Natural Resources Canada | Ressources naturelles Canada

Infrastructure Issues
CSLF Deployment Workshop

CLEAN ENERGY TECHNOLOGIES

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Paris France

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Canada

Overview

The Canadian Situation

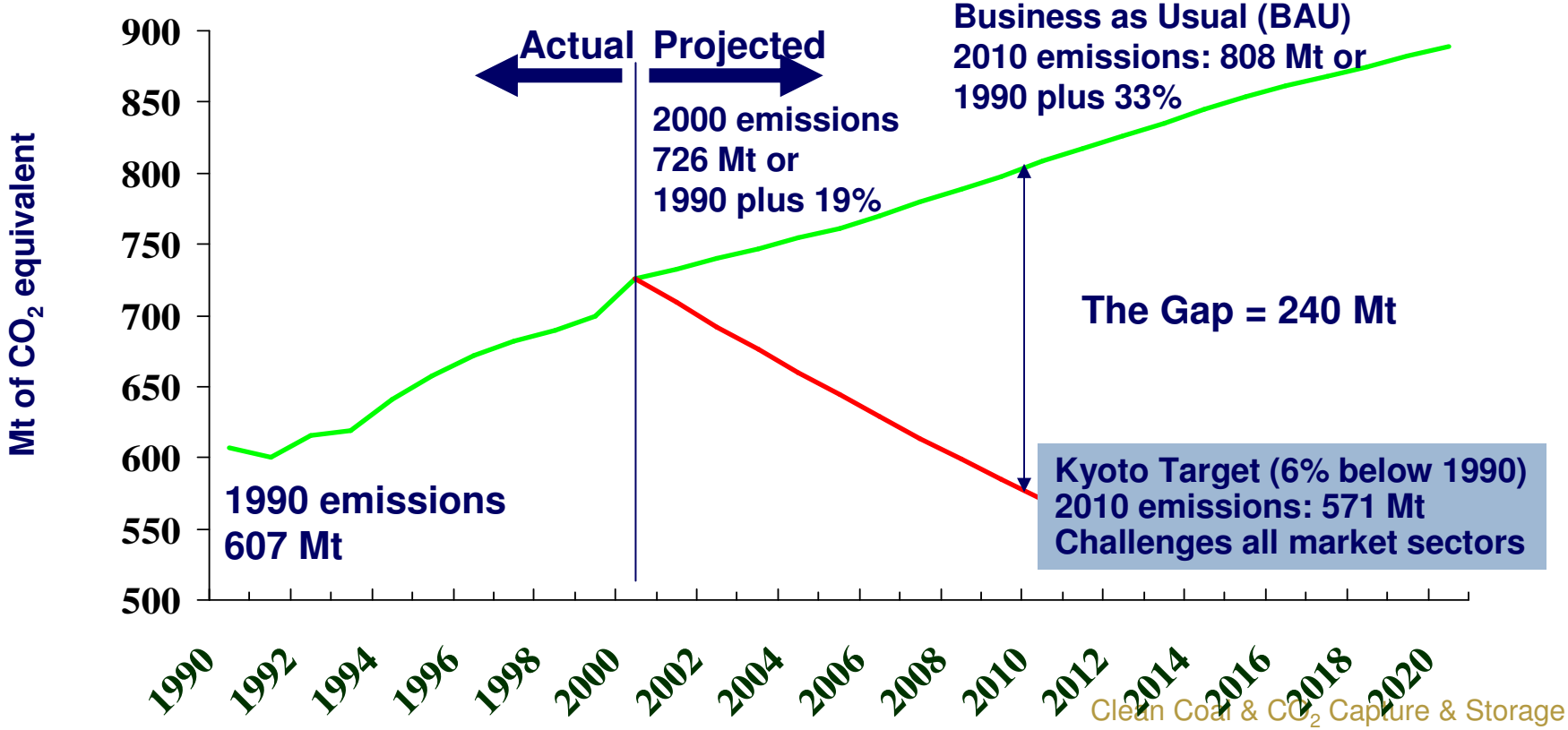
Canada's CCS Technology Roadmap

Technology Initiatives

Policy Initiatives

Canada's GHG Emissions Gap

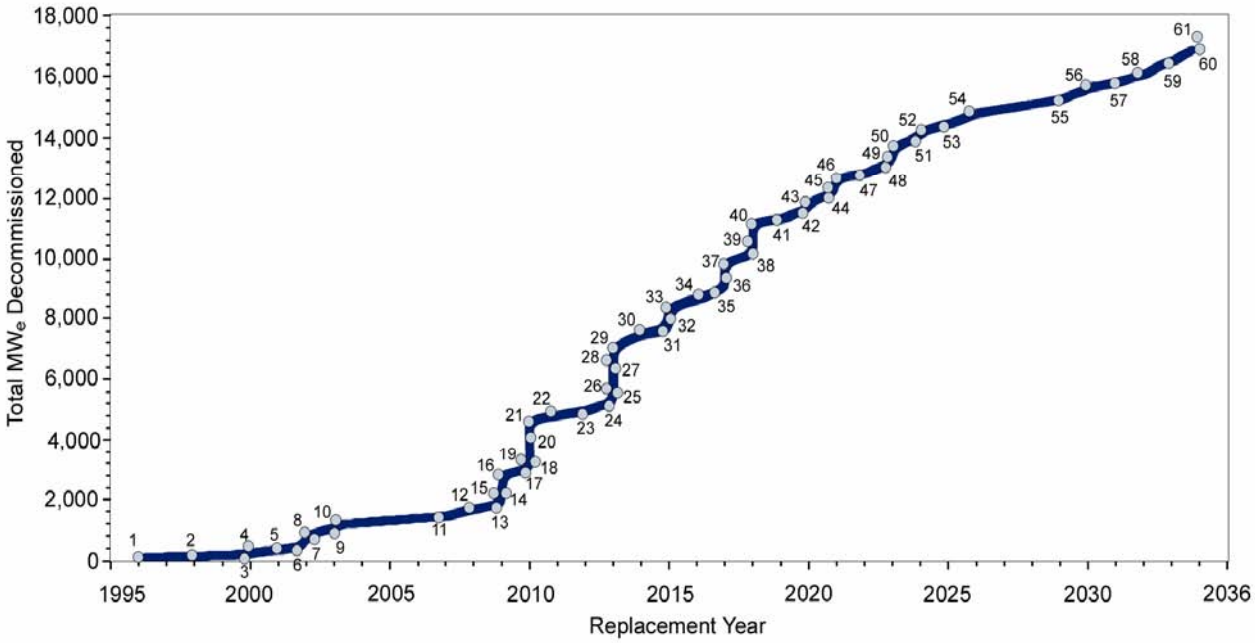
Canada has ratified the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) and thus has agreed to a commitment to lowering its GHG emissions to 6% below 1990 levels during the period from 2008 – 2012.



Resource and Economics

- This figure is a cumulative plot of Canada's coal-fired facilities that will require replacement (expressed in MWe decommissioned) as they reach their 40 year life.

- About half of the current installed capacity is over 25 years old, 33 units will have reached economic maturity by 2015, and 61 will need to be replaced by 2034.



Note: based on a 40 year plant life
(Source: Pearson and Pomalis, 2004)

