CHILE ETS WORKSHOP

IETA
CLIMATE CHALLENGES
MARKET SOLUTIONS

Private Sector Experiences

Addressing Competitiveness

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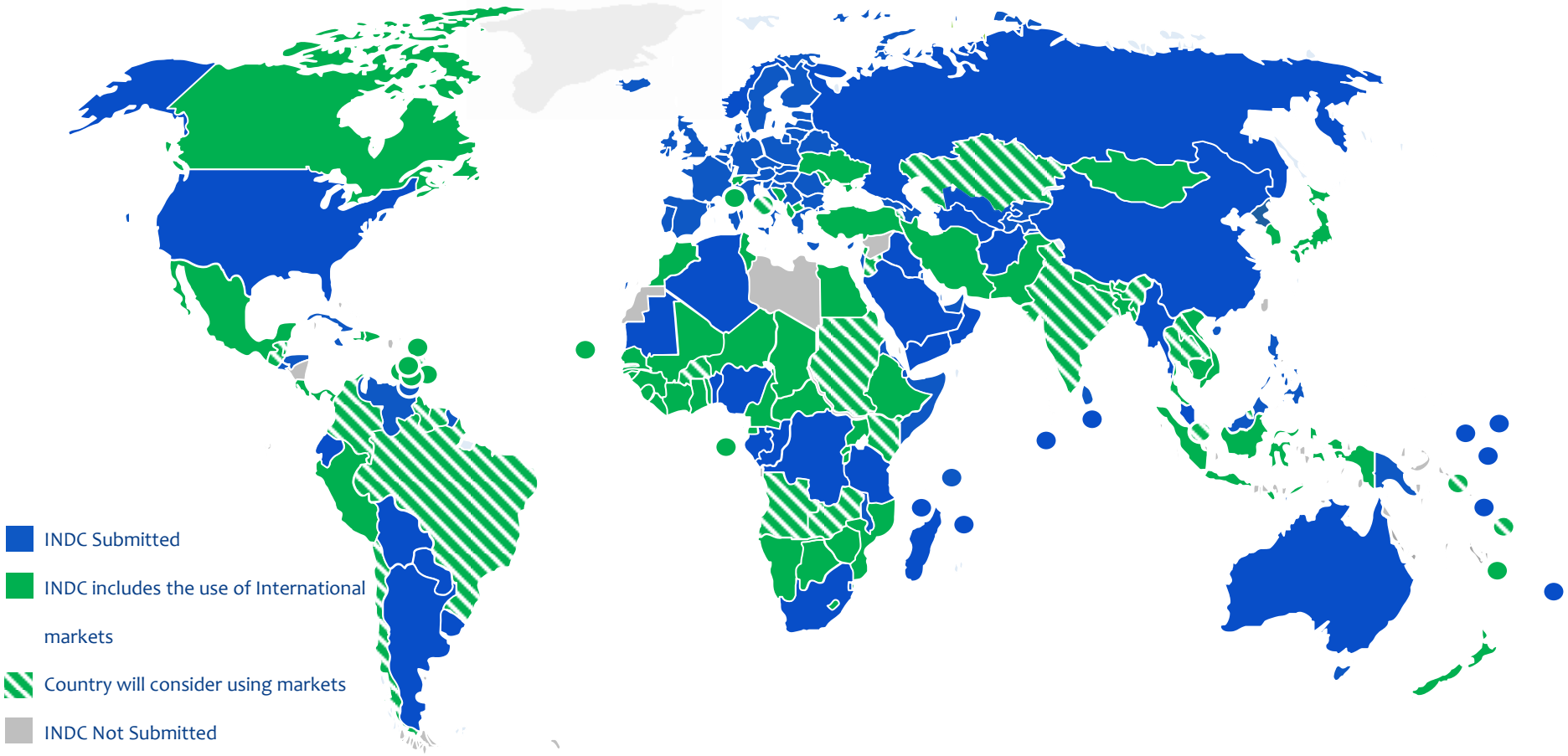
>100 Carbon Market Friendly Targets



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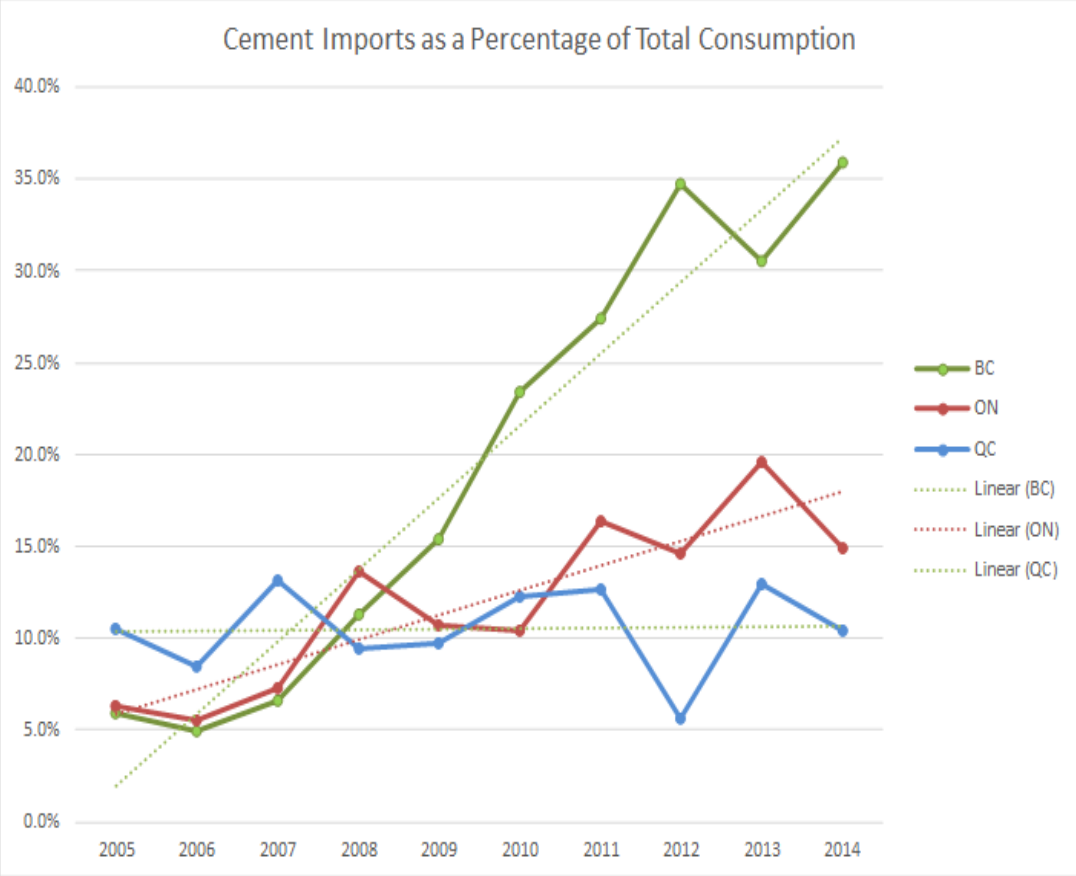
Key Principles

