Agricultural Solutions for Carbon Markets: Alberta and Canada's Experience

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1. Global Context
2. Government and Business Response
3. Role of Agriculture
4. Accounting, policy and market considerations in creating opportunities for agricultural innovation

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Policy Approaches – Carbon Management (30:30:30 Challenge)

Regulation ⟷ Market-Based

Imposing Technology Standards	Performance Standards	C Pricing: • Tax – set price (cost) • Emissions Trading – set limits on Volume

Industry Response:

How do we implement the Technology at the lowest possible price?	***What are the suite of technologies available to achieve the performance?***	***Where do we invest to develop and deploy the best technologies?*** ***ROI driven***

Transformative Change

Innovation ⟶

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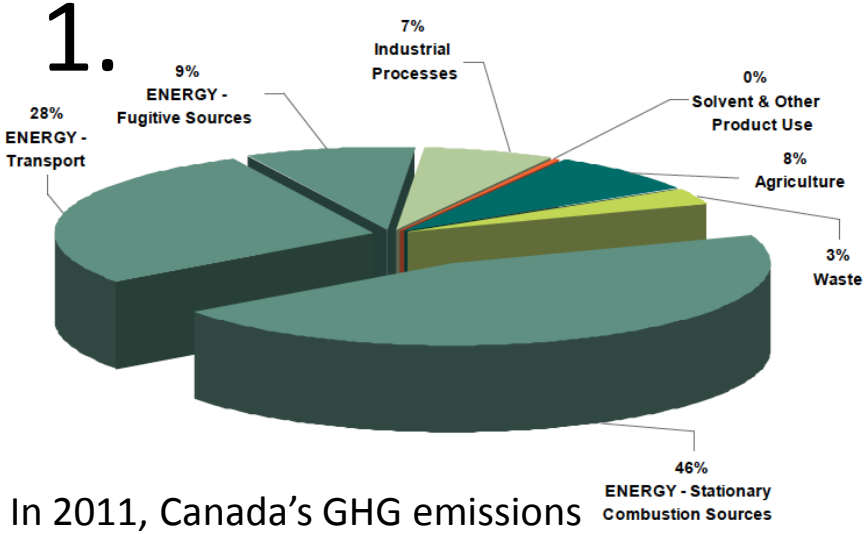
Carbon Pricing

Creating the Incentive to Reduce

1.

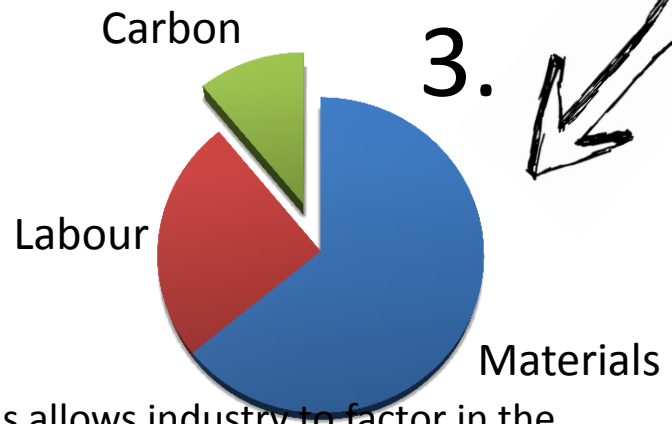


In 2011, Canada's GHG emissions totaled approximately 692 Mt CO_2e with little "carbon" cost to related emitters.

2.

Given the environmental cost to emitting carbon, a carbon price requires polluters to pay for each tonne CO_2e emitted.

3.

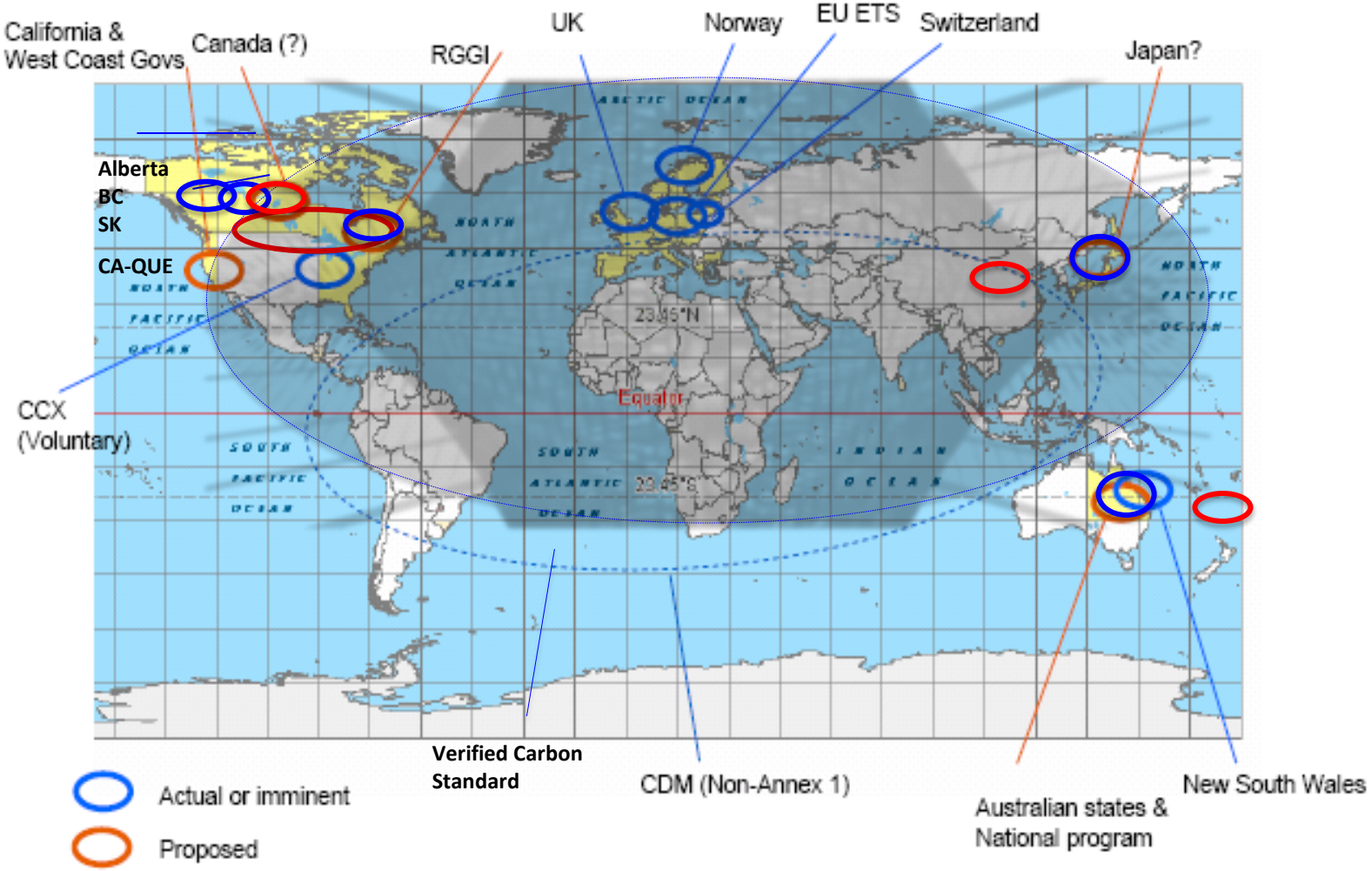


This allows industry to factor in the price or cost into production decisions

4.

