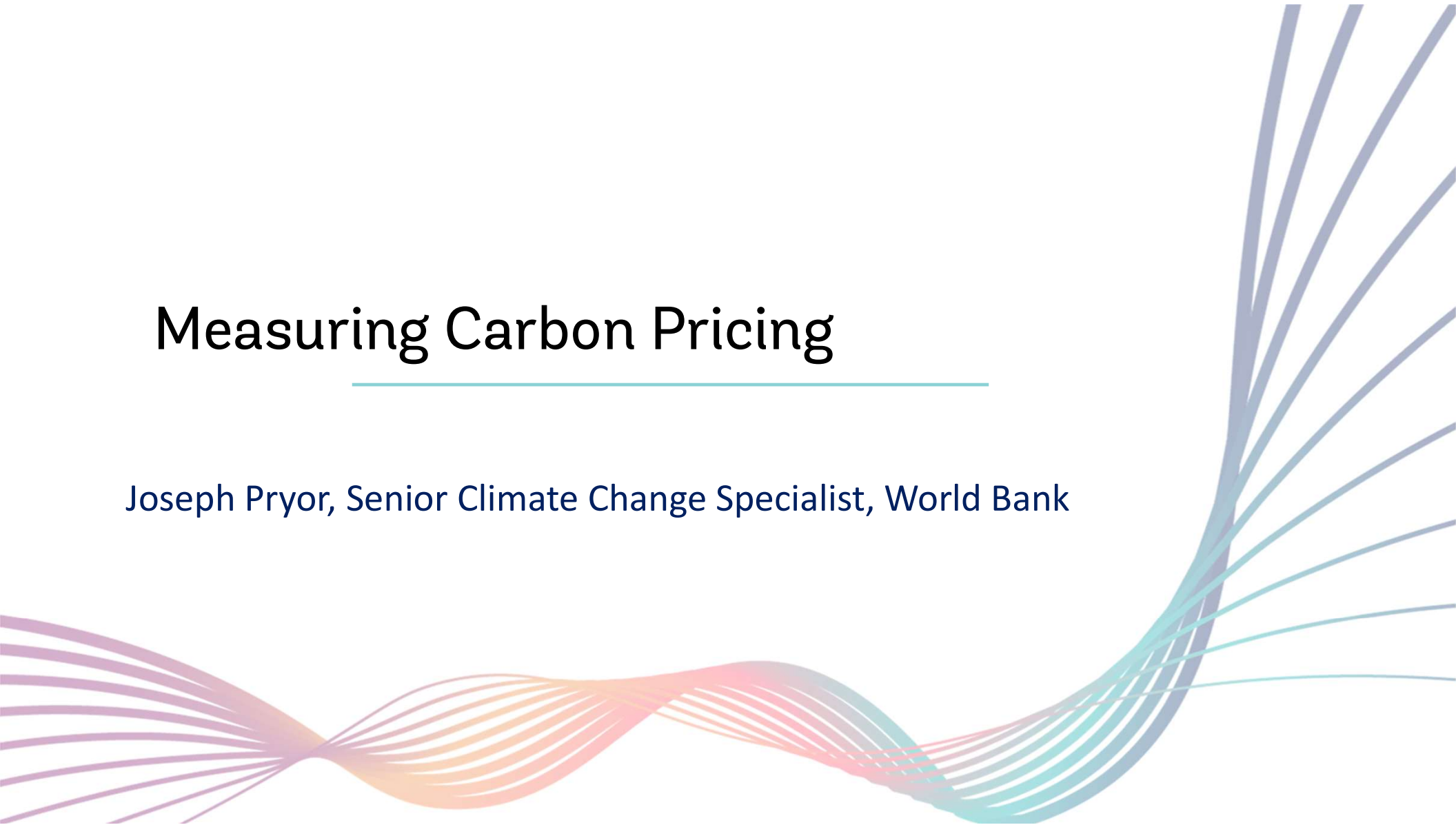


# Measuring Carbon Pricing

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Joseph Pryor, Senior Climate Change Specialist, World Bank



# WHAT IS CARBON PRICING?

Carbon pricing seeks to align the costs of consuming carbon-intensive fuels or undertaking carbon-intensive activities with the social costs of doing so.