- **CLIMATE RESULTS MATTER**
  - Measurable climate (GHG reduction) outcomes!
- **POLICY CERTAINTY MATTERS**
  - Long-term, consistent compliance pathways and price signals
- **PROFIT-INCENTIVE POWER MATTERS**
  - Drives innovation & broader economic development
- **LOW-COST & FLEXIBILITY MATTERS**
  - Trading, low-cost offsets, linking etc.
- **ADDRESSES COMPETITITEVENESS**
  - Levels playing field with international competitors
  - Can be achieved via good design & CLOSE industry input

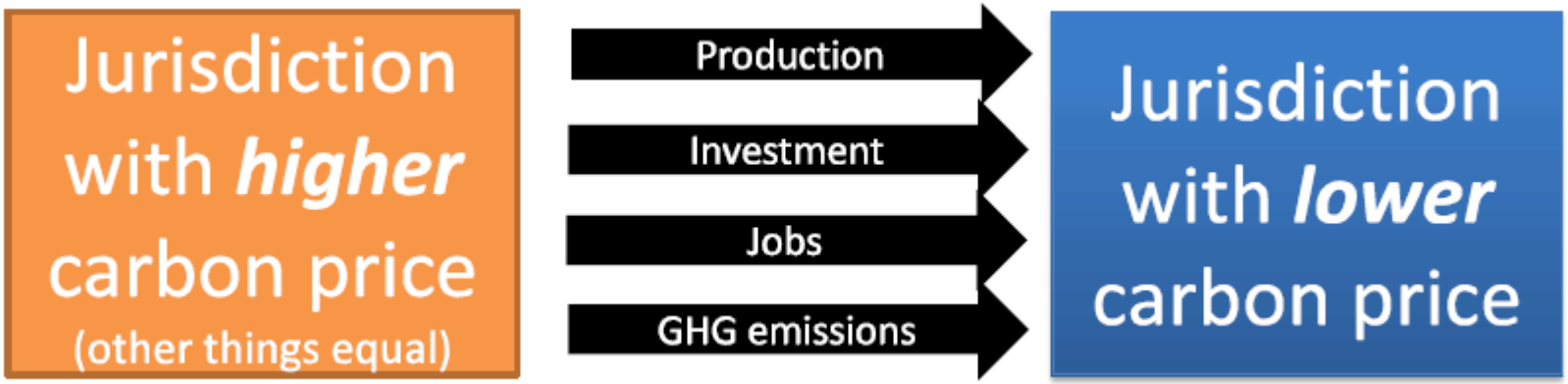
British Columbia Carbon Tax: The Cement Sector Story

- Lost 40% of BC market share to cheaper imported cement
- Occurred since launch of BC's $30/t tax (revenue neutral)
- Could have been avoided with policies to protect competitiveness
- Now moving to OBA approach