Industry finds new, less carbon-intensive means of production

Global Policy Response



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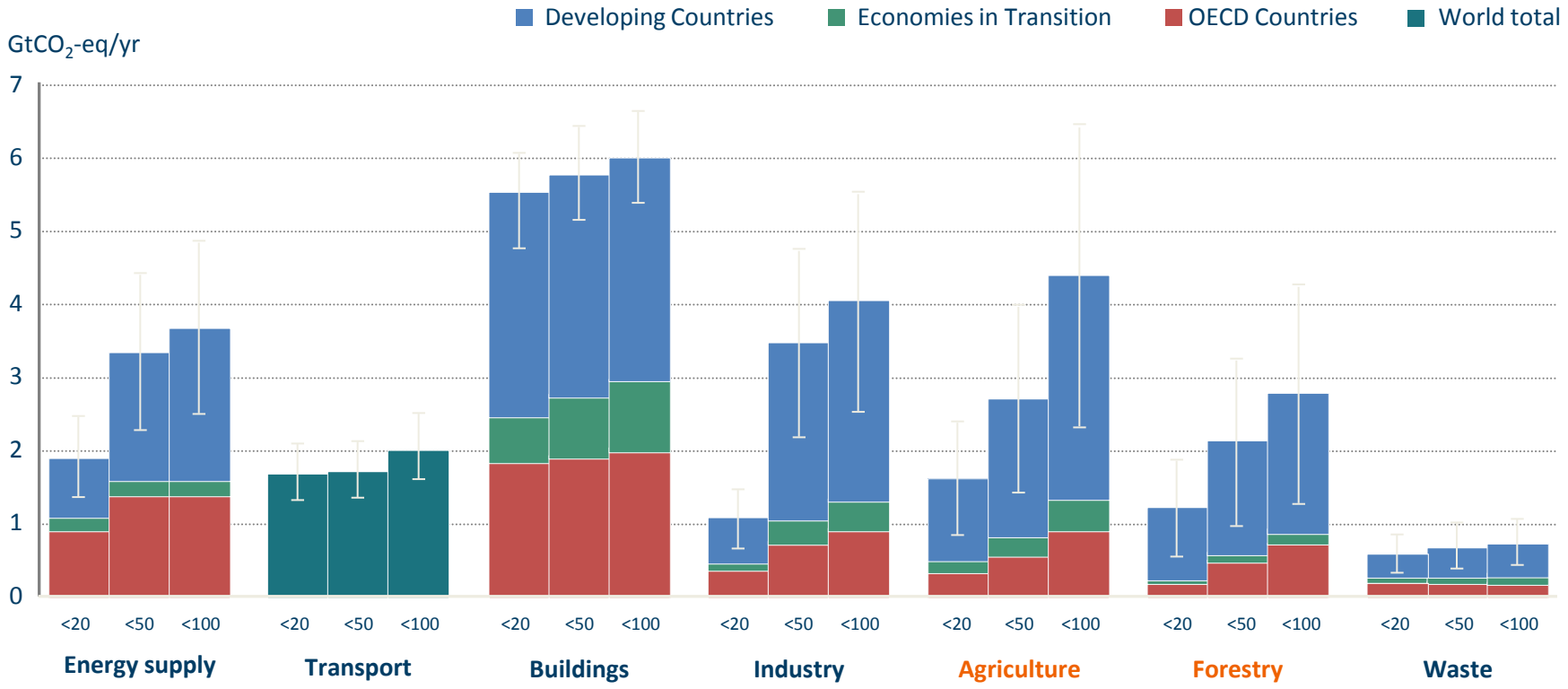
Mitigation Potentials by Sector – Intergovernmental Panel on Climate Change 4th Assessment Report



