Tax in Politics, Politics in Tax.
A dialogue on the political economy of tax laws - May 2025

THE USE OF TAX EXPENDITURES TO DELIVER GOVERNMENT SUSTAINABILITY POLICIES

For a Greener and Sustainable Future

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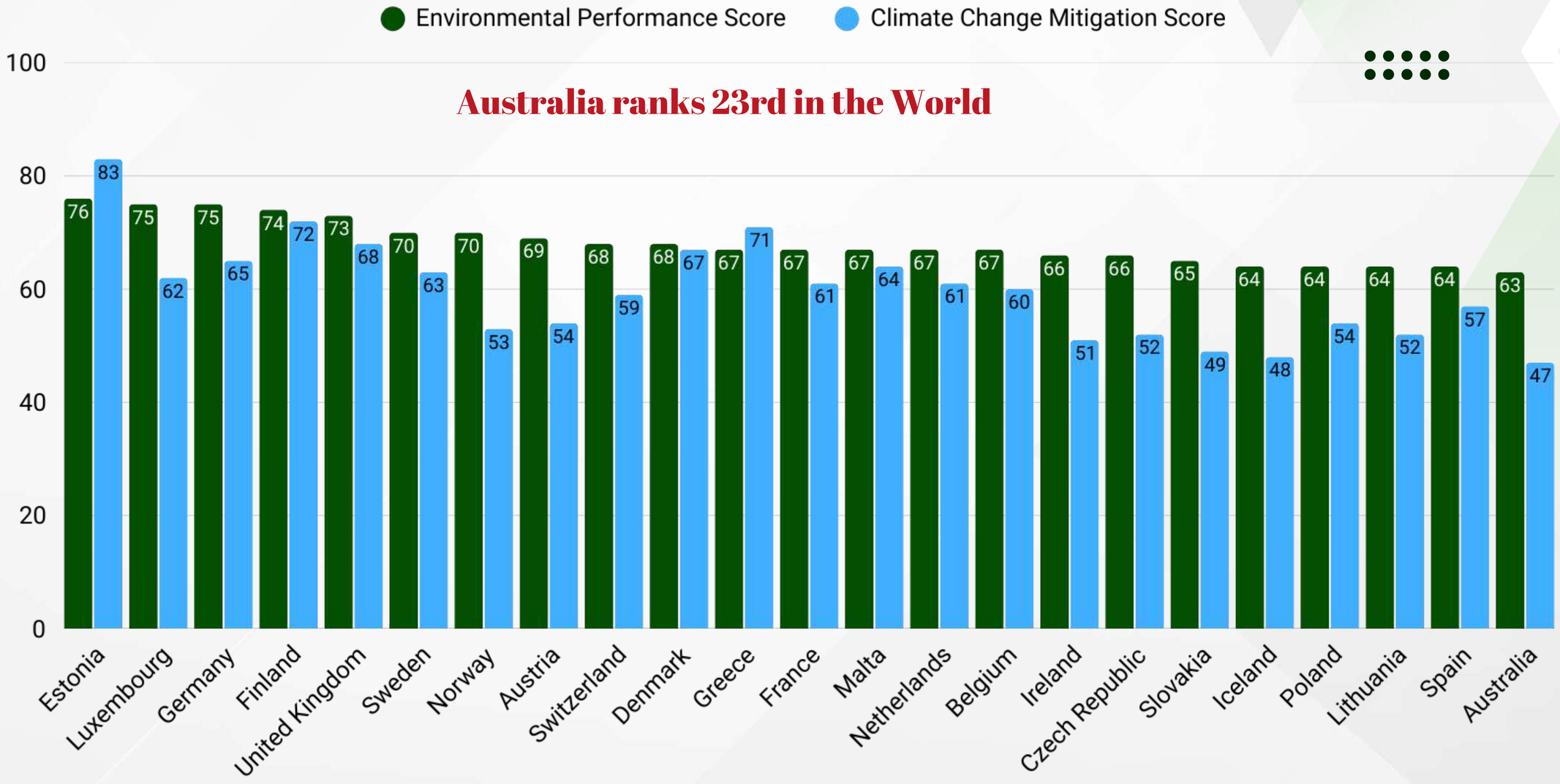
International Tax in the Digital Age