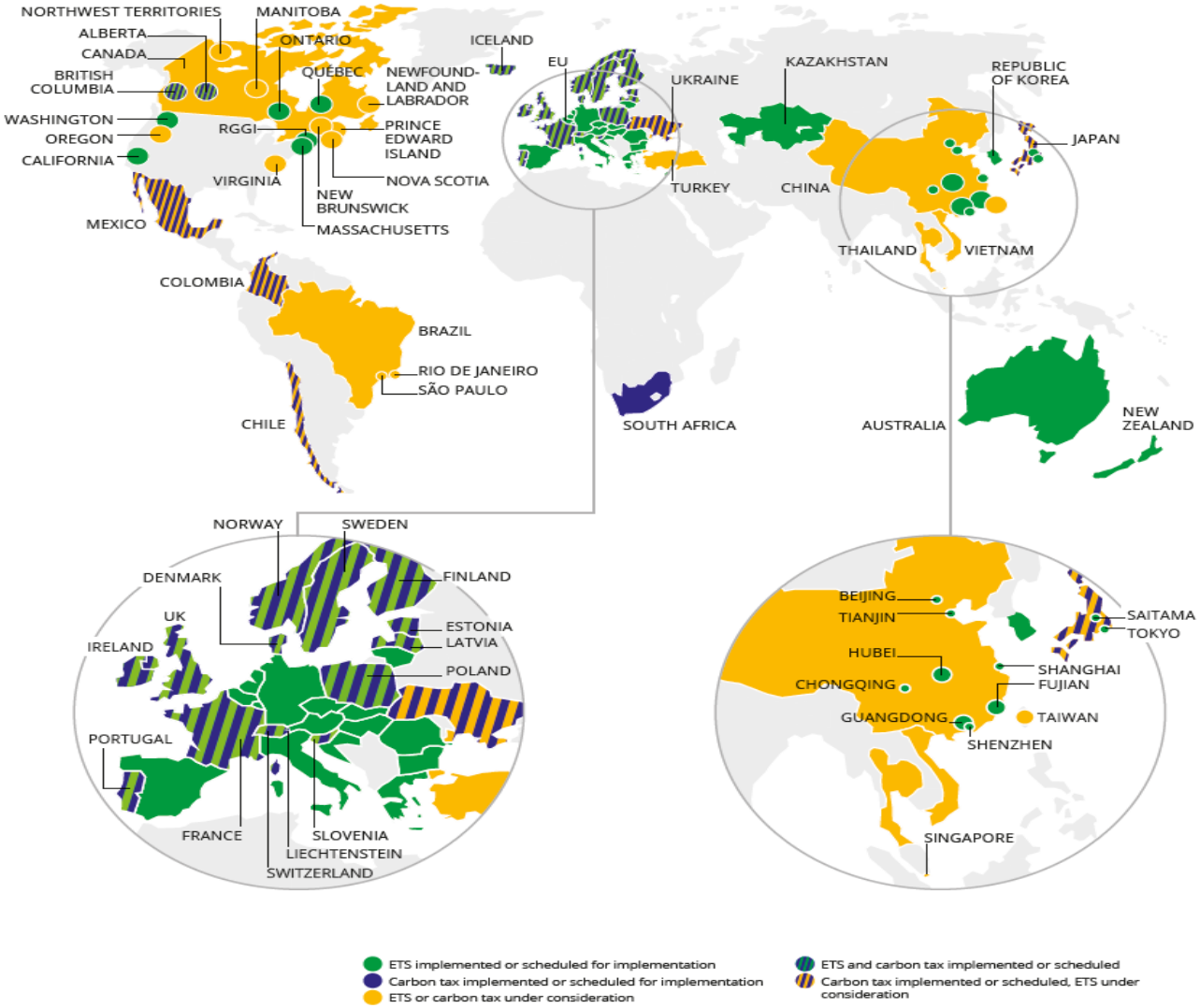


What Does Competitiveness Mean?

- **Carbon Price DIFFERENTIAL**
  - **Differential Between jurisdictions – not the absolute level**
- **Carbon Leakage**
  - **Production – and GHG emissions – leave to occur in other