Relative contribution of Agriculture + Forestry to total mitigation potential

US$ 20/tCO2 – 21%

US$ 50/tCO2 – 32%

US$ 100/tCO2 – 45%

**Slide courtesy of D. Martino, Coordinating Co-Chair of IPCC 4th Assessment Report, Agriculture Chapter*

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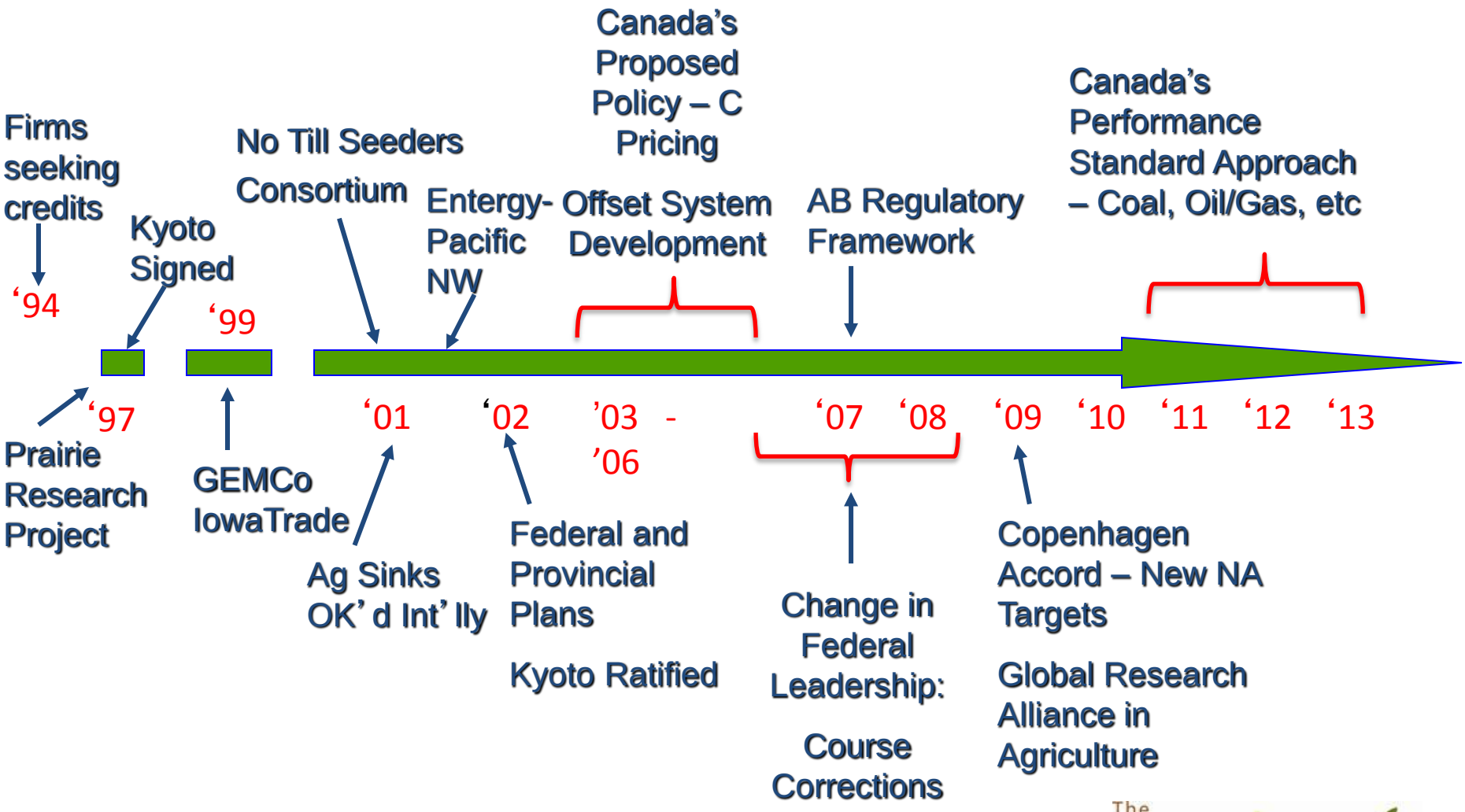
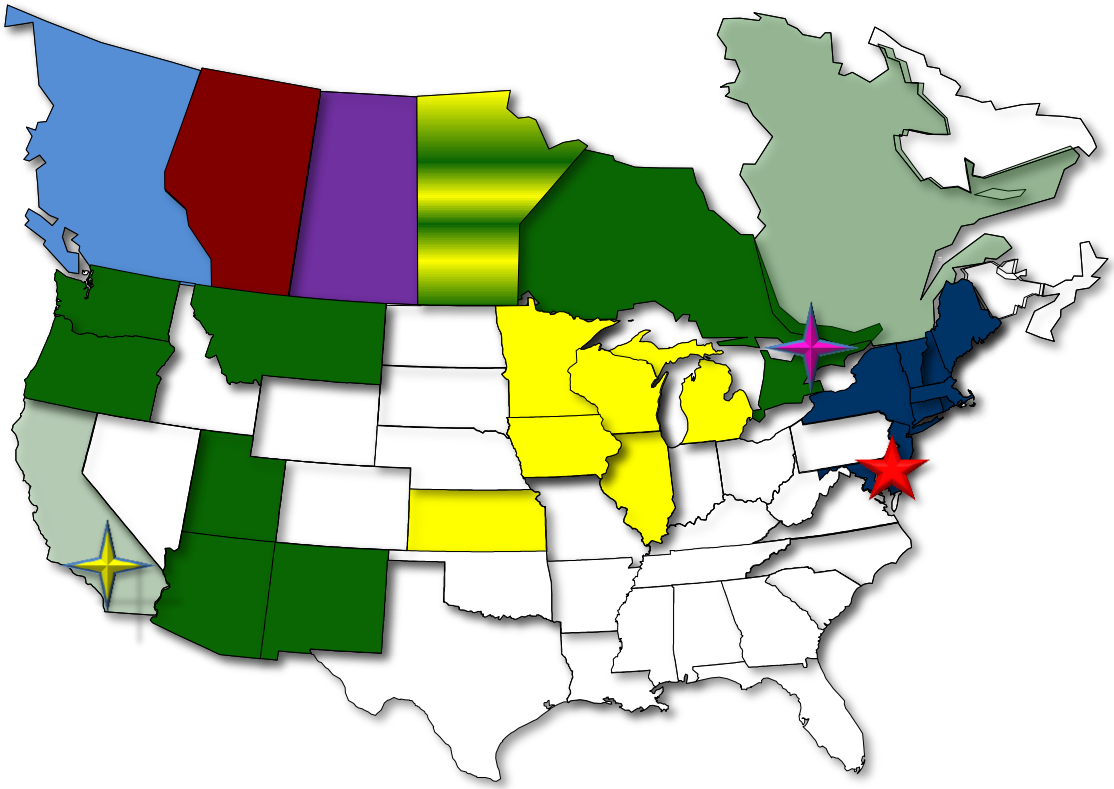
Significant Developments in Canada's Carbon Pathway –Focus on Agriculture



N.A Carbon Pricing Policies



- A comprehensive, Pan-North American approach is not in sight
- Regional Initiatives aligned in economies with 'like' assets and liabilities is the reality

Western Climate Initiative † *

Midwestern GHG Reduction Accord*

SK Bill 126

Performance Standards by Sector

American Federal Initiative*

Regional GHG Initiative

AB Specified Gas Emitters Regulation

California AB32

BC Cap and Trade Act

* Not in effect currently
† Enabling policies have been implemented
British Columbia is moving forward as is Quebec and California