# CATEGORIZING CLIMATE POLICIES

Broad view can *oversimplify* solution and can undervalue critical role of *complementary policies*

Narrow view could *mask or distort* true picture: E.g. failing to account for fuel subsidies

Simple and objective definition

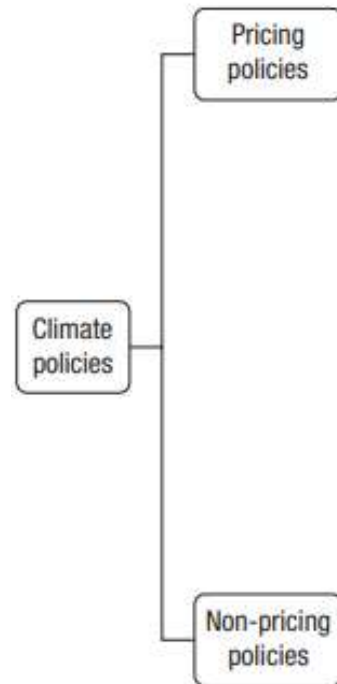


Two criteria:

(1) Does the policy set a pricing incentive?

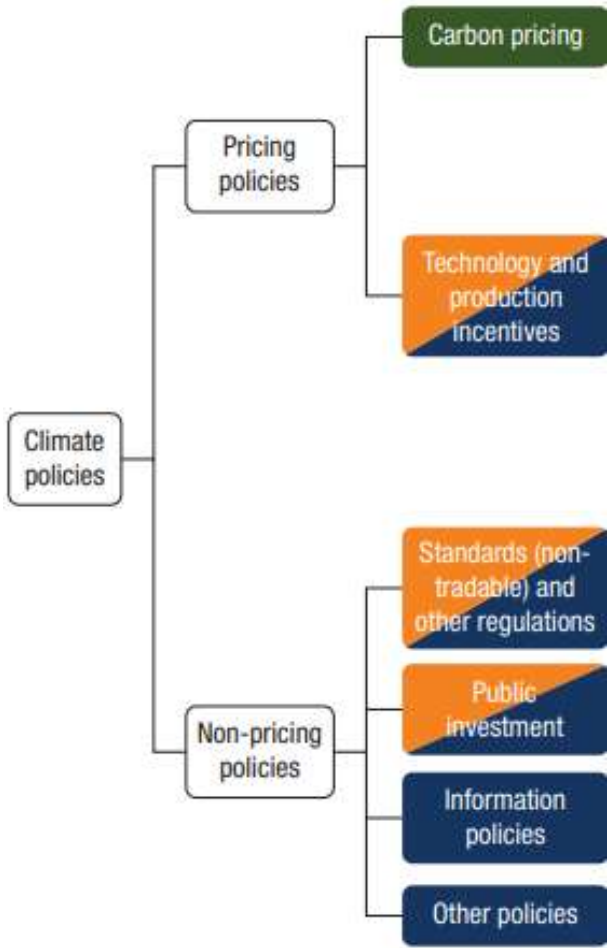
(2) Which market failure does the policy best address?