International Tax Insights

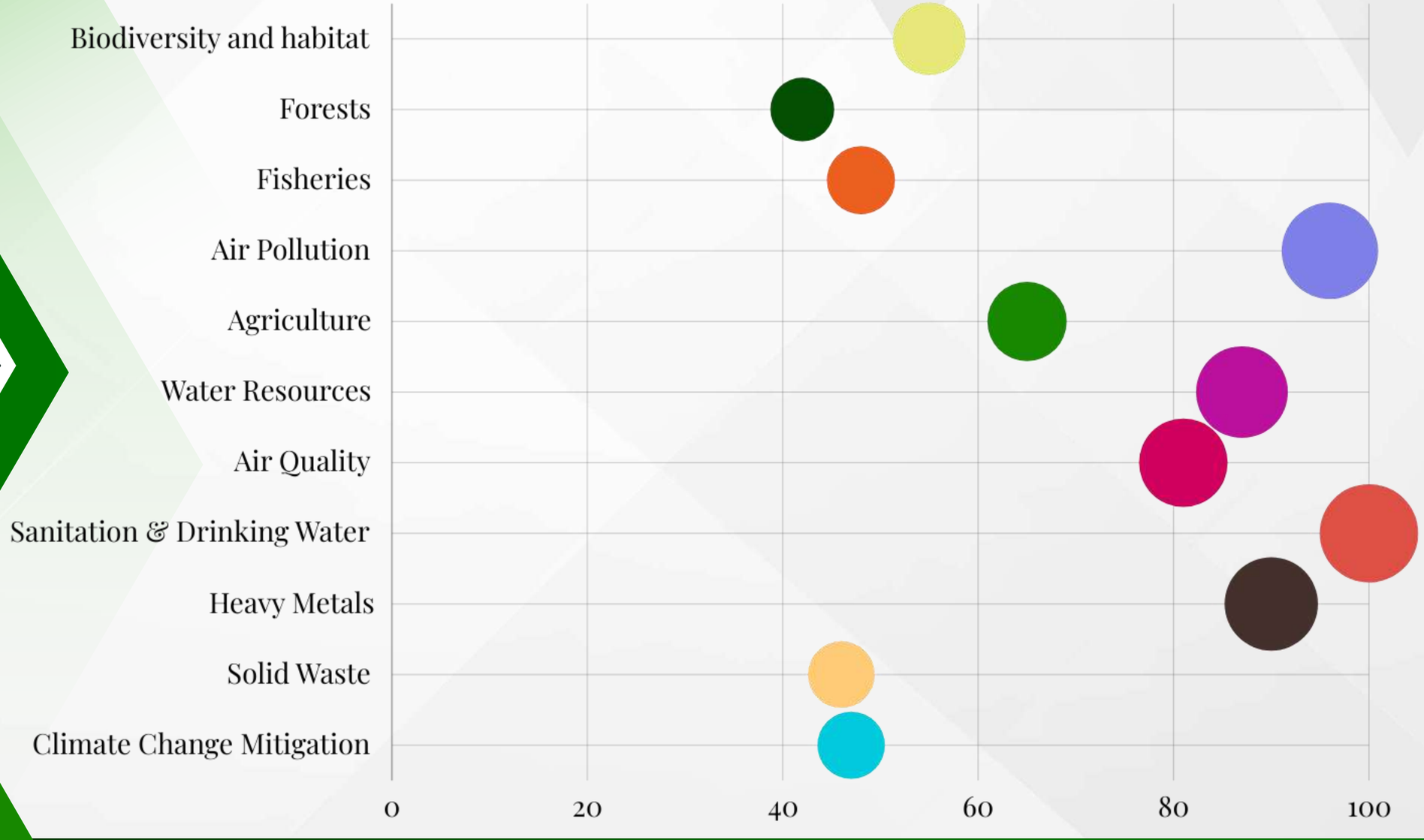
RESEARCH CONTEXT

Environmental Performance Index [EPI] 2024

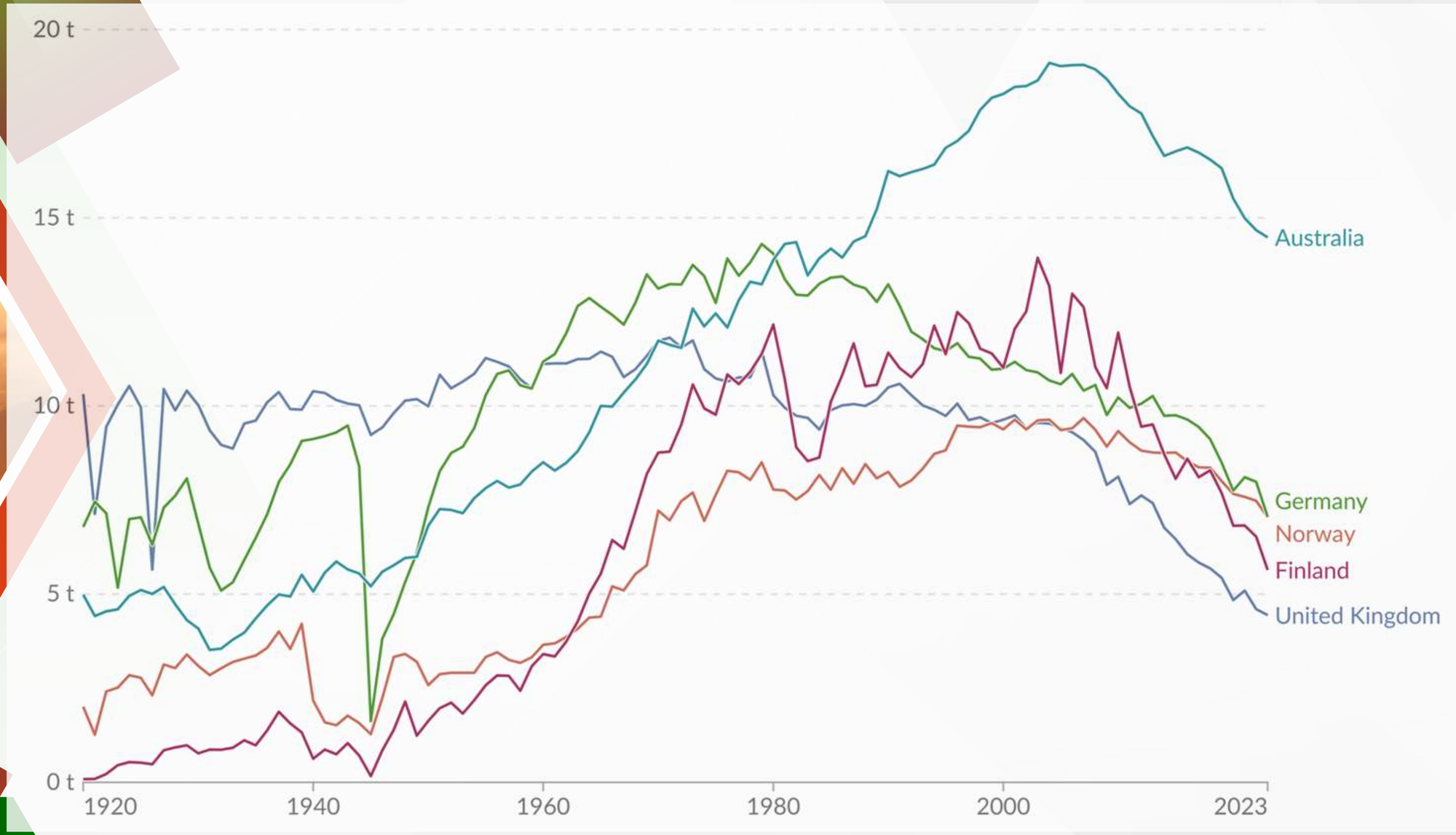


RESEARCH CONTEXT

Australia's Performance - EPI Categories



Carbon Emissions [Per Capita]: Australia, Germany, Finland, Norway, & The UK



What Drives Corporate Green Innovation

Government Incentives/Disincentives

E.g., Tax Incentives

Legal Environment

E.g., Climate Change Act

Firm Characteristics

E.g., Financial Status

Governance Characteristics

E.g., Board of Directors Skill Matrix

Market & Society Characteristics

E.g., Stakeholder Pressure

Environmental Policies

Government Policy Instruments [Regulations]

Command-and-Control

Less Flexible

Prescriptive

- Climate Change Act
- Technology Standards
- Technical Standards
- Emission Restriction Standards

Market-Based

Flexible

Market Signals

- Carbon Taxes
- Emissions Trading System - ETS
- R&D Tax Credits
- Direct Subsidies & Grants

- Demand-Pull Incentives

Carbon Tax

ETS

Policy Mix

R&D Tax Credits

Subsidies

- Supply-Push Incentives

Policy Instruments & Tax Expenditures

Tax Expenditures

Any differential treatment (e.g., deductions/concessions/additional taxes) for taxpayers or activities imposed by governments beyond the 'standard' taxation regime in countries.