Resource and Economics

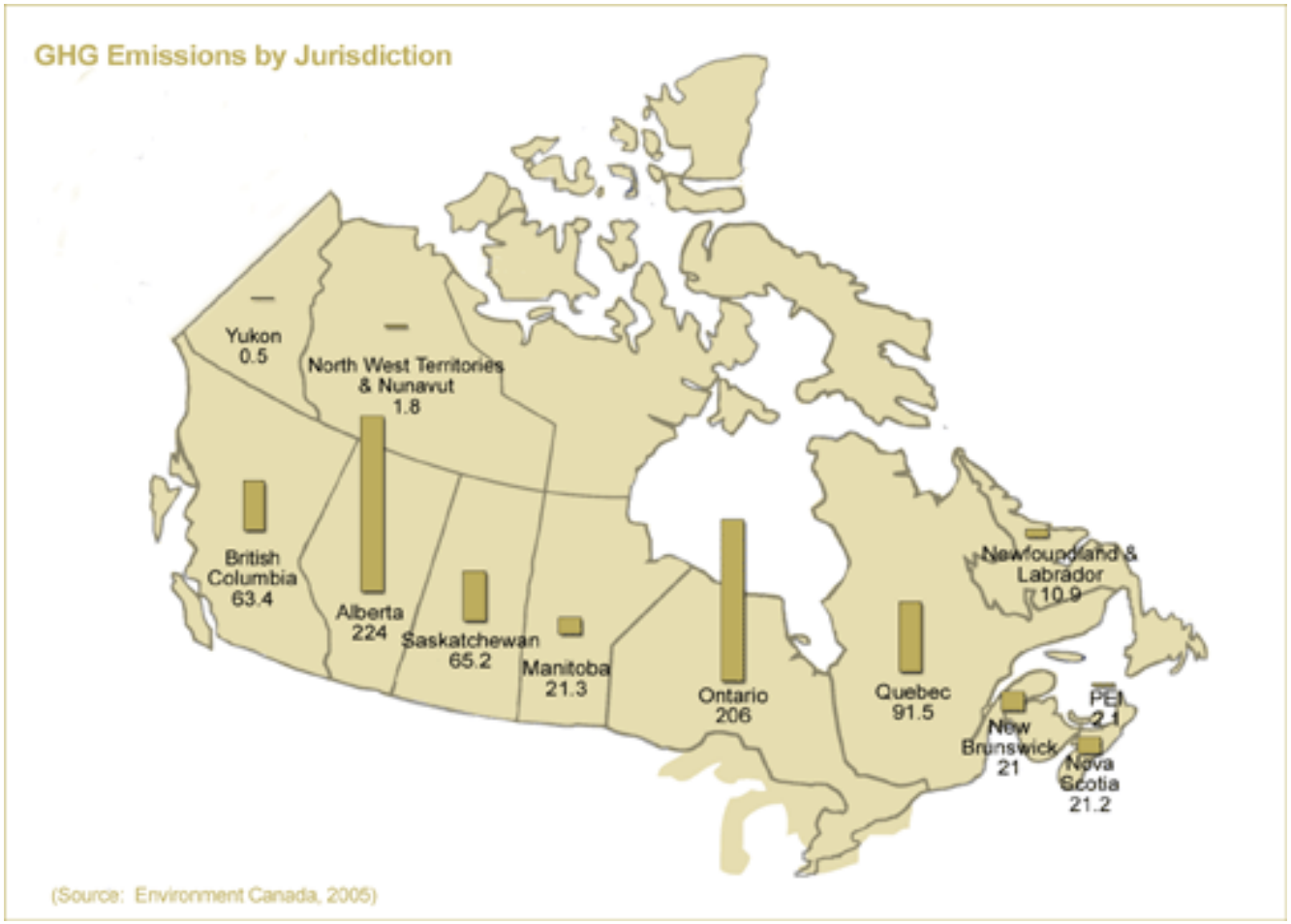
CO_2 Capture & Storage in Canada

- CCS is important on a global scale because of the potential to disconnect the relationship between economic growth and global GHG emissions rates

CCS matters domestically because Canada:

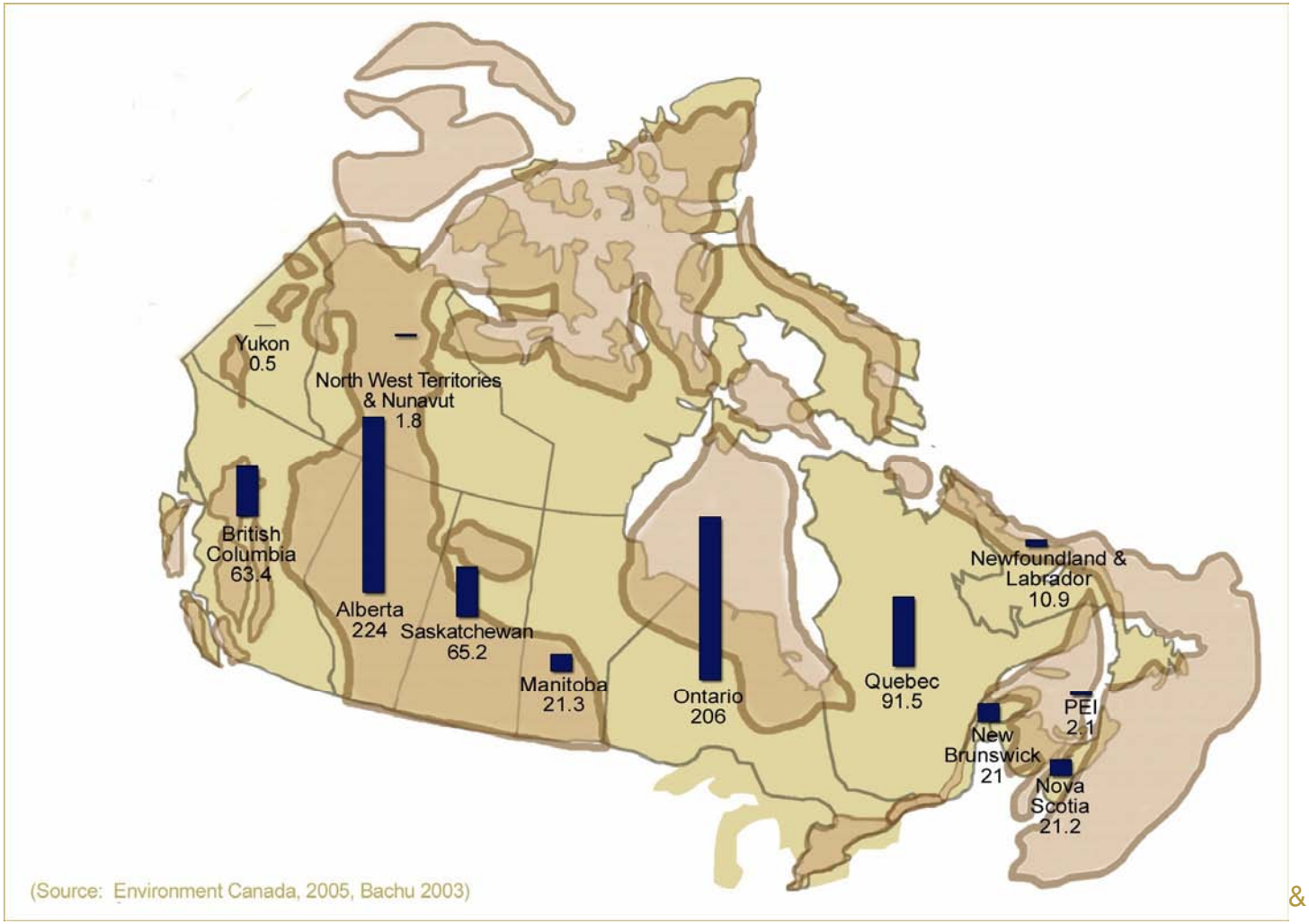
- Depends on its vast fossil fuel resources
- Is a top industrial producer and exporter of fossil fuels
- Has enormous CO_2 storage potential in a variety of regions across the country
- Has the potential to be a global leader in CCS knowledge and expertise