jurisdictions with no (or more lax) carbon regulations**



Asymmetric Carbon Pricing is One Factor



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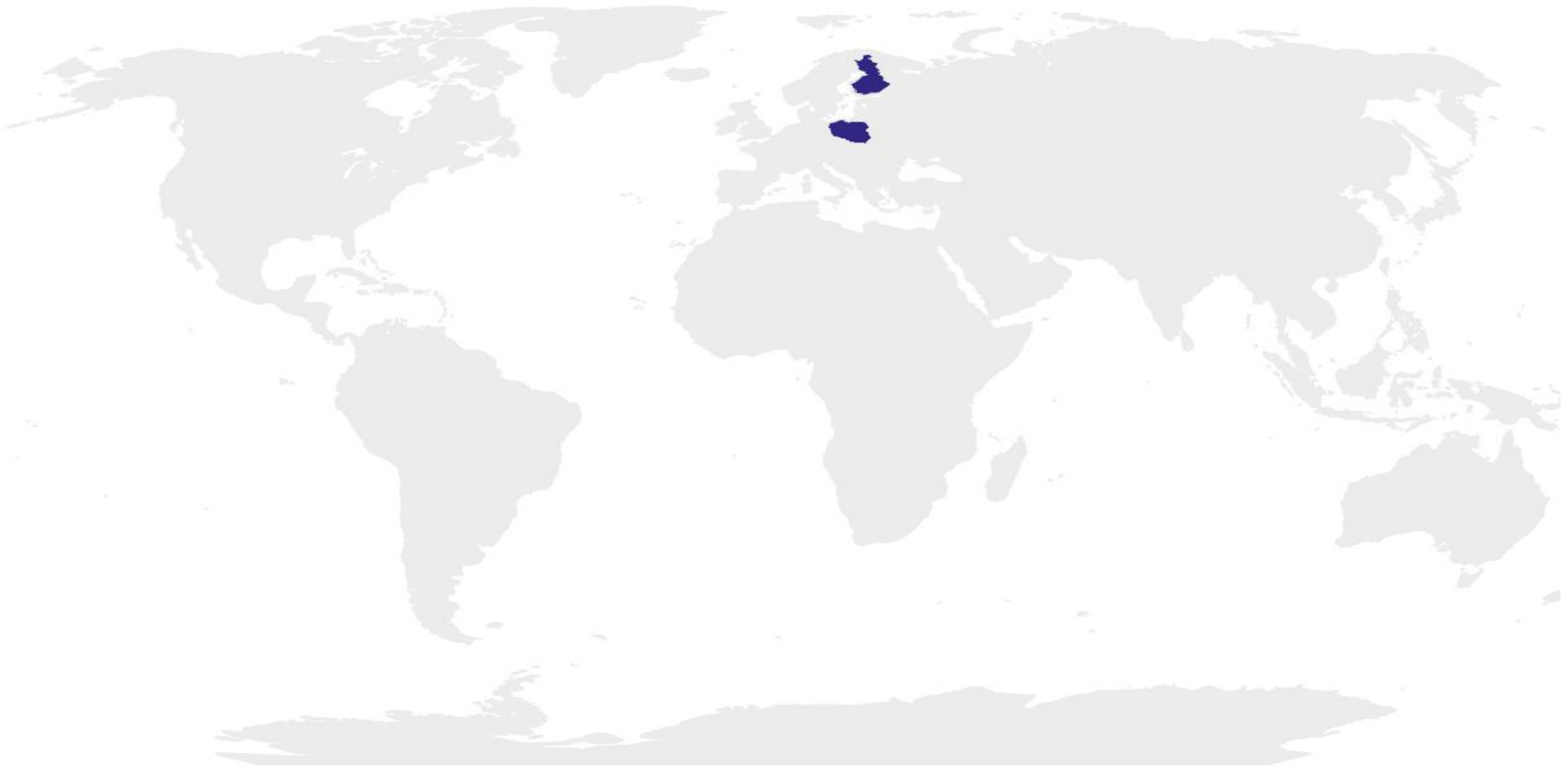
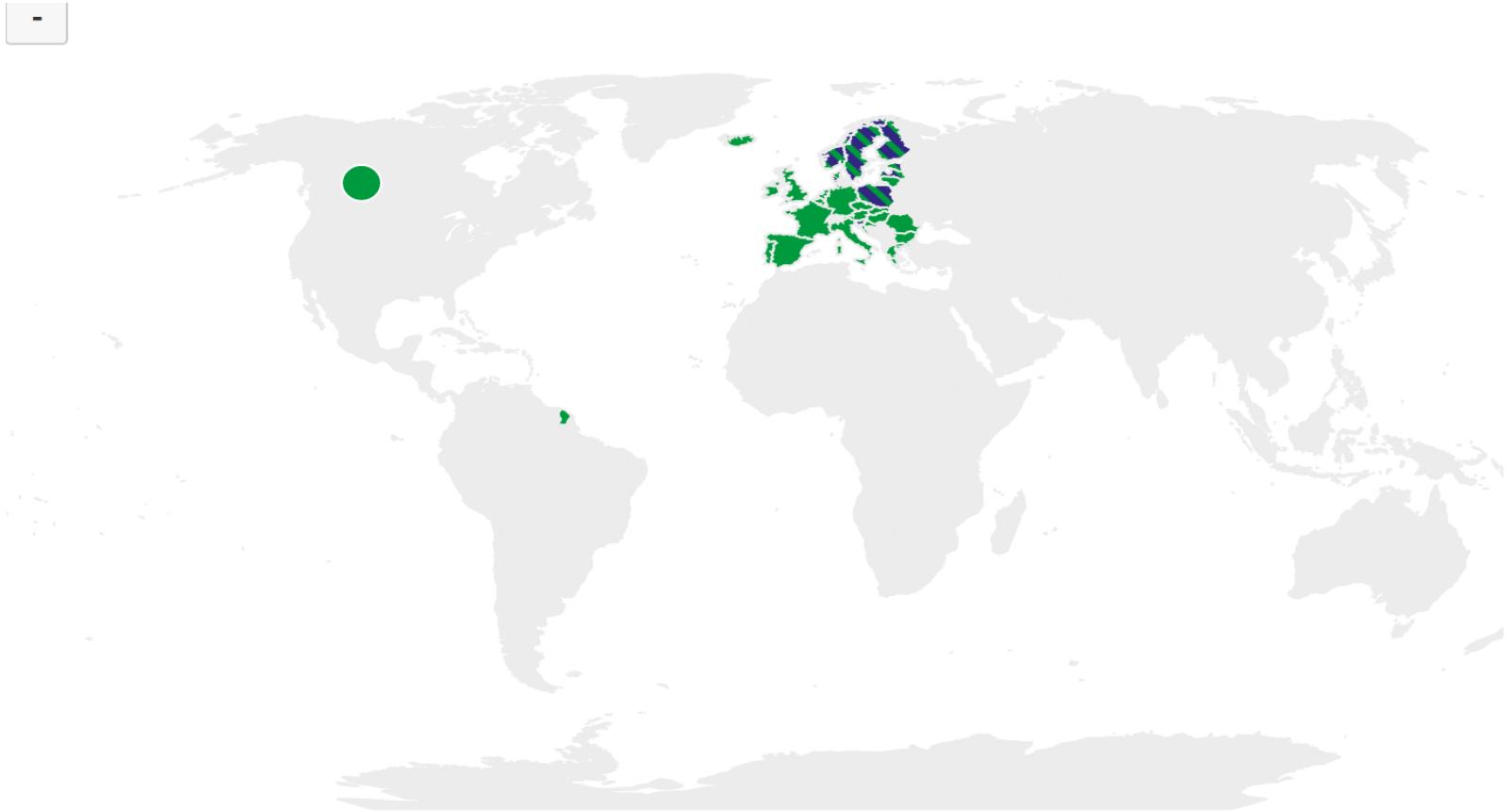
Carbon Pricing - 1990