# CATEGORIZING CLIMATE POLICIES



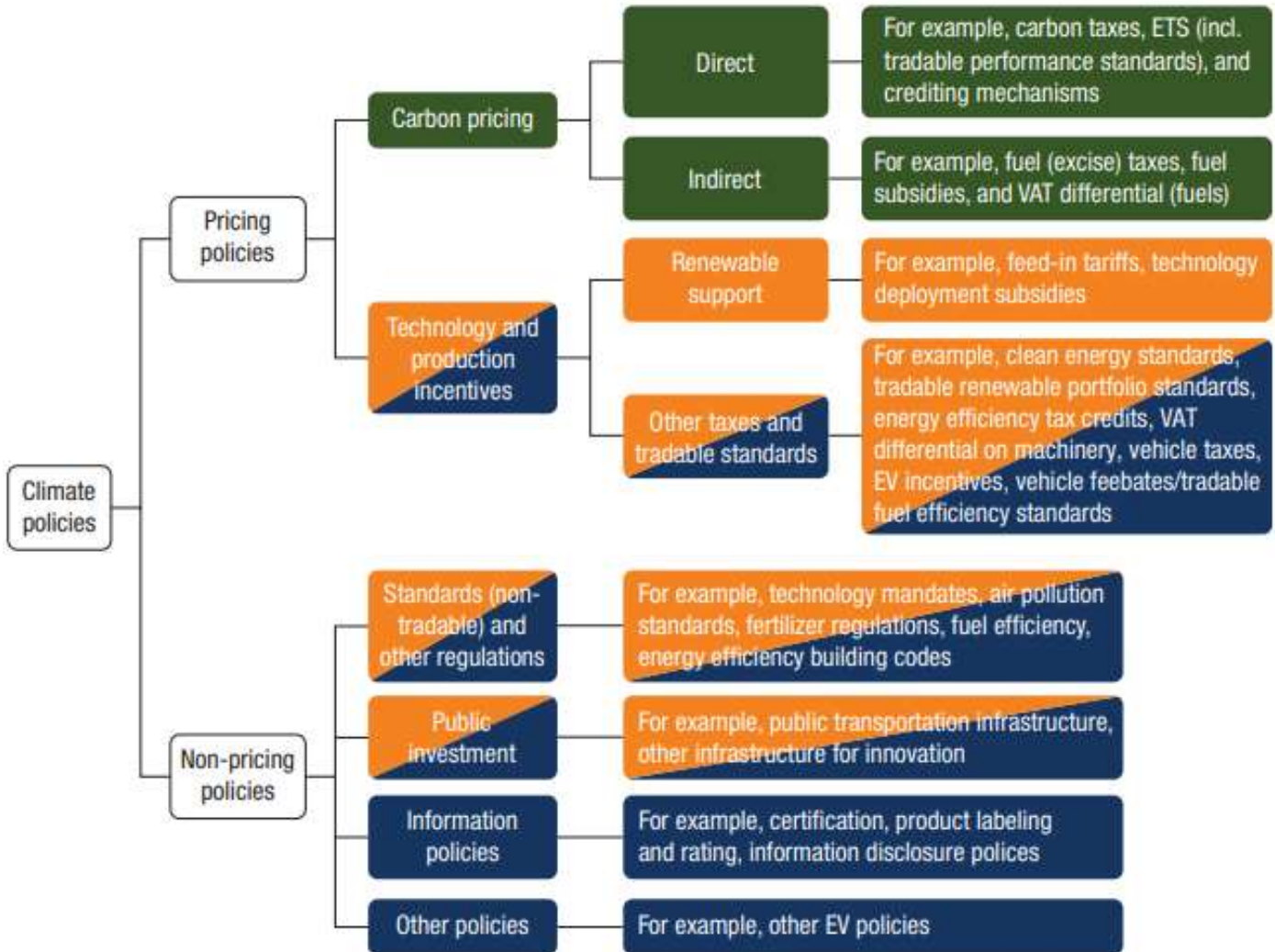
*Source: Contribution to IMF book "Data for a Greener World"*

# CATEGORIZING CLIMATE POLICIES



Source: Contribution to IMF book "Data for a Greener World"