R&D Tax Credits

Carbon Taxes

Policy Instruments & Tax Expenditures

R&D Tax Credits

- A deviation from the ‘standard’ tax regime
- Taxpayers obtain an additional fiscal benefit
- ‘Forgone’ Government revenue

Generates a Positive Tax Expenditure

Carbon Taxes

- A deviation from the ‘standard’ tax regime
- Taxpayers incur an additional expenditure
- Increase Government revenue

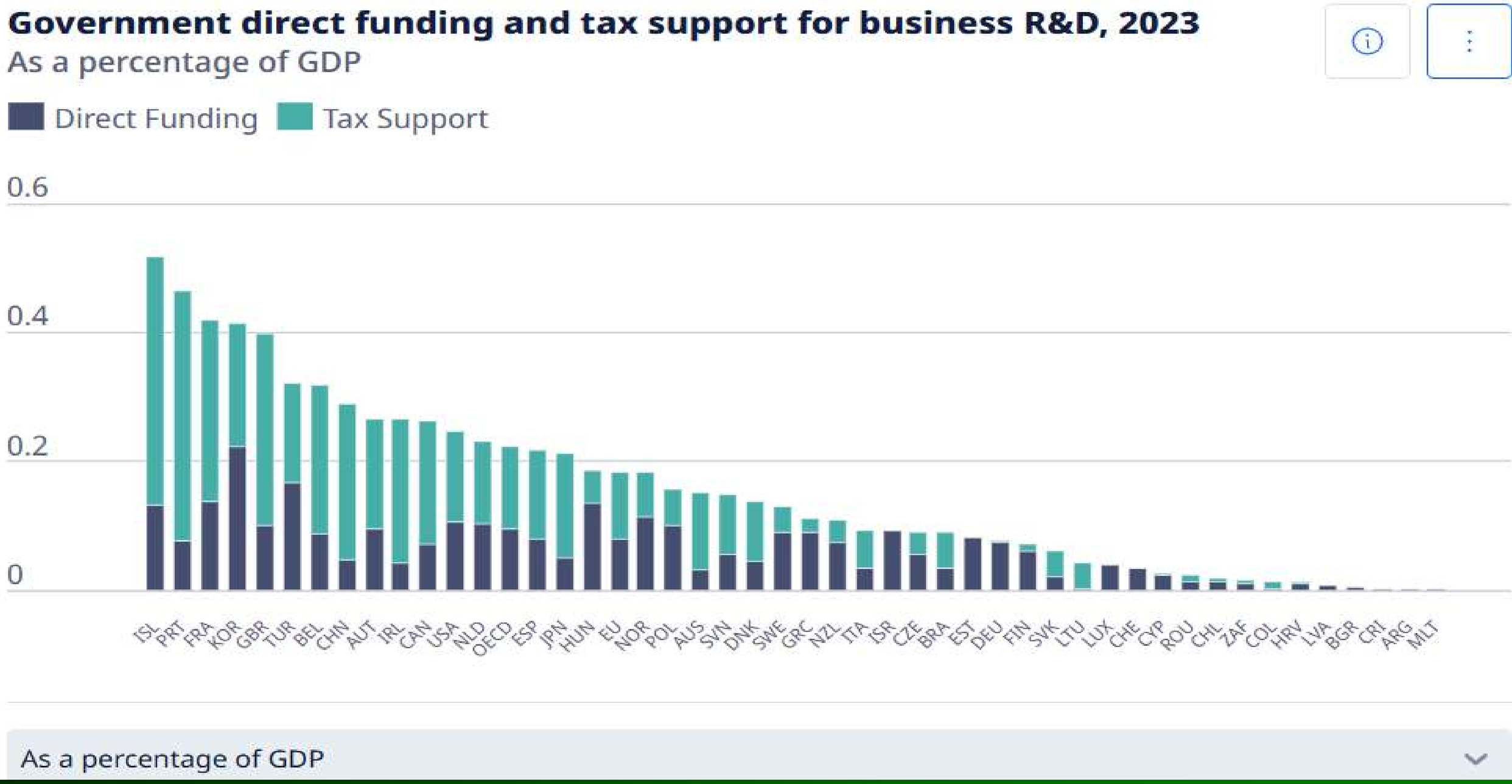
Generates a Negative Tax Expenditure

Government Direct Subsidies

- Some evidence that subsidized firms are likely to apply for patents related to green innovations
- Firm financial status and past funding intensity are firm-level determining factors
- Subsidies are more effective for new and small to medium entities (SMEs) than well-established entities - Due to financial constraints
- Complementary to other incentives in driving green innovations

R&D Tax Credits /Incentives

- Key feature in the UK, Norway, & Australia – minimal and recent in Germany (2020) and Finland (2021 and 2023)
- R&D tax incentives are effective in spurring green innovations
- Less effective for firms with severe financial constraints
- Complementary to other incentives in driving green innovations


Government direct funding and tax support for business R&D, 2023
As a percentage of GDP
Direct Funding
Tax Support
0.6
0.4
0.2
0
ISL PRT FRA KOR GBR TUR BEL CHN AUT IRL CAN USA NLD OECD ESP JPN HUN EU NOR POL AUS SVN DNK SWE GRC NZL ITA ISR CZE BRA EST DEU FIN SVK LTU LUX CHE CYP ROU CHL ZAF COL HRV LVA BGR CRI ARG MLT
As a percentage of GDP

Pigouvian Taxes

- Environmental taxes are a form of government tax instrument aimed at reducing corporate pollution.
- This instrument is also known as a Pigouvian tax, named after Arthur Pigou, who in 1982, proposed that government taxes equalling negative externalities generated through production are essential in internalising external costs to the private costs of the producer.
- Pigou suggested that optimal taxes should be levied on polluters to make the price of goods equal to the social marginal cost.

Pigouvian Taxes - Carbon Tax

- Finland & Norway were among the first in the world to introduce carbon taxes - 1990s