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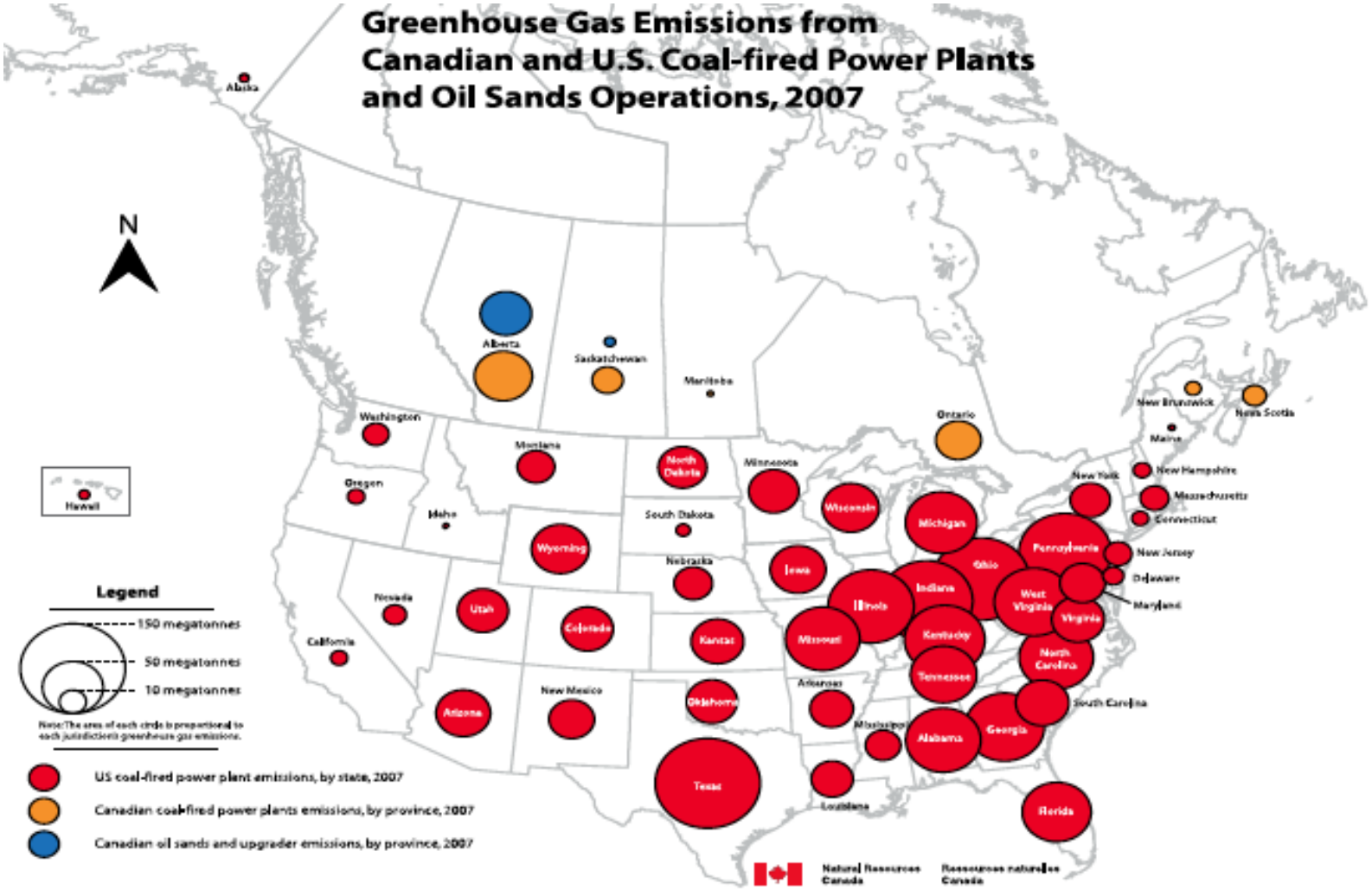
The Complexity of Carbon



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Carbon and Business

- **Capital Markets** – redefining the role of businesses in society (carbon was novel risk in 2006; now mainstream)
  - Global Carbon Disclosure Project (534 investors > $64 Trillion in Managed Funds) &
  - Global Reporting Initiative (24% of S&P 1200 Index companies)
- **Driving integration Corporate Social Responsibility Initiatives** – "Carbon Enterprise Accounting"
  - US Securities and Exchange Commission and EPA rulings in the US; as well as in Canada, means Carbon Enterprise Accounting and subsequent disclosure of carbon risk to investors, is a common industry practice

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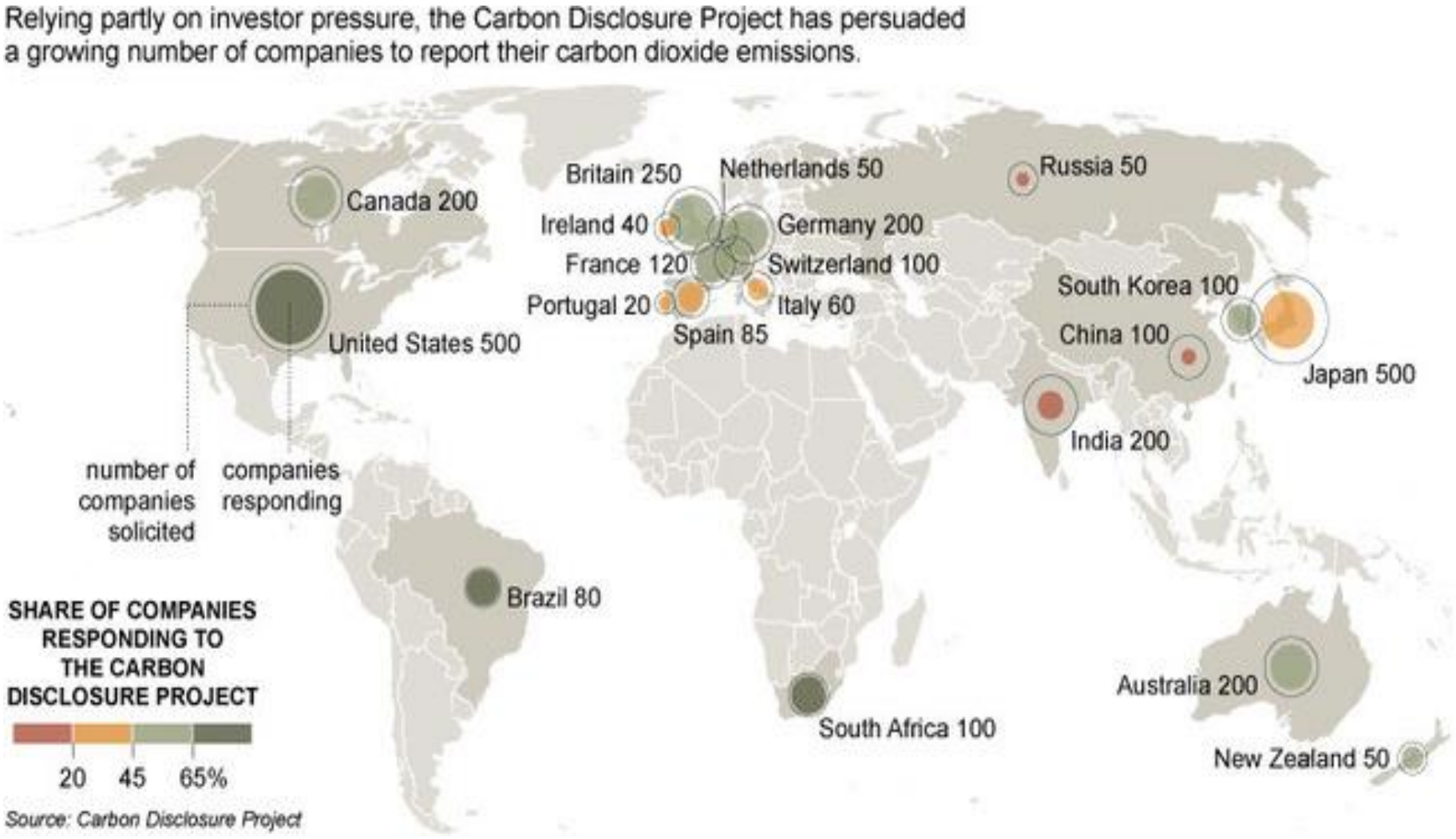