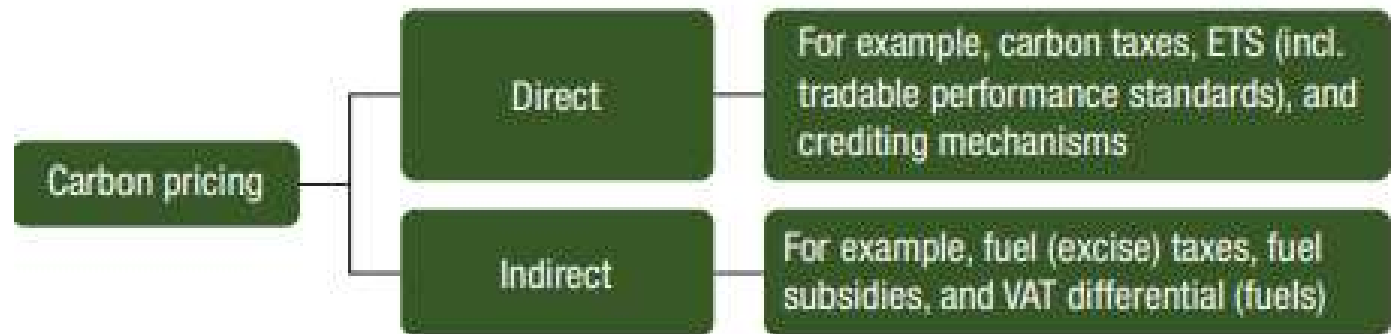
# CATEGORIZING CLIMATE POLICIES



Source: Contribution to IMF book "Data for a Greener World"

**Type of market failure:**  
 ■ Unpriced carbon externalities ■ Technology market failure ■ Information, behavioral, and financial barriers

# CATEGORIZING CLIMATE POLICIES



Source: Contribution to IMF book "Data for a Greener World"

**Type of market failure:**

- Unpriced carbon externalities
- Technology market failure
- Information, behavioral, and financial barriers

# Direct vs Indirect Carbon Pricing

The core difference relates to whether the price is uniformly proportional and consistent. However, these differences are less stark in practice.



To promote consistency in cost internalization and to minimize abatement costs, countries should generally strive to:

- price goods/activities in proportion to their emissions.
- price emissions equally across all emissions sources.