- Resulted in a slow growth of emissions (annual growth of 1.5% from 1981 to 1990 as opposed to −0.01% from 1990 to 2008) - Finland
- Evidence from other contexts indicates a similar impact - Europe, China, & OECD countries
- Australia enacted a carbon tax in 2012. Repealed in 2014 due to political changes
- Evidence indicates the tax was effective in reducing emissions during 2012 - 2014

Tax Policy Design

1. The effectiveness of tax incentives depends on the quality of design
2. Poorly designed incentives could distort corporate resource allocations
3. R&D tax incentives can encourage rent-seeking behaviour in weak regulatory environments
4. R&D tax incentives are ineffective when firms are financially constrained, e.g., SMEs or new firms
5. The effectiveness is also determined by the flexibility (permitting firms to decide the type of R&D technology) & certainty (uncertainties increase perceived investment risk; thus, discouraging R&D expenditure)

Studies indicate policy mixes are more effective in reducing emissions – e.g., A Carbon Tax, ETS, & R&D Tax Incentives

Tax Policy Design

6. Carbon tax or ETS or both?

- Carbon tax can set the future trajectory of climate change mitigation (prices can be fixed) & less complex in administration
- ETS is based on market prices for emission units (prices are volatile & uncertain) & complex in administration
- These taxes are negative tax expenditures, generating government revenue that can be reverted back to sustainability programs
- Important aspects to consider: interconnection with other laws, targeted sectors, consumer impact, & emission reduction goals

Studies indicate policy mixes are more effective in reducing emissions – e.g., A Carbon Tax, ETS, & R&D Tax Incentives

A Theoretical Rationale for Environmental Taxes: Porter's Hypothesis

- Environmental pollution is a waste of resources that can be used to spur productivity
- Well designed environmental regulations can trigger innovations [Weak version]
- These regulations can increase market competition [Strong version]
- Flexible regulations (market-based) are better than prescriptive (command-and-control) regulations in triggering innovations

