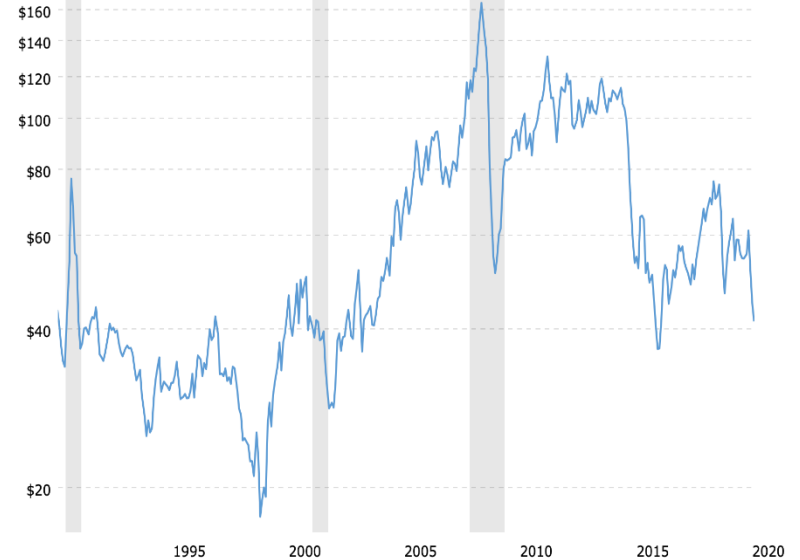
# Oil prices: uncertain and endogenous

## IEA WEO 2010:

Figure 1.2 • Average IEA crude oil import price by scenario (annual data)



## Actual (WTI):



# Mechanisms

- Taxes/charges
- Emissions trading systems
- Pricing within firms
- Command and control – shadow carbon price

# What to spend the revenue on?

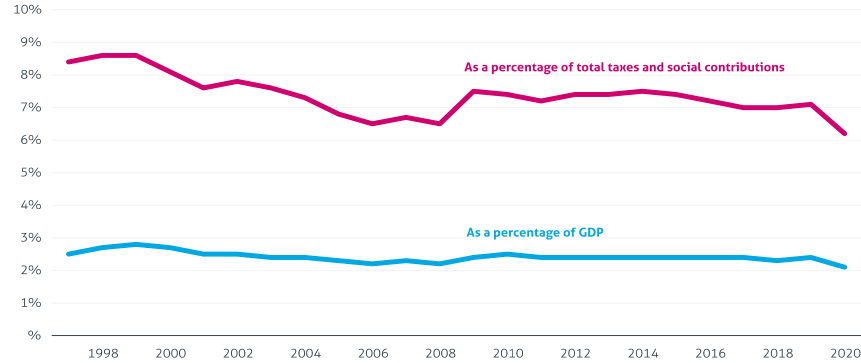
- Spending on domestic environmental policies
- Helping other countries get to net zero
- Cushioning adverse effects of carbon pricing: households
- Cushioning adverse effects of carbon pricing: firms
- Reforming tax-benefit systems: a labour market focus
- Reforming tax-benefit systems: firms
- **Paying down public debt or spending more on other objectives**

(See Bowen, A (2015): Carbon pricing: How best to use the revenue? Grantham Research Institute on Climate Change and the Environment, Policy Brief , LSE, November)

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# Problems for fiscal management

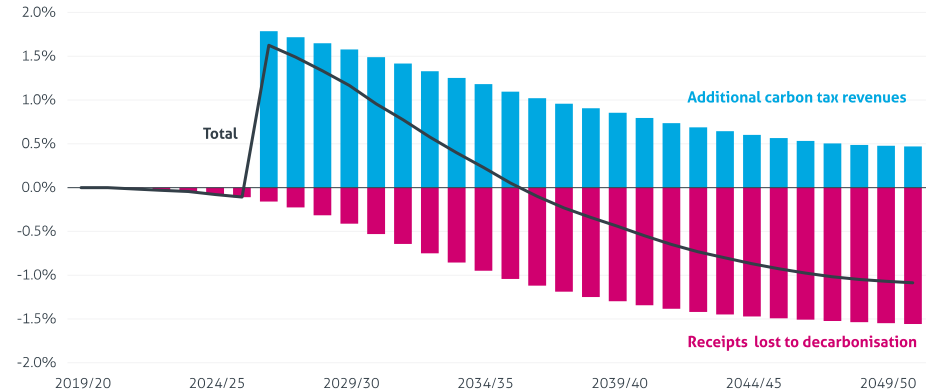
Figure 3 Environmental tax revenues as a share of total taxes and social contributions and GDP (ONS definition)



Source: Institute for Government analysis of Office for National Statistics, Environmental Taxes Dataset, June 2021.

See Hodgin, R, and J Rutter (2021): Net zero and the tax system. Institute for Government, October, London.

Figure 7 OBR estimates of total direct impact of the transition to net zero on receipts as a percentage of GDP



Source: Institute for Government analysis of Office for Budget Responsibility, Fiscal Risks Report, July 2021.



# Complementary policies needed

- Other “externalities” involved, e.g. spill-overs from R&D, network provision – scope for “market failure”
- These are likely to be more sector and/or country-specific
- Important complementary policies include
  - Support for R&D, learning by doing, economies of scale
  - Public investment, e.g. in charging networks and the National Grid
  - Transfers to developing countries

# Summary

- **Carbon pricing makes economic sense**
  - the greenhouse gas problem is analytically a lot simpler than many environmental problems
  - it works
  - it's catching on around the world
- **BUT there are real challenges, e.g.**
  - what's the right price?
  - what mechanism to choose?
  - bearing in mind the implications for income distribution, how should the revenue be spent?
- **AND complementary policies are needed, which are likely to be more sector or country specific, e.g.**
  - R&D/learning by doing/economies of scale
  - public investment
  - transfers to developing countries