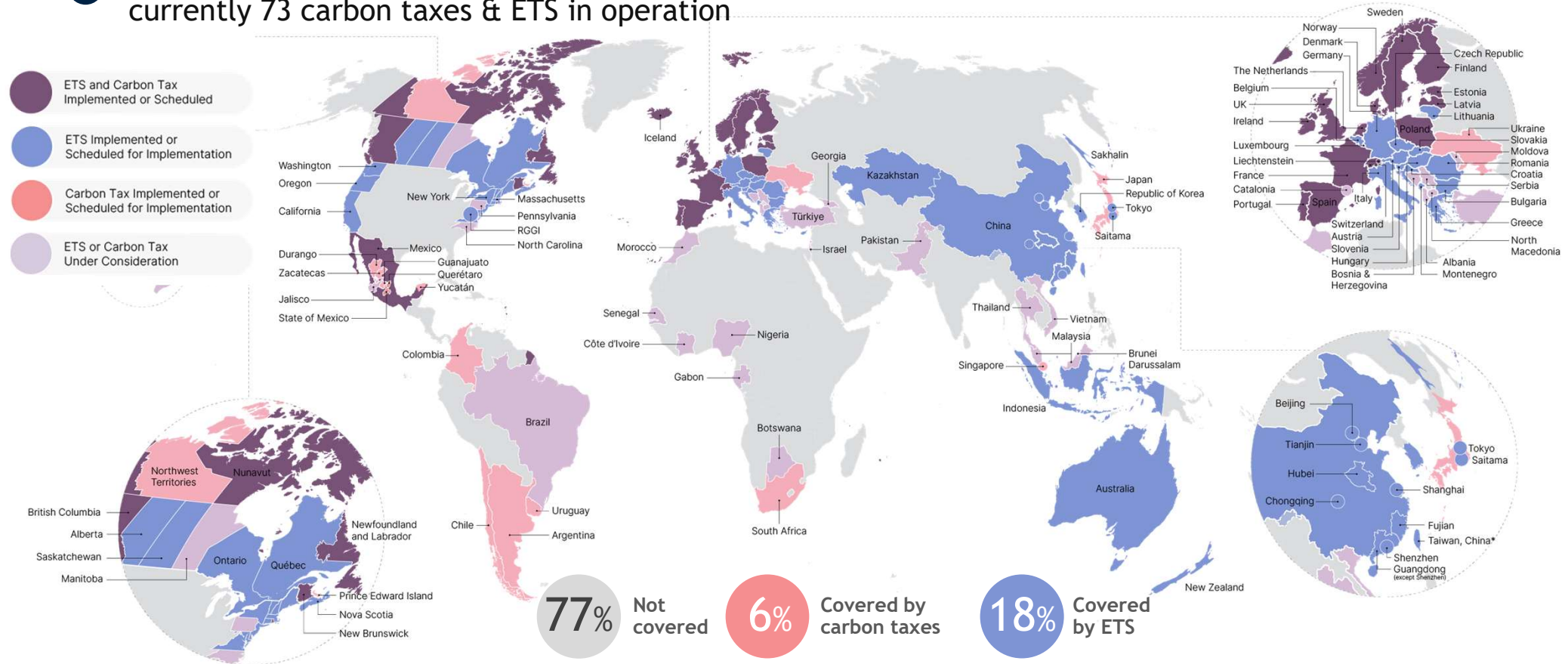
## MEASURING DIRECT CARBON PRICING

- World Bank's *State and Trends of Carbon pricing* and *Carbon Pricing Dashboard* report on *direct* carbon pricing
  - Carbon price
  - Carbon pricing revenue
  - GHG emissions coverage