Carbon Disclosure Project

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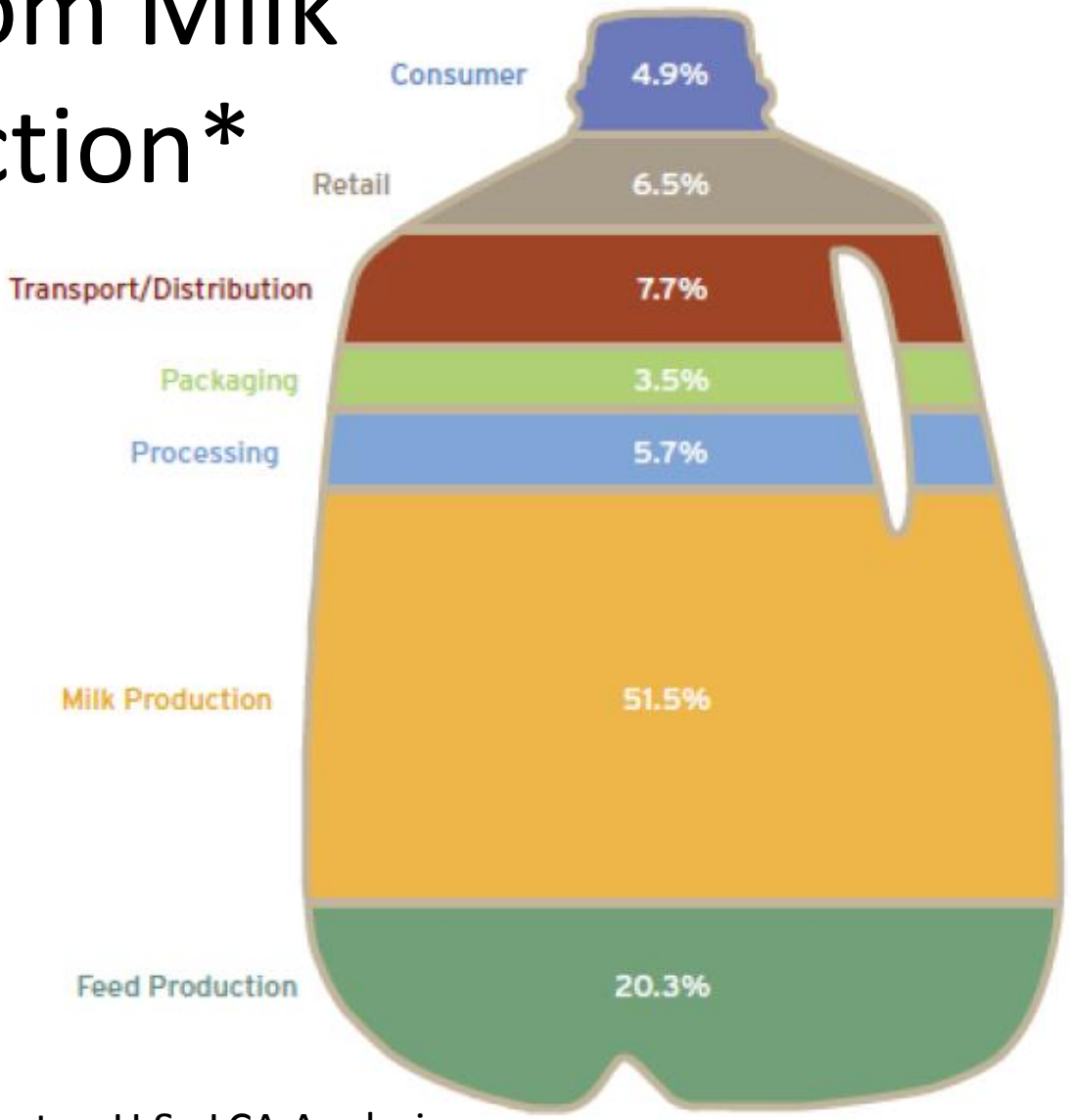
World’s Largest Grocer

- Goal: Eliminate 20 million metric tons of greenhouse gas (GHG) emissions from Walmart's global supply chain by the end of 2015.

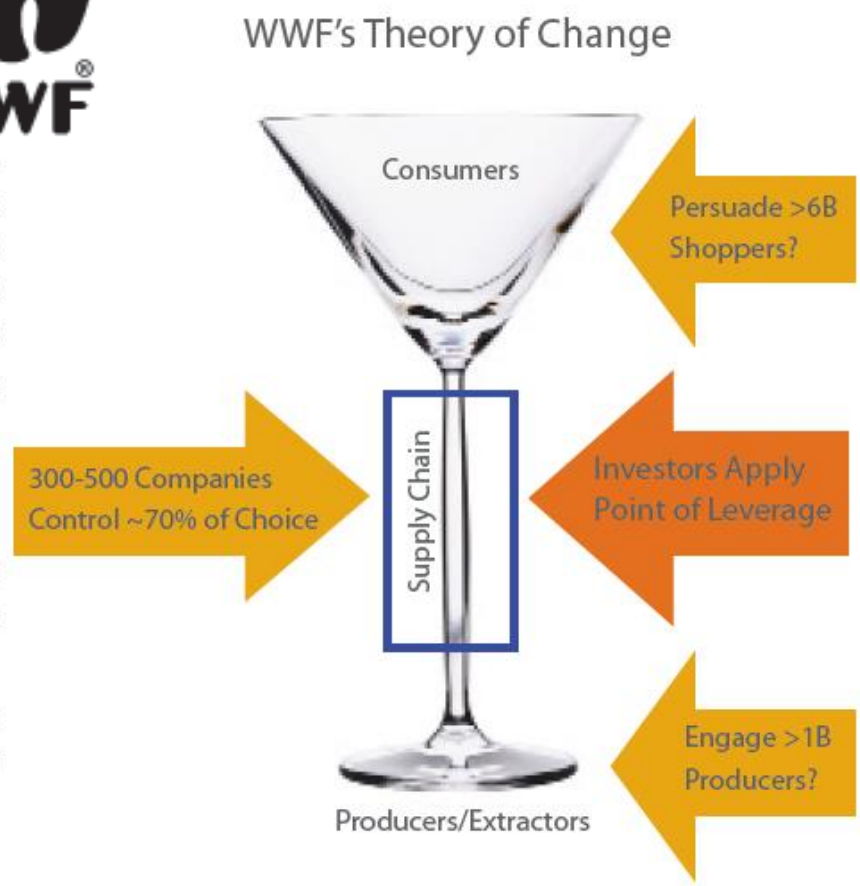
Walmart

GHGs from Milk Production*

In US, most milk GHG emissions from on-farm activity.



