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Clustering the adoption of carbon pricing policies: What polities price carbon?

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The waves of carbon pricing adoption

- Carbon pricing has environmental and fiscal benefits.
- Yet, the adoption of carbon pricing policies has been slow, and followed different waves
- These waves do not correspond to the most obvious explanations (climate commitments, income, fossil fuel reserves)
- => we wanted to explore the different clusters and the factors distinguishing them

Research Questions

1. Which clusters of polities adopting carbon pricing exist?
2. Which factors distinguish the clusters?

Mapping

- **Adopted** carbon pricing initiatives were found in **all regions of the world**, except Middle East and Northern Africa.
- Period extends from **1990 to 2018**.
- Increasing number of policies **since 2015**.

Cluster analysis

- **Identified similarities and differences** between polities that have **adopted** carbon pricing policies
- Countries were classified according to **4 sets of factors**:

Set	Variables
Economic	GDP, account balance, share of natural resources in GDP, share of industry in GDP. Presence of economic and fiscal crises
Carbon intensity	CO ₂ emissions, share of emissions from manufacturing, energy consumption, oil rents
Political	Environmental ministry, green party in government, corporatism, left-right orientation of government.
Diffusion	UNFCCC commitment, international support recipient, region

Cluster analysis results

Early adopters	US & Canada	Chinese provinces	Developed second wave	Developing second wave
Albania	Alberta	Beijing	Australia	Argentina
Cyprus	British Columbia	Chongqing	Austria	Chile
Denmark	California	China	Catalonia	Colombia
Estonia	Canada	Fujian	Croatia	India
Finland	Colorado	Guangdong	EU/EEA	Kazakhstan
Greece	Massachusetts	Hubei	France	Mexico
Latvia	Ontario	Shanghai	Germany	Portugal
Luxembourg	Quebec	Shenzhen	Iceland	Singapore
Norway	RGGI	Tianjin	Ireland	South Africa
Poland	Washington		Japan	Sri Lanka
Slovenia			Korea	Ukraine
Sweden			Liechtenstein	
Zambia			New Zealand	
Zimbabwe			Saitama	
			Spain	
			Switzerland	
			Tokyo	
			United Kingdom	

Findings from the cluster analysis

- **Economic and fiscal crisis** more common among early adopters
- **Carbon intense** states tend to prefer emissions trading
- **Political factors** (e.g. left-right orientation, green party in power) play little role
- **Regional clustering**
- Increasing relevance of **international factors (climate commitments, international support)**

Implications for those promoting carbon pricing

- Draw on experiences from similar countries, not those who adopted it decades ago.
- Utilise international climate commitments and support
- Better to promote emissions trading among carbon intense economies
- Crises may constitute windows of opportunity