*Discusses importance of indirect carbon pricing.*

# 23% of global emission was covered by carbon taxes & ETS

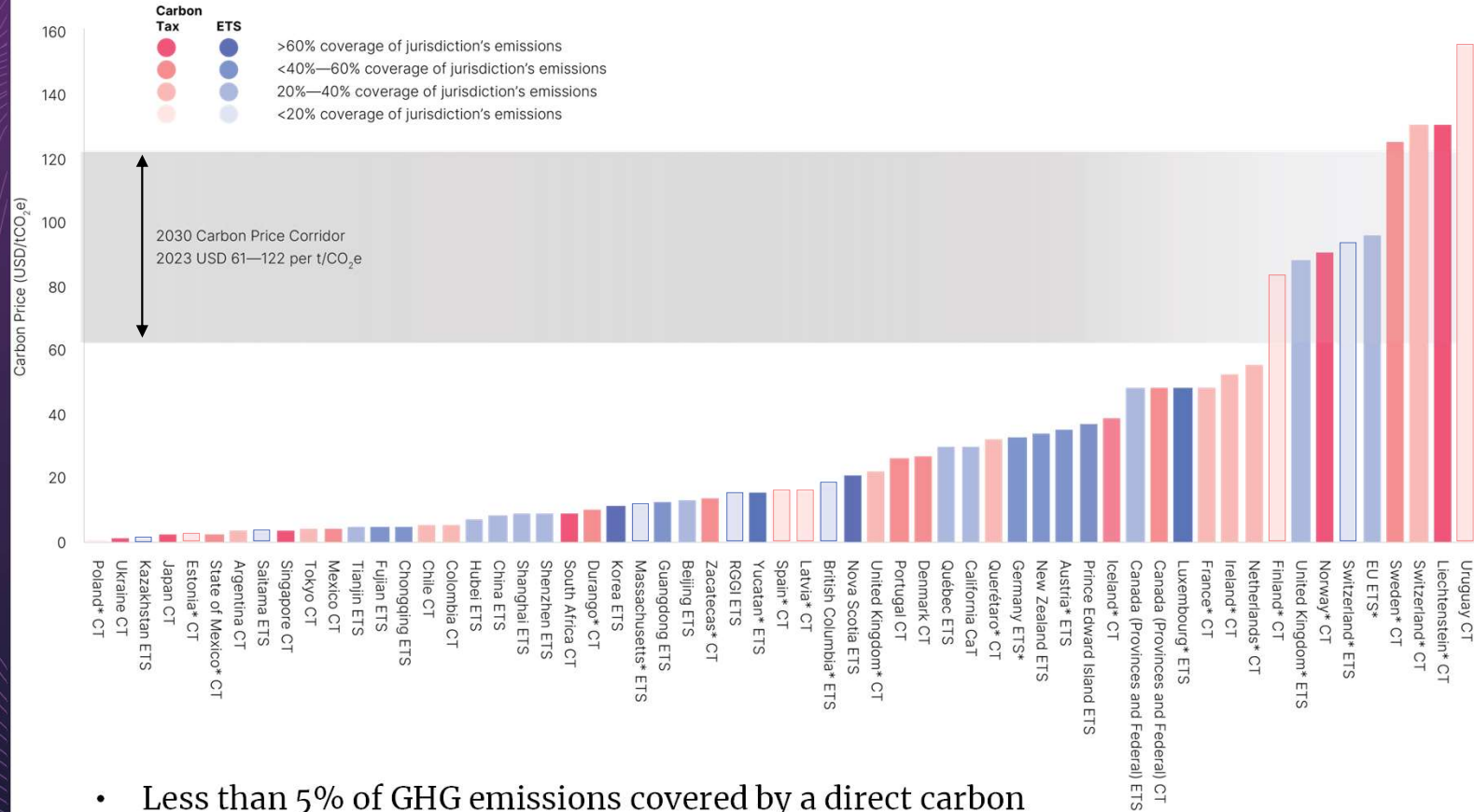
Despite the ongoing global energy crisis, new carbon taxes and ETSs have been introduced. There are currently 73 carbon taxes & ETS in operation