Carbon Pricing - 2007



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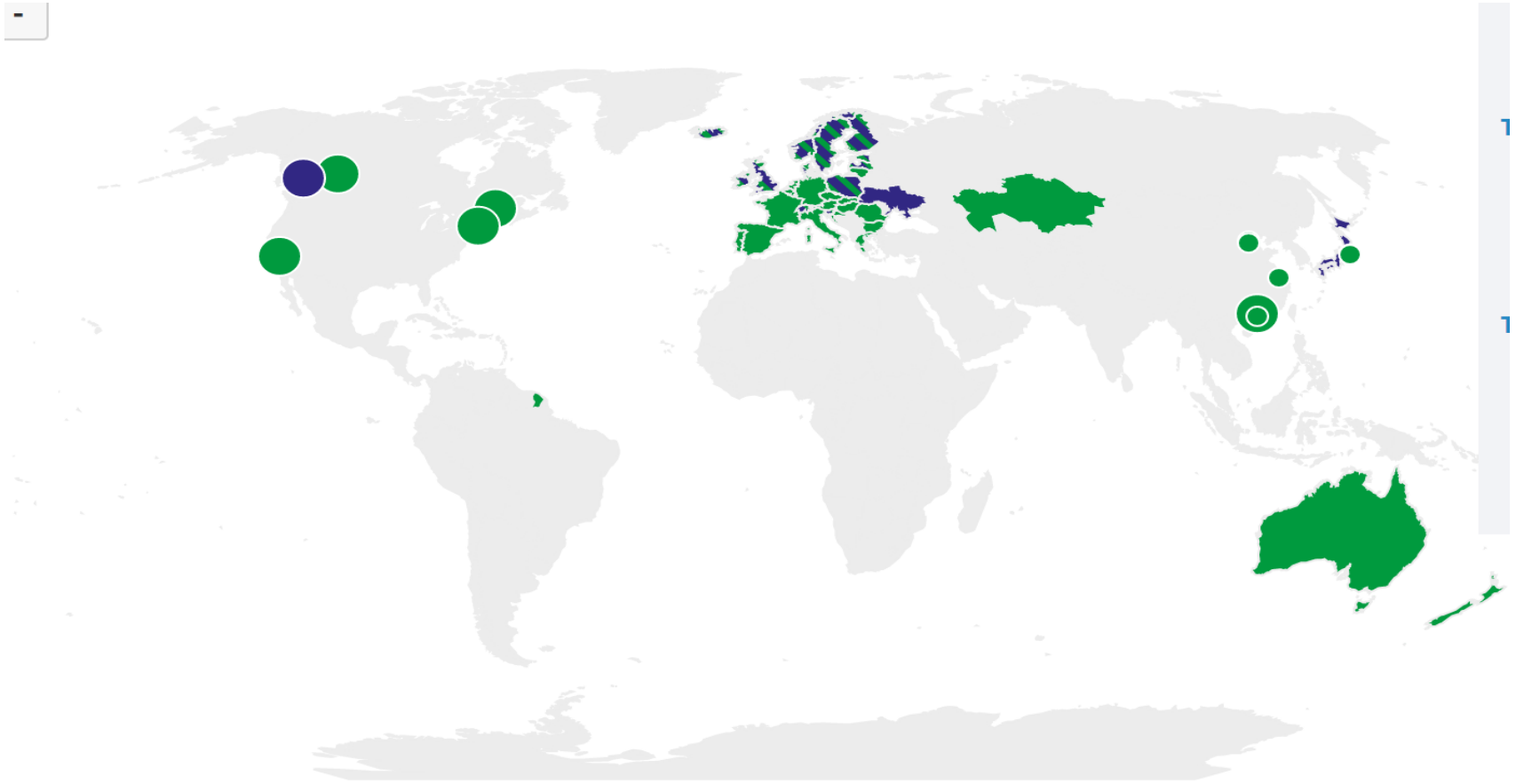
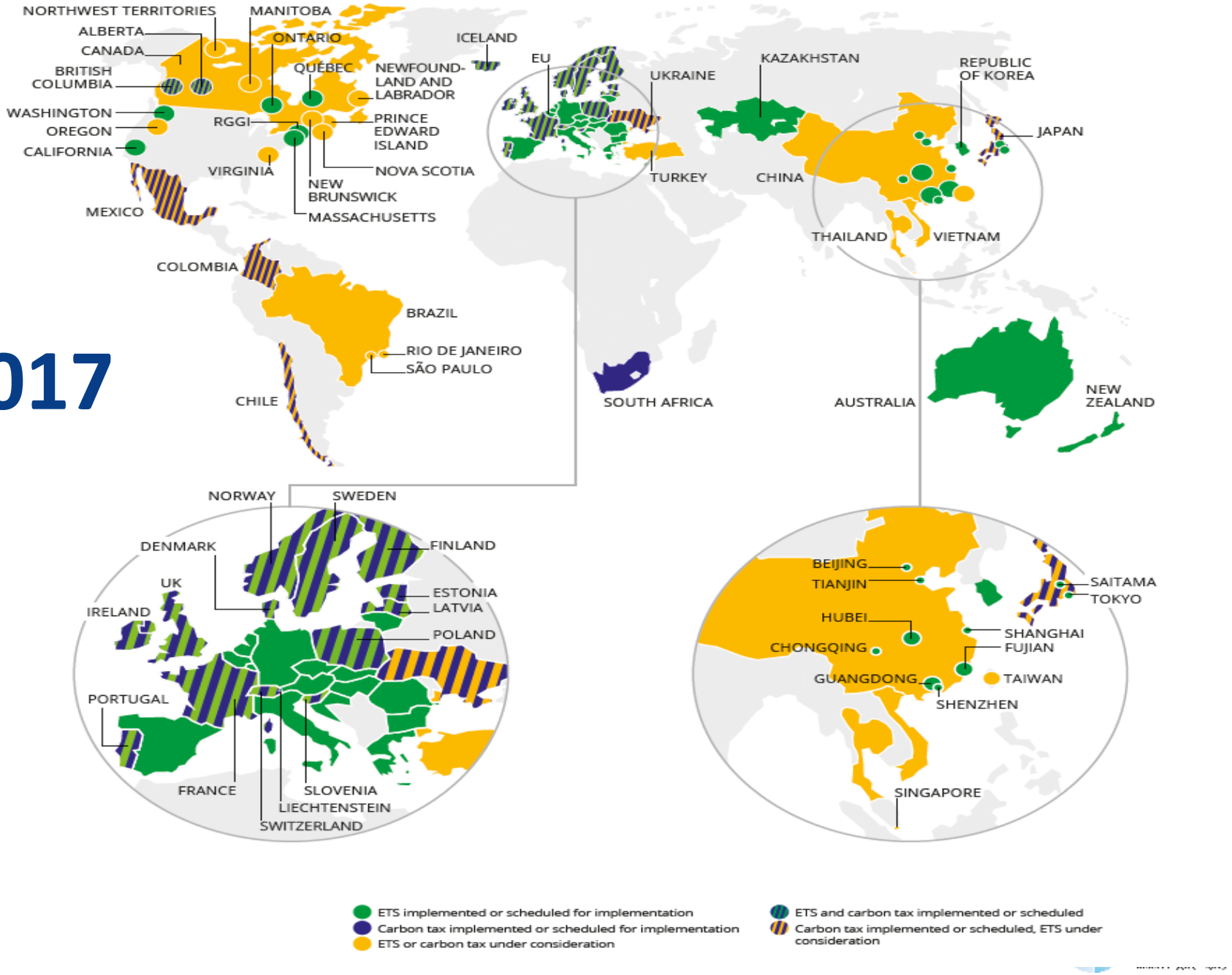
Carbon Pricing - 2013



2017


NORTHWEST TERRITORIES
MANITOBA
ALBERTA
ONTARIO
CANADA
QUÉBEC
BRITISH COLUMBIA
NEWFOUND-LAND AND LABRADOR
WASHINGTON
RGGI
PRINCE EDWARD ISLAND
OREGON
CALIFORNIA
VIRGINIA
NOVA SCOTIA
NEW BRUNSWICK
MEXICO
MASSACHUSETTS
ICELAND
EU
UKRAINE
KAZAKHSTAN
REPUBLIC OF KOREA
JAPAN
TURKEY
CHINA
THAILAND
VIETNAM
COLOMBIA
BRAZIL
RIO DE JANEIRO
SÃO PAULO
CHILE
SOUTH AFRICA
AUSTRALIA
NEW ZEALAND
NORWAY
SWEDEN
DENMARK
FINLAND
UK
ESTONIA
IRELAND
LATVIA
POLAND
PORTUGAL
FRANCE
SLOVENIA
LIECHTENSTEIN
SWITZERLAND
BEIJING
TIANJIN
SAITAMA
TOKYO
HUBEI
SHANGHAI
CHONGQING
FUJIAN
GUANGDONG
TAIWAN
SHENZHEN
SINGAPORE
ETS implemented or scheduled for implementation
Carbon tax implemented or scheduled for implementation
ETS or carbon tax under consideration
ETS and carbon tax implemented or scheduled
Carbon tax implemented or scheduled, ETS under consideration

ADDRESSING COMPETITIVENESS

IETA Guiding Principles (General)

- **Targeted, sufficient, predictable, and fair as possible**
- **Harmonized across jurisdictions**
- **Transparent and defensible**
- **Based on evidence - not theory**
- **Ensure most efficient facilities don't face undue carbon cost**
- **Transitional in nature**
- **Adaptive as more regions price carbon (Challenging!)**
- **Linked to achieving a "level-playing field" for industrial competitiveness**

EITE: Key Design Considerations

1. Define EITE – and Level of EITE assistance?
2. Scope of performance benchmarks (e.g. facility or sector)?
3. Level of stringency (e.g. average, first quartile, Best-in-Class)?
4. Comparators in setting benchmark?
5. Treatment of process (fixed) vs. combustion emissions?
6. Treatment of electricity (indirect)?
7. Review of performance standard (e.g. frequency, goals etc.)?
8. Governance of system?