Porter's Hypothesis

"First, they must create the maximum opportunity for innovation, leaving the approach to innovation to industry and not the standard-setting agency. Second, regulations should foster continuous improvement, rather than locking in any particular technology. Third, the regulatory process should leave as little room as possible for uncertainty *at every stage"*

[Michael Porter, 1996]

Cross-Sectional Comparisons Between Australia & Finland, Germany, Norway, The UK

EPI Rank	Country	CO_2 [Per Capita] [2023]	Government Subsidies [BERD] % of GDP [2021]	R&D Tax Incentives [GTARD] % of GDP [2021]	Implied Tax Subsidy Rate R&D [2023/SME]	Carbon Taxes [$USD - CO_2 MTon] [2023]	ETS [$USD - CO_2 MTon] [2023]	Emissions Coverage [Tax + ETS] [2023]	Environ. Tax Revenue [% of GDP] [2022]
23	**Australia**	14.48	0.03	0.11	0.22	No	22 National	28%	0.55
4	**Finland**	5.65	0.07	0.00	0.11	65-100	61 EU	45% + 38%	2.44
3	**Germany**	7.05	0.07	0.00	0.19	No	49-61 National + EU	39% + 38%	1.63
7	**Norway**	7.05	0.11	0.09	0.22	16-108	61 EU	65% + 38	1.45
5	**United Kingdom**	4.44	0.15	0.33	0.26	23	45 National	28%	1.77

- **Government Subsidies [BERD]** - Government financed business expenditure on R&D
- **R&D Tax Incentives [GTARD]** - Government tax relief for R&D
- **Implied Tax Subsidy Rate for R&D** - The extent of business tax relief for each additional dollar invested in R&D
- **ETS - Emissions Trading Schemes** - National and EU ETS

Key Findings

Government Subsidies [BERD]

- On average, **Australia has the lowest** amount of subsidies on business R&D - 0.03 of GDP
- **The UK has the highest** (0.10 of GDP), followed by Norway (0.09 of GDP)
- Germany and Finland are third and fourth highest with 0.08 and 0.07 of GDP contributing to business R&D
- All four countries' government funding for business R&D is **significantly greater than Australia**

R&D Tax Incentives [GTARD & ITSR]

- On average, **The UK & Australia are the top** in the list with 0.13 & 0.11 of GDP of R&D tax incentives
- Norway's R&D tax incentives are third on the list; however, much lower than top two (0.07 of GDP)
- R&D tax incentives **are mostly absent in Germany & Finland** (0.00 of GDP)
- **Australia's strongest policy** instrument for green innovation

Environmental Taxes & Carbon Pricing

- On average, **Australia has the lowest** carbon pricing (6) & environmental tax revenues (1.48 of GDP)
- **Finland has the highest** tax revenue (2.73 of GDP) and carbon pricing (75)
- The UK has the **2nd highest tax revenue (2.12 of GDP); however, 2nd lowest** in carbon pricing (52)
- All four countries' tax revenue & carbon pricing are **significantly greater than Australia**