Source: State and Trends of Carbon Pricing 2023

Prices remain below the levels required to achieve Paris Agreement goals

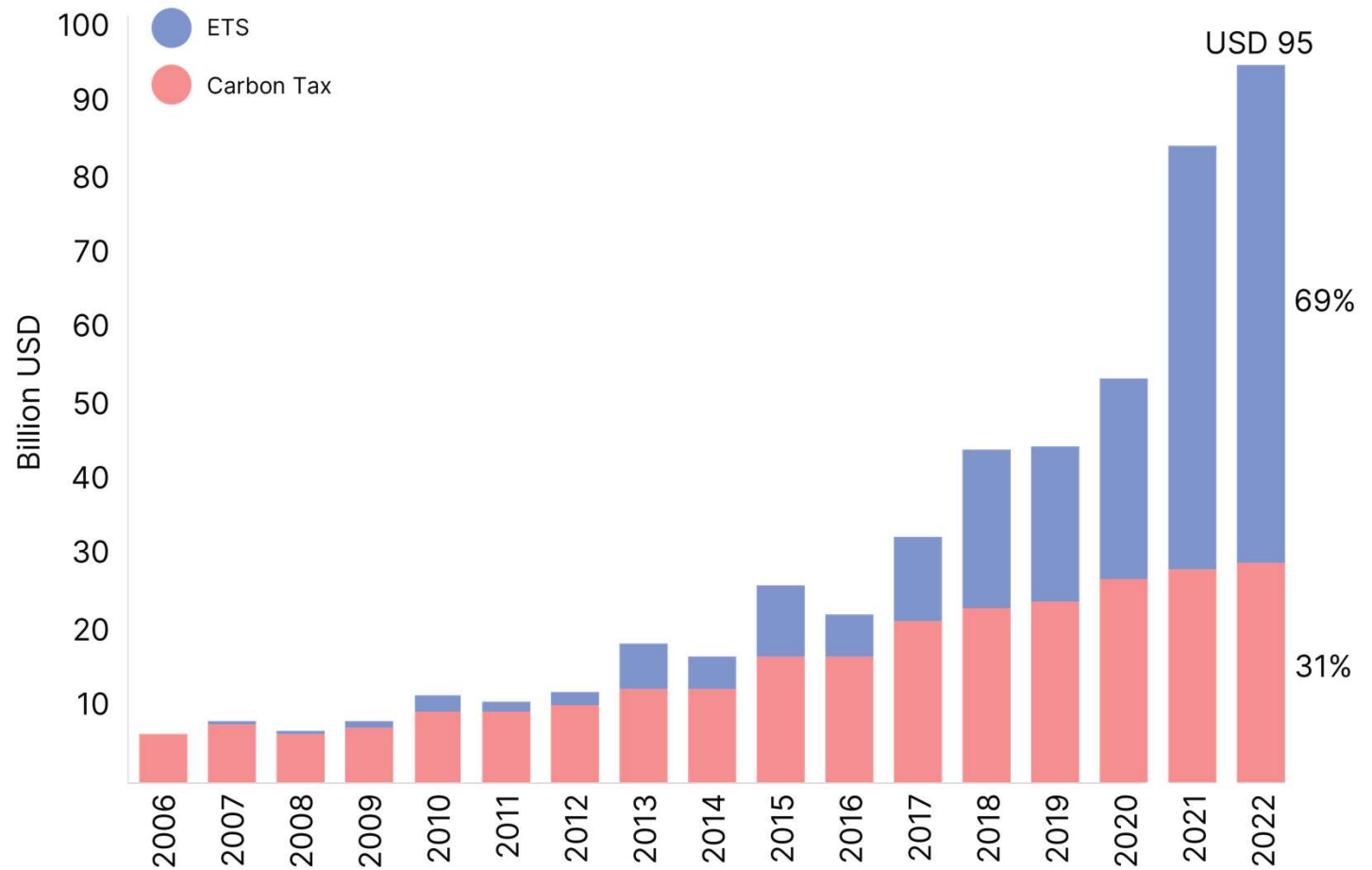
## Prices and Coverage across ETSs and Carbon Taxes