Resource and Economics



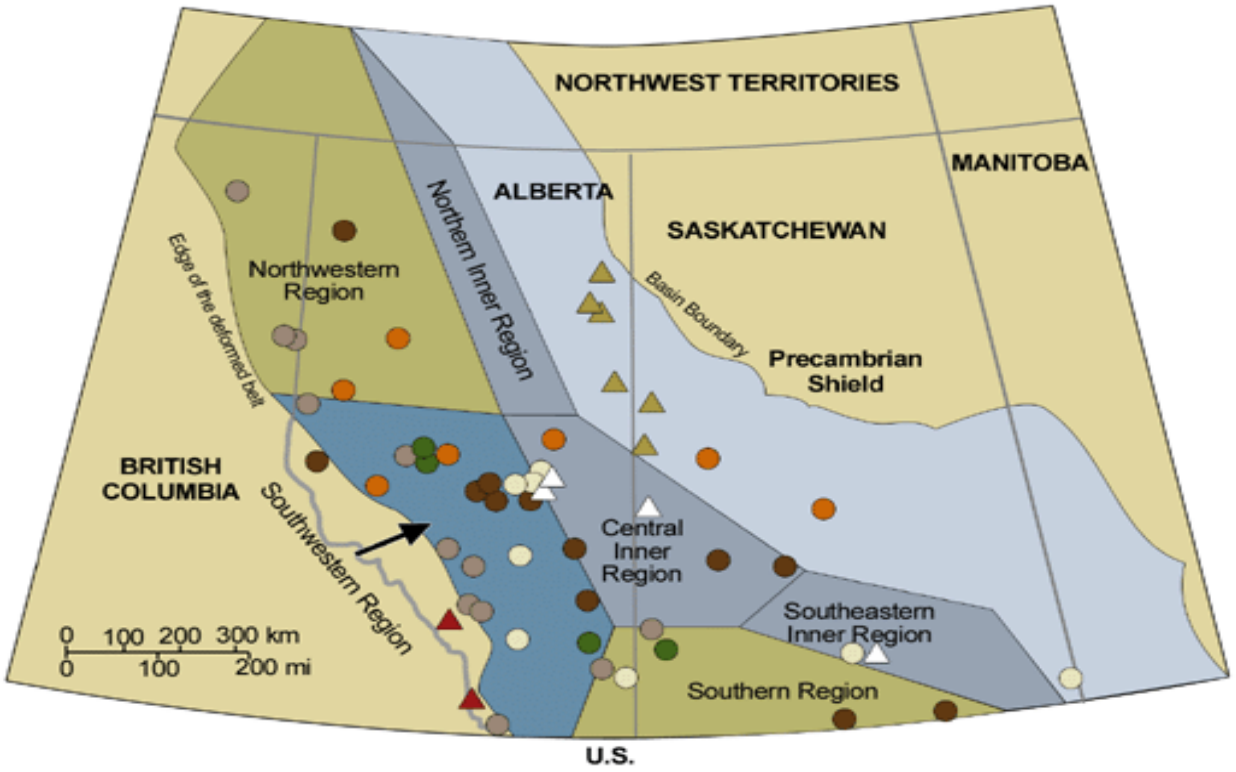
- CCS will contribute to Canada's emissions reduction efforts,
- Many large point sources of CO2 are located near potential storage sites.