Key Findings

Policy Mix

Balanced Approach

Policy Mix

Taxes & Carbon Pricing

Policy Mix

Balanced Approach

Policy Mix

Taxes & Carbon Pricing

Policy Mix

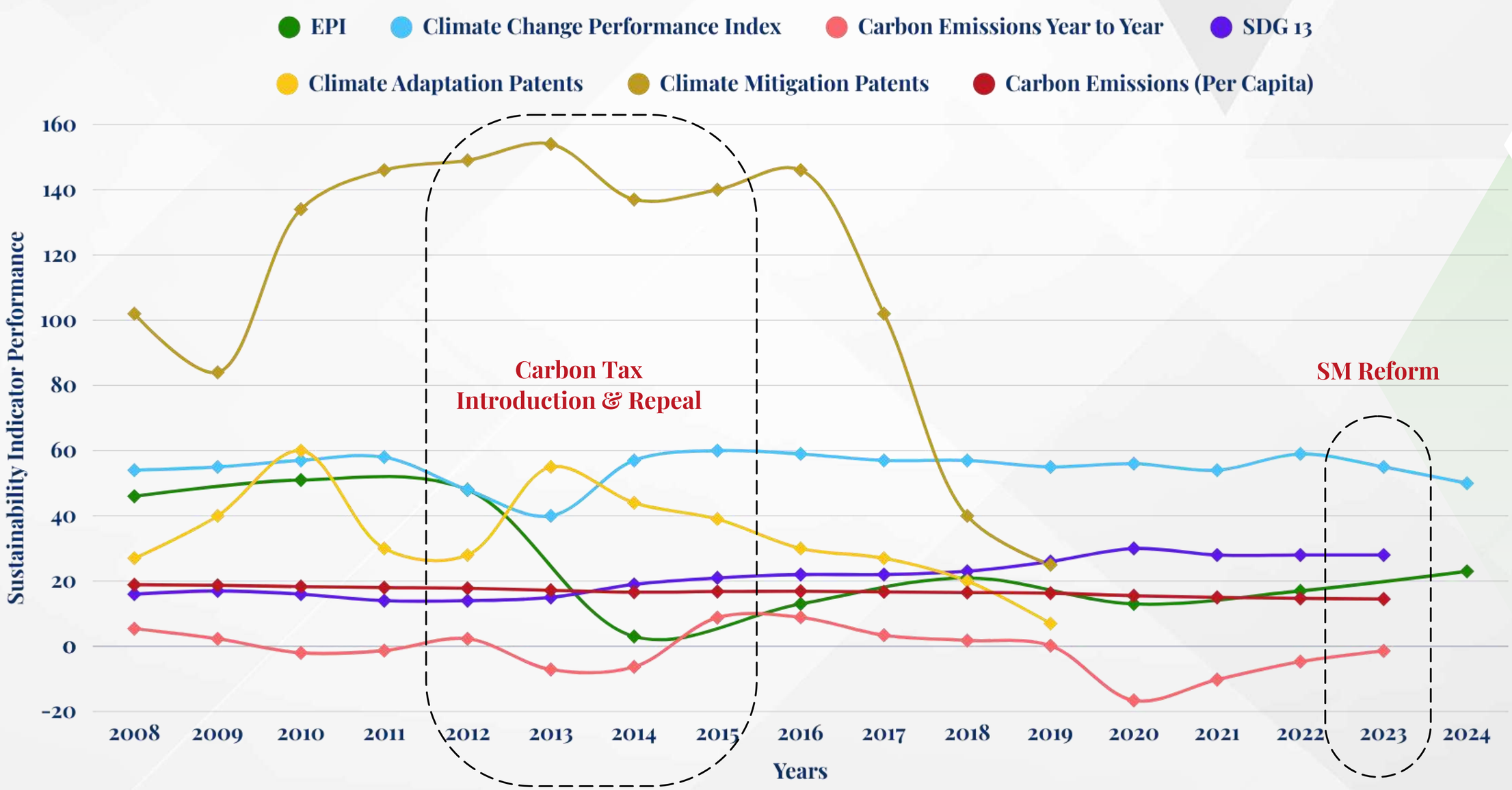
R&D Tax Incentive

Subsidies

R&D Tax Incentives

Environmental Taxes & Carbon Pricing

Australia's Green Innovation Trajectory



Policy Reform Suggestions: Way Forward

Policy Mix

Policy Stringency & Coverage

Policy Certainty

Policy Mix

- Each Global West country has a **strong policy mix** – either **R&D tax incentives** + **Carbon Pricing** or **Subsidies** + **Carbon Pricing**
- A common feature of all countries is **strong carbon pricing**
- Some countries perform well compared to Australia **without significant R&D tax incentives** – Germany & Finland

Policy Stringency & Coverage

- At least **two instruments** must be present to have a strong system
- **Australia's** only strong instrument is the **R&D tax incentive**
- An Effective policy mix will require tax incentives with **strong carbon pricing or subsidies**
- **SMEs** lack of financial capacity; thus, **'ex ante' incentives,** such as subsidies, are suitable
- **R&D tax incentives** are more suitable for **large firms**

Policy Certainty

- Global West countries indicate **longevity** of policy mixes. **For example, Finland's & Norway's carbon tax existed for many decades**
- **Policy uncertainty** increases **investment risk** and discourages green innovations
- Policy uncertainty is the most influential business 'risk' for innovation decisions
- Australia's climate policy uncertainty has been a key weakness

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