- Less than 5% of GHG emissions covered by a direct carbon price at or above the range recommended by 2030

The majority of global carbon revenue now comes from ETSs

Evolution of Global Revenues from Carbon Taxes and ETSs over time (Nominal)



Source: State and Trends of Carbon Pricing 2023

## MEASURING TOTAL CARBON PRICING

- *Total Carbon Price* includes both direct and indirect carbon pricing instruments.
- The TCP reflects both carbon prices and effective coverage.
- Objective is to provide a comprehensive picture
  - *Across countries, sectors, fuels, & a broad timeframe.*
- Provides a “top-down” approach to infer the net tax/subsidy for ~140 countries over the period 1991 to 2021

Agnolucci, P; Fischer, C; Heine, D; Montes De Oca Leon, M; Pryor, J; Patroni, K.; Hallegatte, S. 2023 *Measuring Total Carbon Pricing*. Policy Research working paper ; no. WPS 10486 Washington, D.C. : World Bank Group.

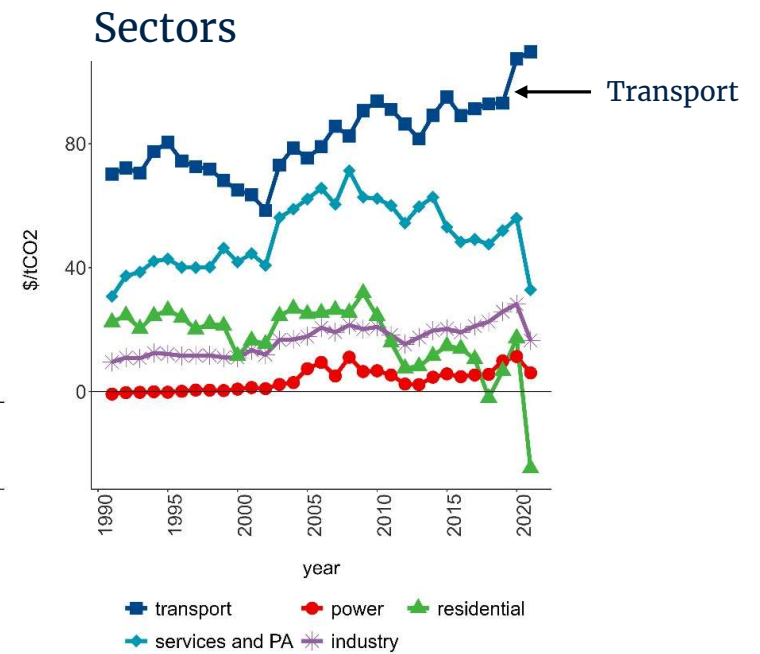
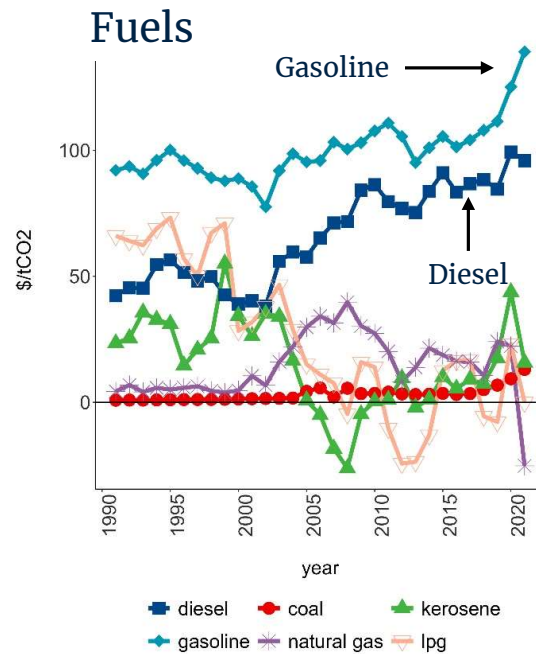
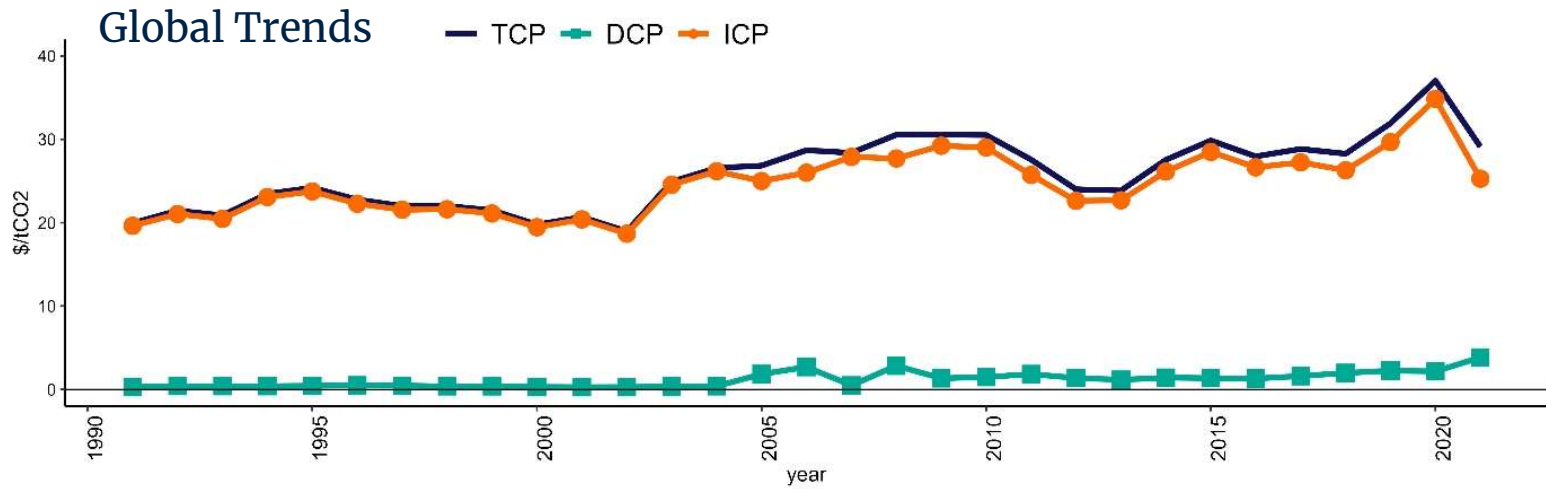
## METHODOLOGY AND DATA

- Data for **direct** carbon prices from World Bank's Carbon Pricing Dashboard
  - nominal rates and coverage for each ETS and carbon tax.

- Data for **indirect** carbon pricing compiled using a price-gap approach
$$net\ fuel\ tax = retail\ price - supply\ cost - VAT\ payments - upstream\ carbon\ price$$
  - Annual average retail prices mostly from IMF and World Bank
  - Supply costs mostly from IEA
  - VAT deviations (the difference between the overall VAT rate and the VAT rate applying to a specific fuel) based on IMF database



# TOTAL CARBON PRICING



# Practical insights



Carbon pricing is an important tool to incorporate climate change costs into economic decision making.



Carbon pricing can be implemented through a range of instruments. This could include indirect carbon pricing. Complementary policies are also important.



Irrespective of direct/indirect approach, economy-wide proportionality and consistency (e.g., price uniformity) should be promoted.