*Dairy Innovation Centre, U.S. LCA Analysis



- 15 Agri-Food Commodities Targeted

- Work with the top 100 companies who control 25% of the trade

- Will pull sustainable production standards to 60-70% of the supply

World Wildlife Fund

Eg. Sustainable Agriculture Index

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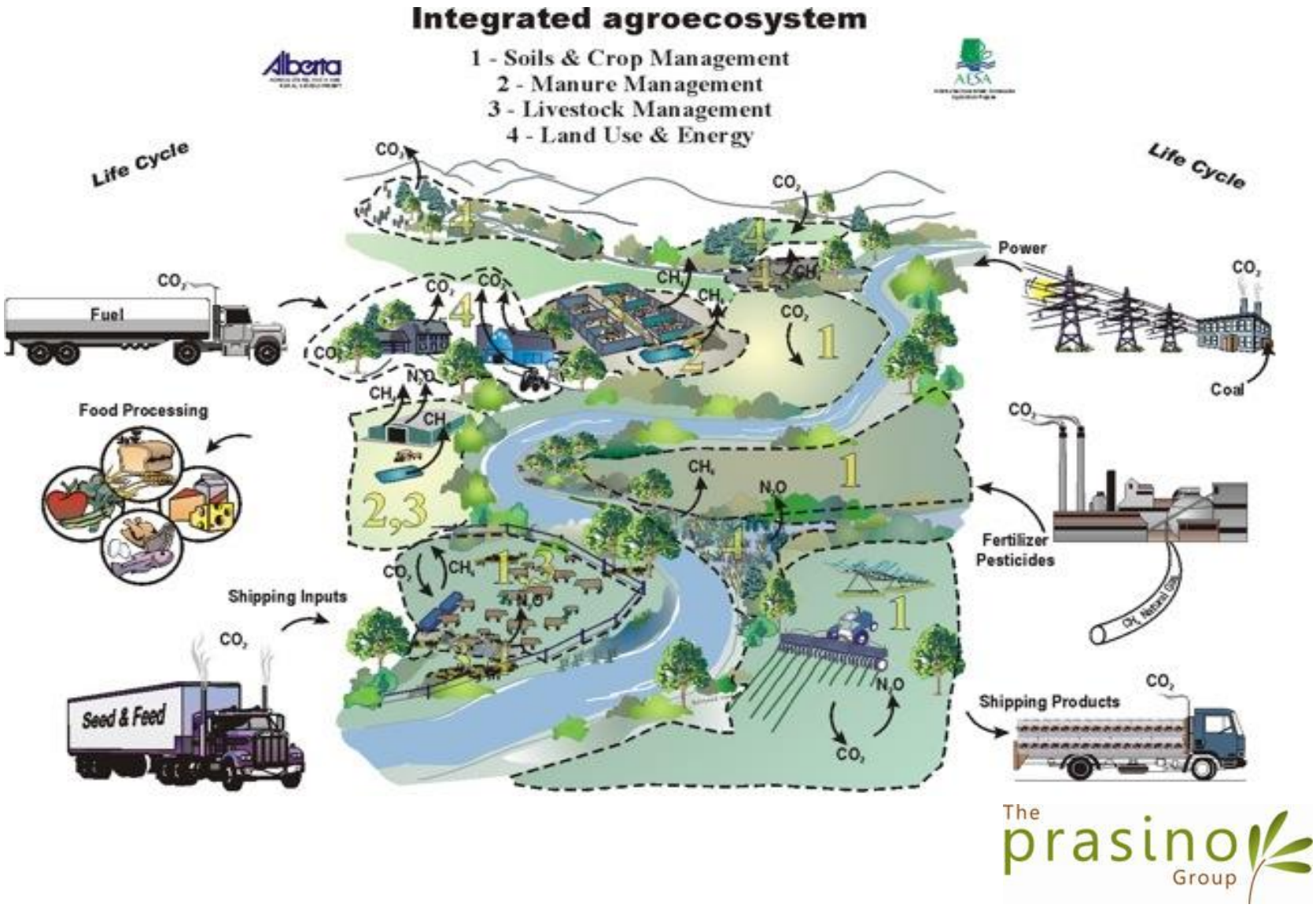
The Complexity of Carbon in Agriculture



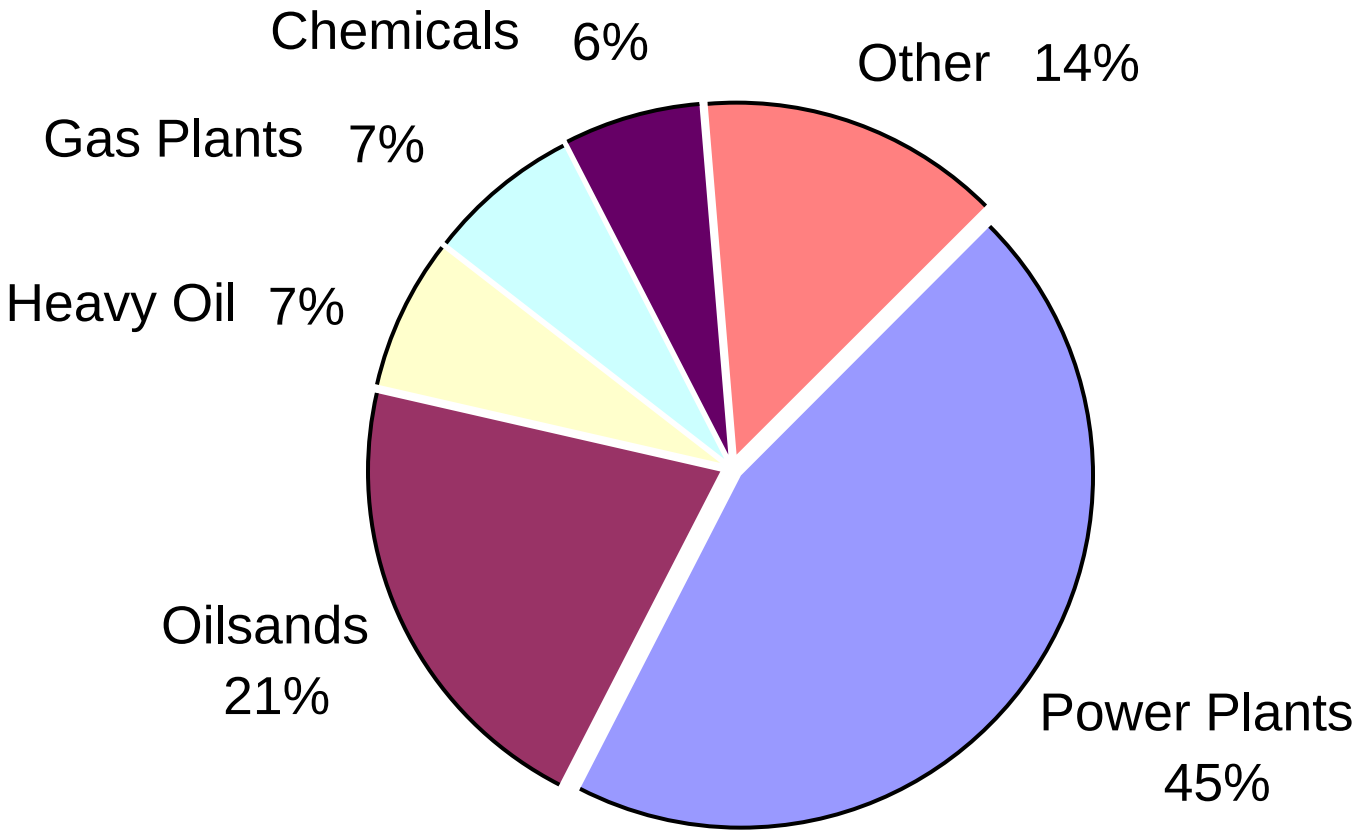
Alberta's Carbon Pricing Policy: (SGER), *CCEMA*