Lessons Learned

Jurisdictions with an ETS have all provided some support to affected sectors, with assistance provided on a uniform or tiered basis

ETS	Treatment of electricity	Treatment of non-electricity	Is assistance tiered or uniform?
Kazakhstan	Included	All entities given assistance	Uniform
Chinese pilots			
Korea			
EU ETS	Generally excluded		
South Africa	Included		Two tiers
Australia (prior to repeal)	Assisted through a one-off compensation package	Limited to activities that meet eligibility criteria	Two tiers (high, moderate)
New Zealand	Excluded		
California (2018-20)	Assisted through a mechanism specific to the sector	All entities given assistance	Three tiers (high, medium, low)

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CLIMATE CHALLENGES
MARKET SOLUTIONS

EXTRA SLIDES

Revenue Recycling Options

Transferring revenue to households

Reducing income taxes

Investing in clean technology

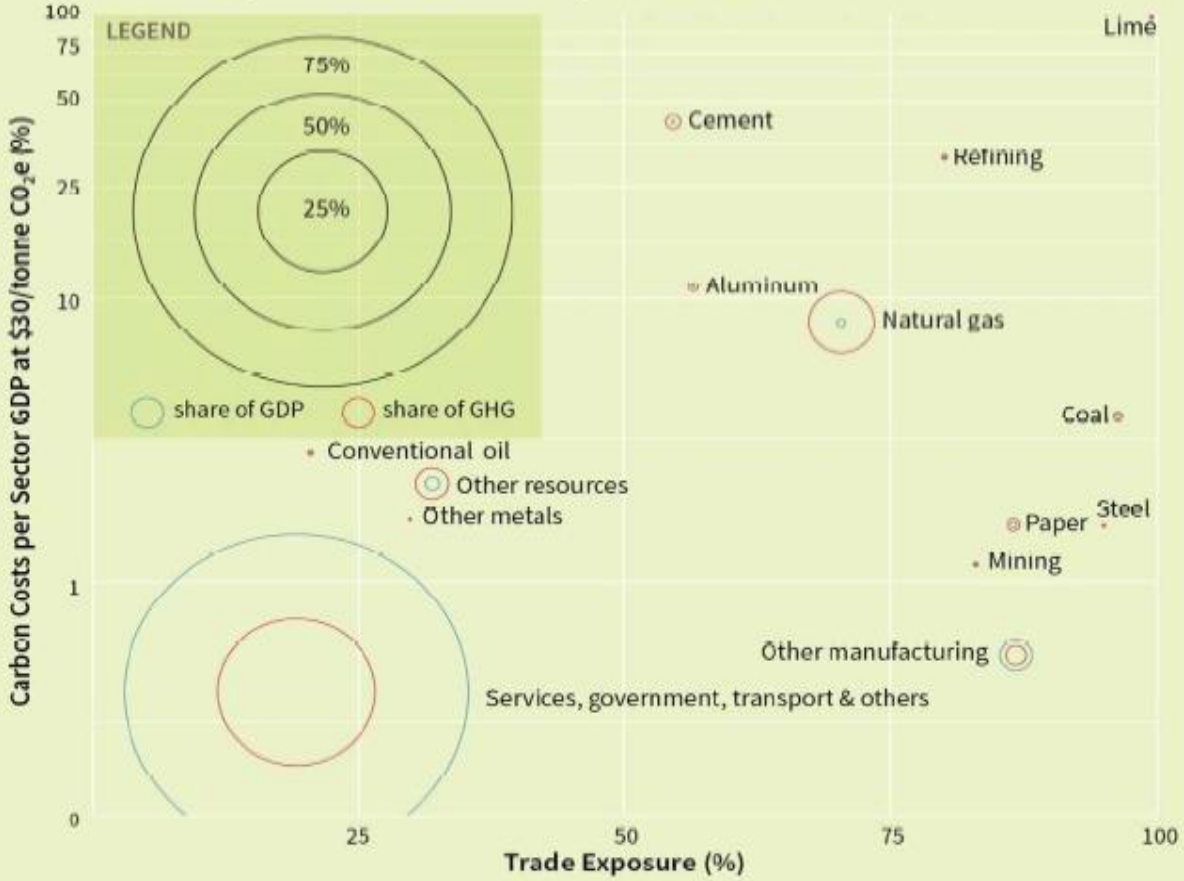
Investing in infrastructure

Reducing government debt

Providing transitional support to industry

Canada: British Columbia
Competitiveness Pressures By Sector

Figure 1a: Competitiveness Pressures by Sector in British Columbia

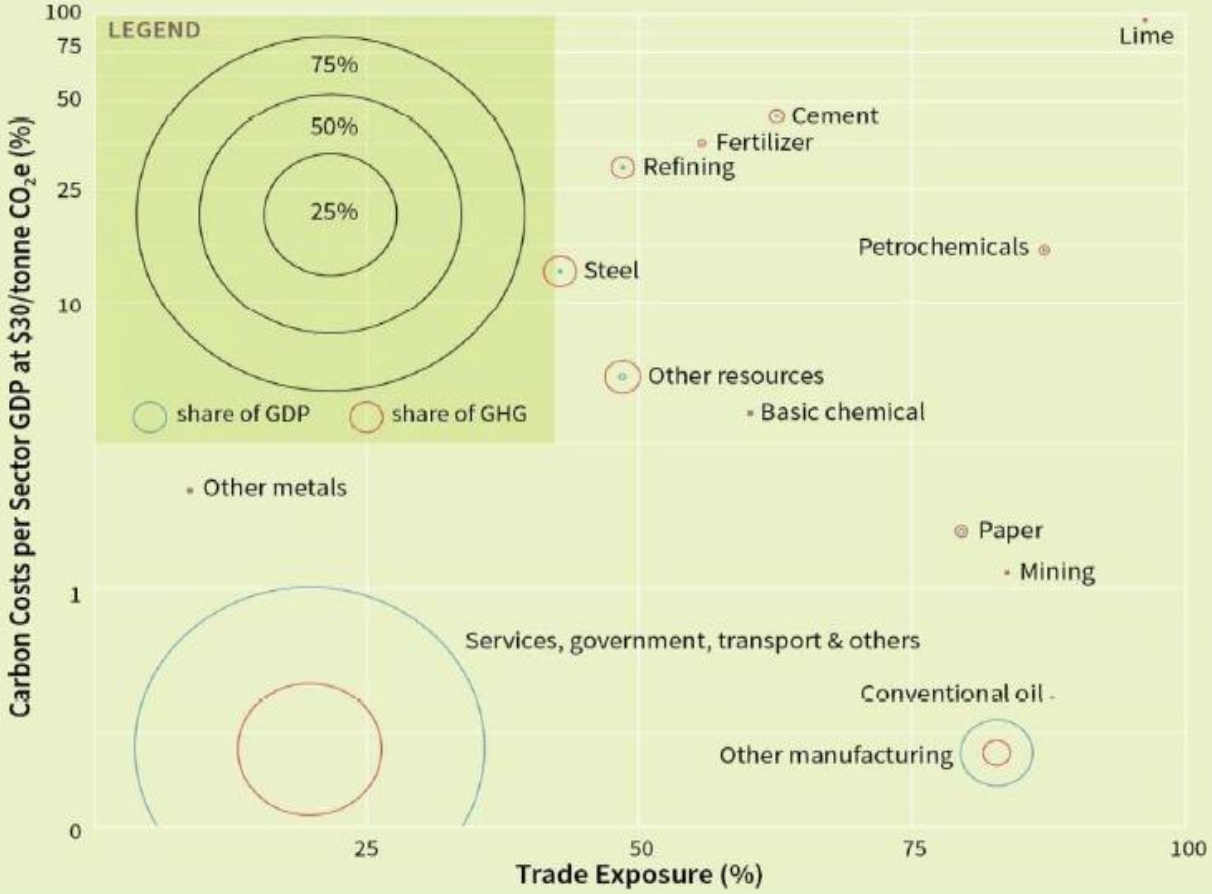


The centre of each sector's bubble reflects that sector's trade exposure (horizontal axis) and its carbon costs (vertical axis; log scale). The size of each bubble reflects the sector's share of provincial GDP (blue) and share of provincial GHG emissions (red).

Source: Modelling analysis from Canada's Ecofiscal Commission and Navius Research.

Canadian Example: Ontario
Competitiveness Pressures By Sector

Figure 1c: Competitiveness Pressures by Sector in Ontario



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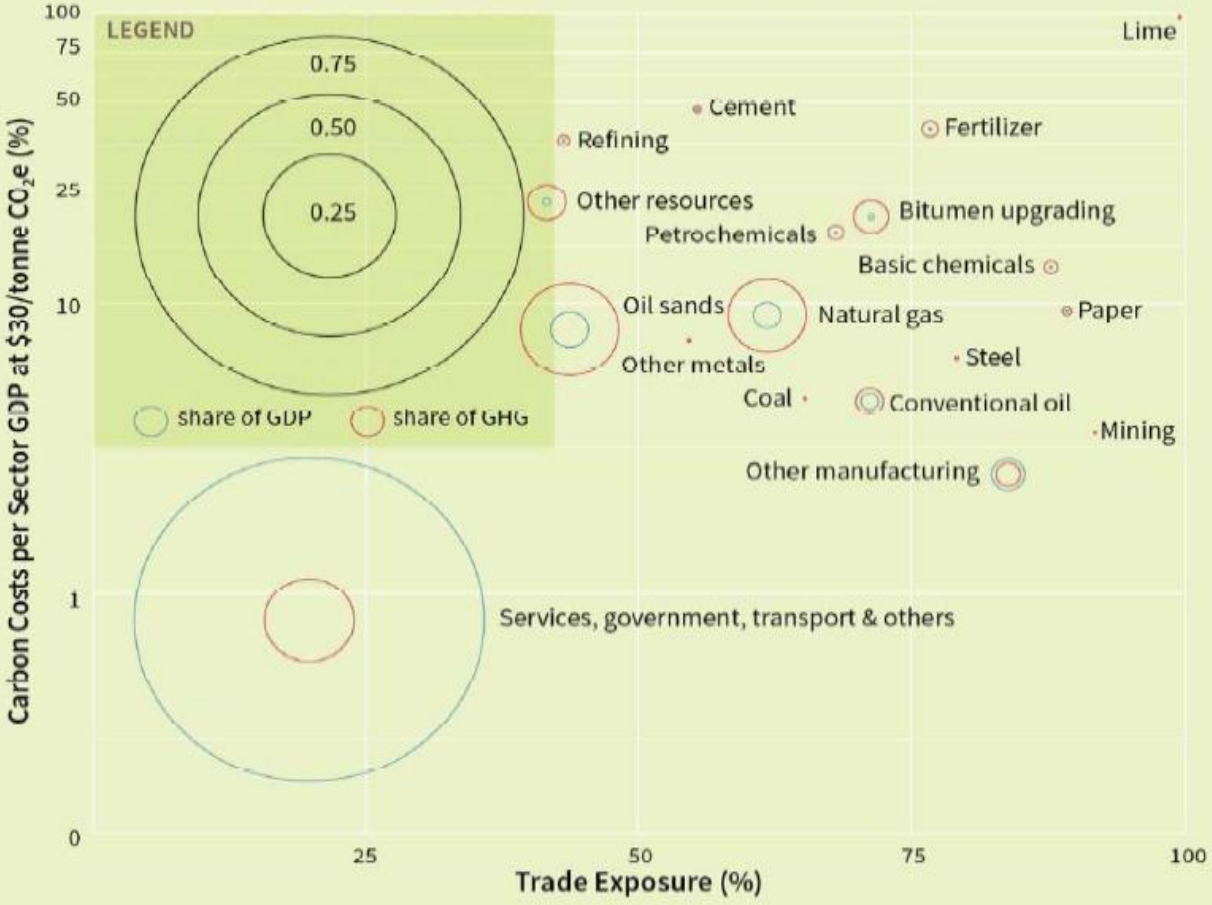
Source: Modelling analysis from Canada's Ecofiscal Commission and Navius Research.

Canadian Example: Alberta
Competitiveness Pressures By Sector

FIGURE 1b: Competitiveness Pressures by Sector in Alberta



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Source: Modelling analysis from Canada's Ecofiscal Commission and Navius Research.

EITEs in Alberta (Many High Risk)

Trade is ~80% of AB Market

	Trade Exposure	Index (1 = EITE Average)
Pulp, paper and paperboard mills	95%	1.35
Non-ferrous metal (except aluminum) production and processing	94%	1.34
Resin, synthetic rubber, and artificial and synthetic fibres and filaments	89%	1.27
Alumina and aluminum production and processing	86%	1.23
Meat product manufacturing	86%	1.22
Conventional oil and gas extraction	83%	1.18
Fertilizer	81%	1.15
Cement and concrete product manufacturing	80%	1.13
Non-metallic mineral product manufacturing (except cement)	79%	1.12
Converted paper product manufacturing	78%	1.11
Non-conventional oil extraction	76%	1.09
Coal mining	73%	1.03
Crude oil and other pipeline transportation	71%	1.01
Other chemical product manufacturing	70%	0.99
Plastic product manufacturing	69%	0.98
Petroleum refineries	57%	0.81
Petroleum and coal product manufacturing (except petroleum refineries)	53%	0.75
Basic chemical manufacturing	52%	0.73
Pipeline transportation of natural gas	26%	0.37
Electric power generation, transmission and distribution	9%	0.12

Alberta EITEs

Sector Indicators of Exposure

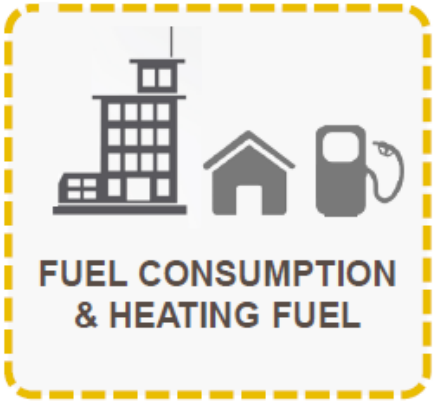
	Trade Exposure	Energy Intensity	Carbon Exposure	Gross Operating Surplus	Overall Rank (average of indicators)
Pulp, paper and paperboard mills	1	12	3	5	1
Fertilizer	7	4	2	13	2
Coal mining	12	5	7	6	3
Pipeline transportation of natural gas	19	3	4	7	4
Alumina and aluminum production and processing	4	17	9	4	5
Non-metallic mineral product manufacturing (except cement)	9	10	6	11	6
Electric power generation, transmission and distribution	20	2	1	14	7
Non-ferrous metal (except aluminum) production and processing	2	19	15	1	7
Converted paper product manufacturing	10	16	12	3	9
Cement and concrete product manufacturing	8	11	14	8	9
Resin, synthetic rubber, and artificial and synthetic fibres and filaments	3	14	10	15	11
Basic chemical manufacturing	18	1	8	18	12
Meat product manufacturing	5	20	20	2	13
Conventional oil and gas extraction	6	8	17	17	14
Non-conventional oil extraction	11	7	11	19	14
Other chemical product manufacturing	14	13	13	10	16
Crude oil and other pipeline transportation	13	15	5	20	17
Petroleum refineries	16	9	19	12	18
Petroleum and coal product manufacturing (except petroleum refineries)	17	6	18	16	19
Plastic product manufacturing	15	18	16	9	20

Canada Federal Carbon Pricing: Output Based Pricing System (OBPS)

FUEL PRODUCTION AND DISTRIBUTION

- Pay fuel charge to GoC
- Proposed 2019 rates (= $20/t CO2e)
  - Gasoline: 4.42 ¢/L
  - Light fuel oil: 5.37 ¢/L
  - Natural gas: 3.91 ¢/m^3
  - Propane: 3.10 ¢/L
- Some exclusions

FUEL DELIVERY



- Consumers do not pay the fuel charge directly to the federal government
- Fuel price paid by consumers may have costs of the fuel charge embedded
- Registered OBPS facilities would generally not pay the charge on fuels that they purchase
- Instead, would be subject to the carbon price on the portion of emissions above a facility emissions limit

Canada Federal Carbon Pricing: OBPS is *SIMPLEST* of Terms..

- OBS provides significant reduction in competitiveness impacts for included industry
- Original proposed OBS starting point was 70% of production-weighted national average emissions intensity
  - Adjustments to be made based on engagement, and preliminary analysis of competitiveness impacts

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Lessons Learned #1

Ex-post examinations of actual leakage find little evidence for it

Low carbon prices in many schemes translate to only a small impact of carbon pricing relative to other cost increases

Mitigation policies such as free allowances have successfully blunted leakage risk

Methodological challenges due to the relatively short time period that carbon pricing has been used as a policy instrument

Lessons Learned #2

The types of assistance to support sectors at risk can be integrated within the carbon pricing mechanism or complementary to it

Integrated

Measures integrated into the design of the carbon pricing scheme

Measure	Examples
Free allocation	EU ETS, California, New Zealand, S. Korea
Exemptions	South Africa

Complementary

External measures that operate in parallel to a carbon pricing policy

Measure	Examples
Cash transfers	EU ETS (for indirect emissions costs)
Direct support	New Zealand, Australia

Free allocation of allowances has tended to be the most prevalent measure to mitigate leakage risk in an ETS

Lessons Learned #3

Jurisdictions with an ETS have all provided some support to affected sectors, with assistance provided on a uniform or tiered basis

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Lessons Learned #4

Effective **carbon leakage risk measurement** → Identification

Threshold effects in allowance allocation → Support

Designing **effective product benchmarks** → Support

1. Key **risks and opportunities** for jurisdictions looking to establish carbon pricing initiatives

2. Opportunities for **refinement** of existing schemes