- In 2007, Alberta regulated large industrial GHG emissions
- Existing facilities required to immediately reduce per unit GHG output by 12%
- Three compliance options:
  - Physically reduce emissions
  - Purchase serialized Alberta offsets
  - $15 dollar/tonne towards technology fund

RESULTS (March 2012):

- 32 million tonnes of emissions avoided (from BAU)
- $312 million into the Climate Change and Emissions Management Fund
- $161 million invested in clean energy projects

Large Emitters Profile
(>100,000 tonnes CO2e/year)

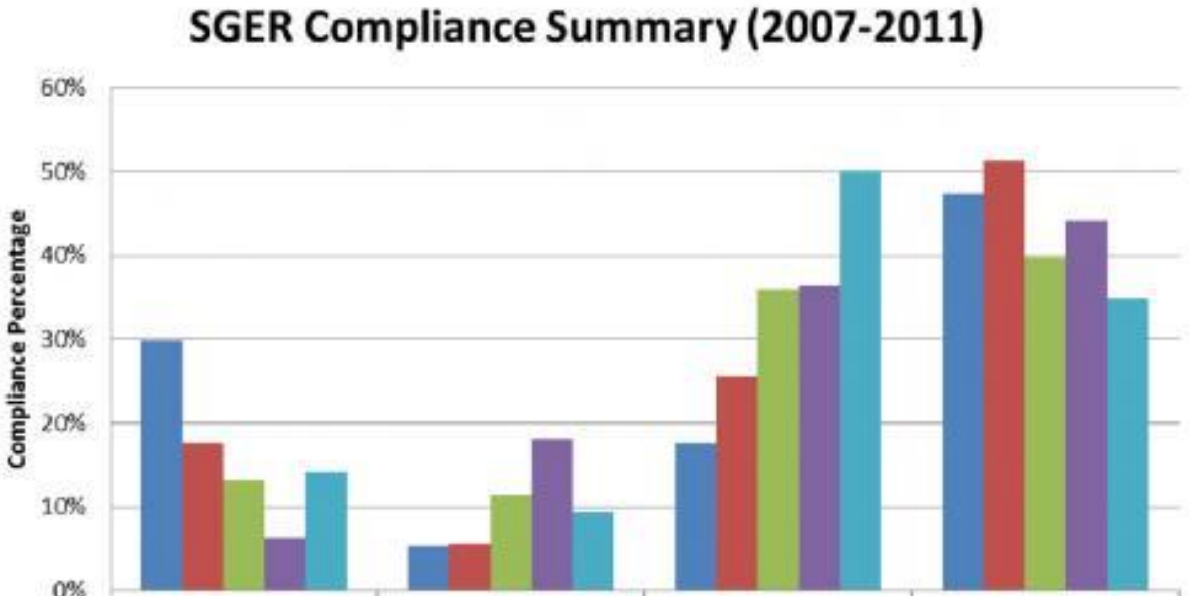


Alberta Reporting Program - 2010

Current Alberta Status

Compliance at a Glance

- As of December 2012, the province has:
  - ✓ collected more than $320 million in the CCEMC fund
  - ✓ 133 offset projects registered that account for over 26 million tCO_2e in emission reductions



	Internal Improvements	EPCs Retired	Alberta Offsets	CCEM Fund Payments
2007	30%	5%	18%	47%
2008	18%	6%	26%	51%
2009	13%	11%	36%	40%
2010	6.4%	18.1%	36.4%	44.1%
2011	14.2%	9.4%	50.0%	34.8%

Source: Alberta Offset System Compliance at a Glance
http://carbonoffsetsolutions.climatechangecentral.com/policy-regulation/alberta-offset-system-review

Offset System Status:

Offsets

34 offset protocols

17 Mt of offsets retired to date

Top offsets:

- agriculture (tillage)
- wind
- energy efficiency
- enhanced oil recovery
- nitric acid abatement
- wastewater management

Over 133 Offset Projects; 26 Mt of GHG Emission Reductions (from baseline) – a $100M+ private sector cash injection to the Ag Sector

Alberta
Protocols applicable to agriculture

- Dairy
- Pork
- Beef Feed Efficiency
- Beef Reduced Days to Harvest
- *No-Till/Conservation Cropping*
- Biofuels
- Biogas
- Composting
- Biomass Combustion
- N Use Efficiency in Cropping
- Genetic Selection for Beef Efficiency

(under development):

- Conversion to Perennial Forage

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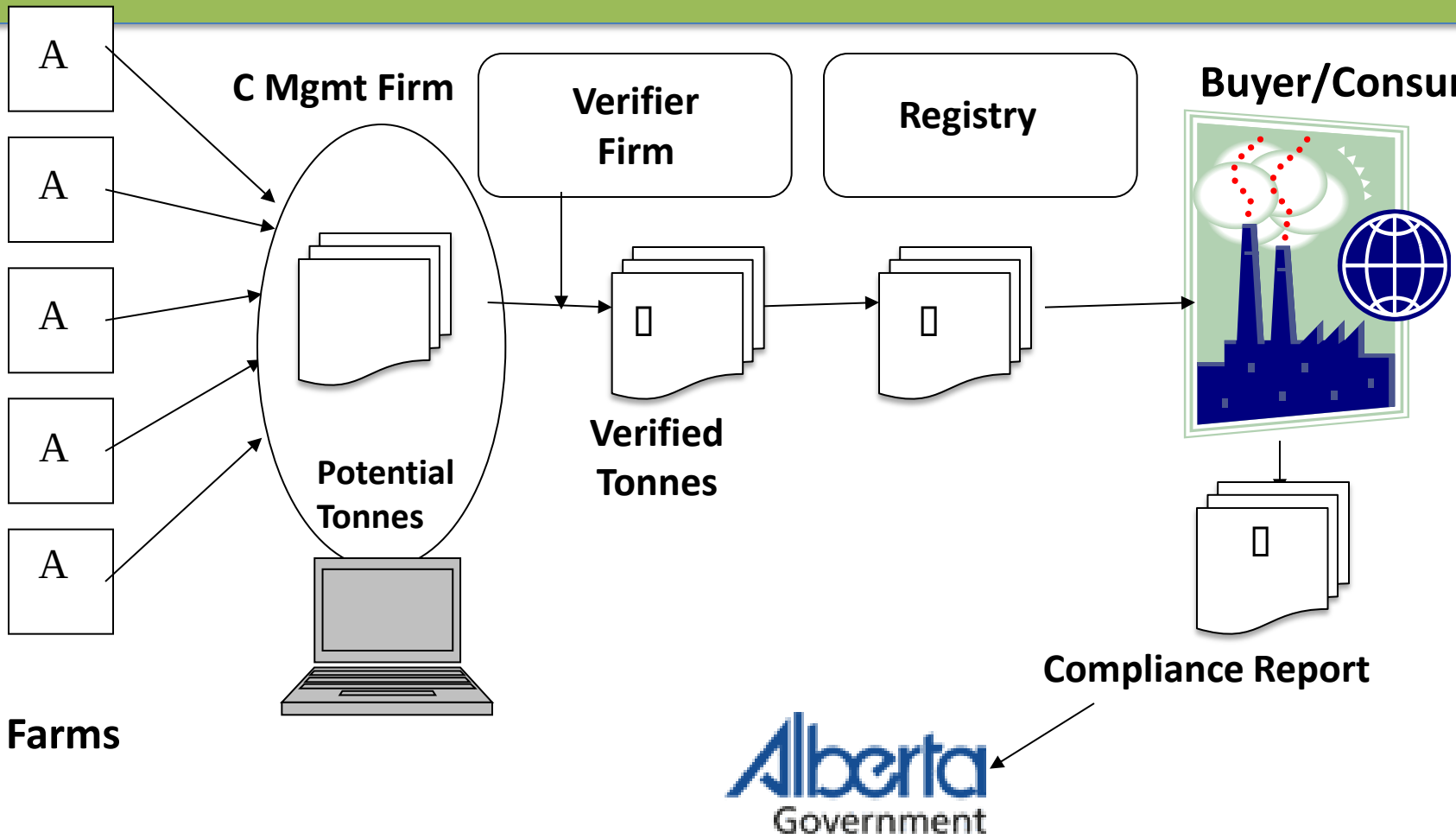
The Carbon Supply Chain



Per Acre C Rate – averages 0.08 tonnes GHGs reduced/acre for No Till – adjusted to meet the Offset Policy Criteria

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Outcomes of AB's Carbon Market

- $100M investment in the Ag 1^{o} sector to date – C another service offering
- Alberta's recognized as a Leader in this Space
- Leveraging federal in-kind - research, protocols, policy
- Farms in Alberta are meeting global data and monitoring standards
- C Platform built by the Carbon Service Providers are housing 'digital footprints' of participating farms
- Ready for Other Ecosystem Service platforms

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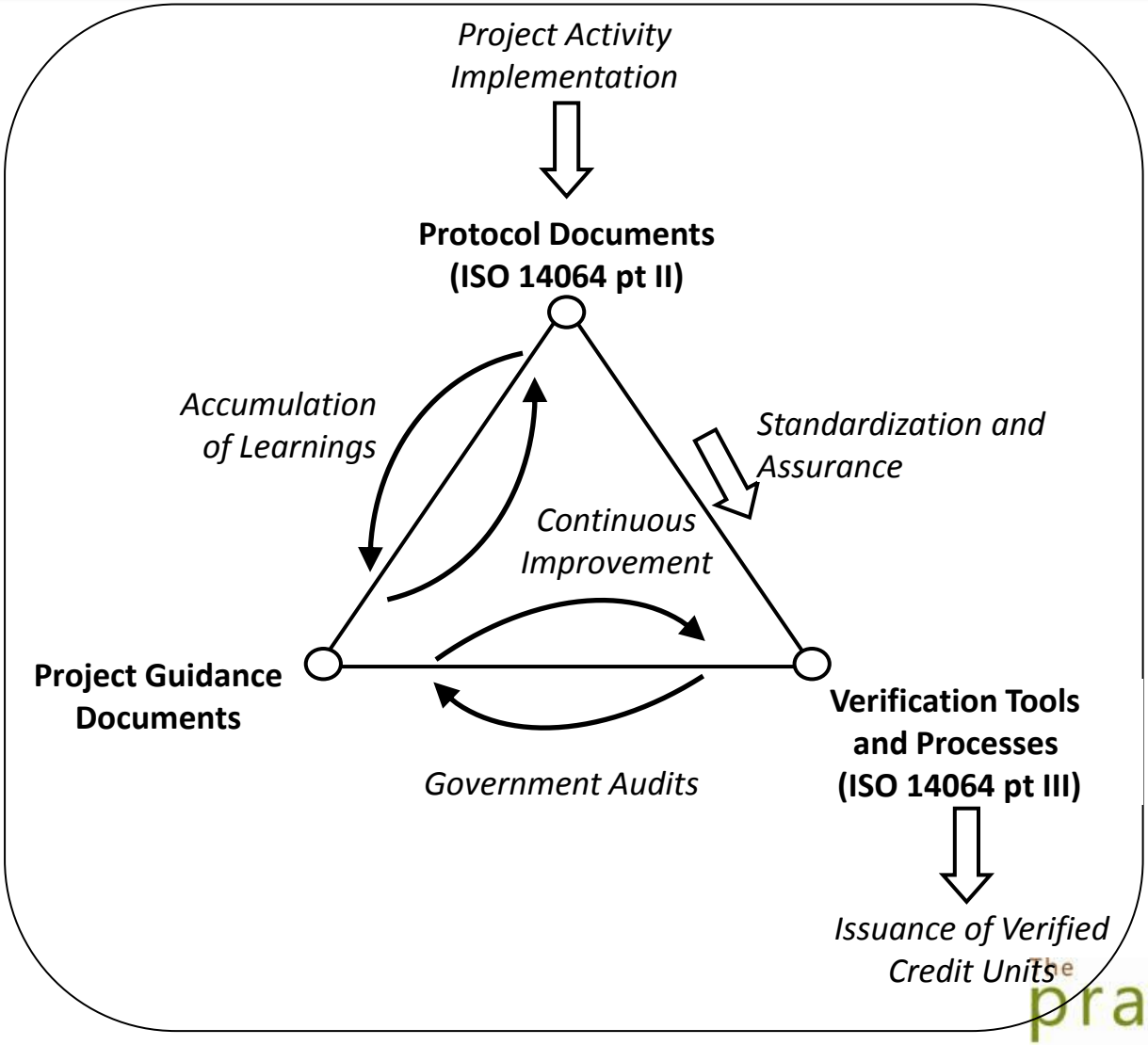
Alberta's Adaptive Management Framework



Alberta's "Learn by Doing" Pathway