Sources and Sinks



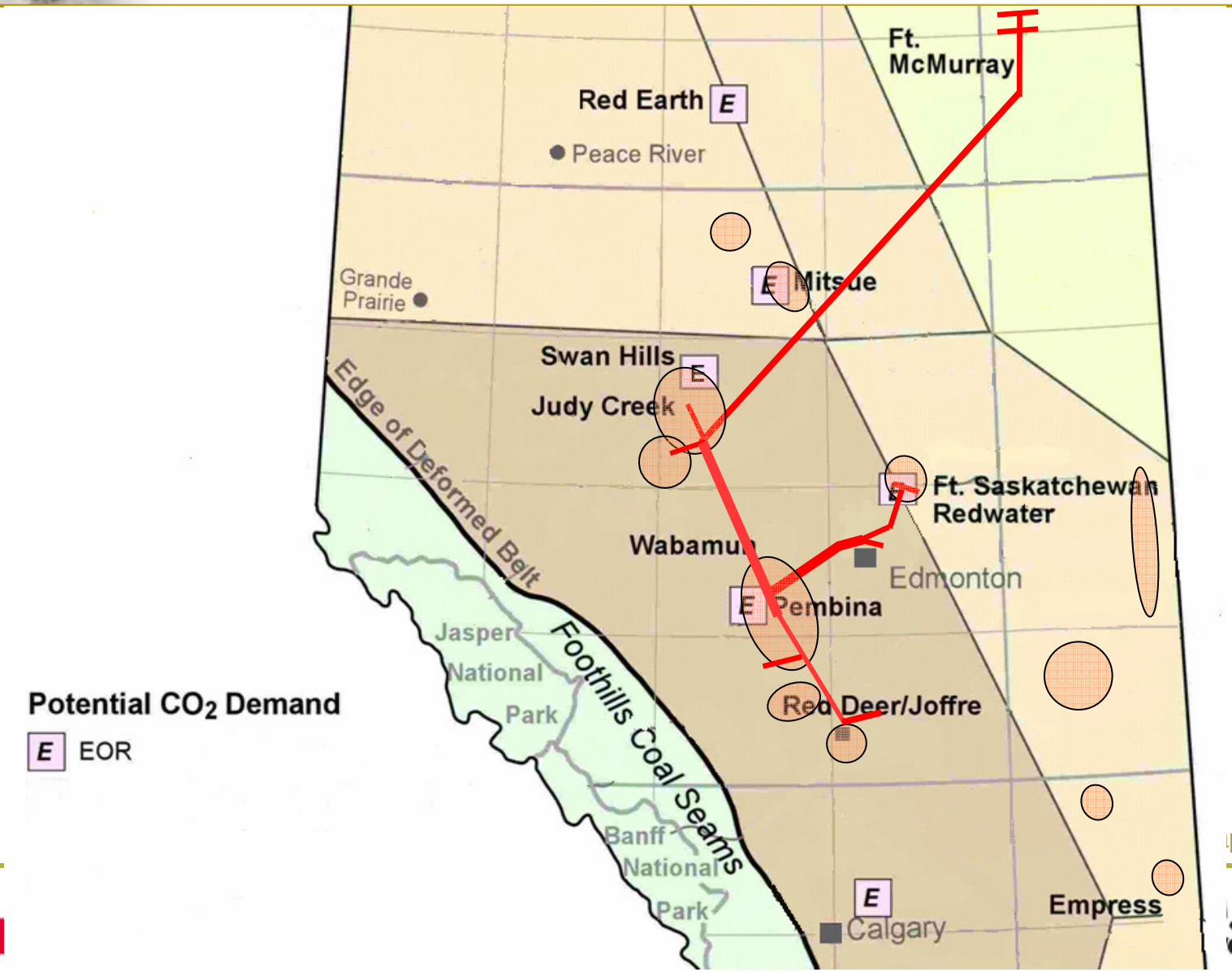
CCS Opportunities in Western Canada

Major CO_2 Sources in the Western Canada Sedimentary Basin



(Source: Bachu and Steward, 2002)

ICO_2N and Other Studies



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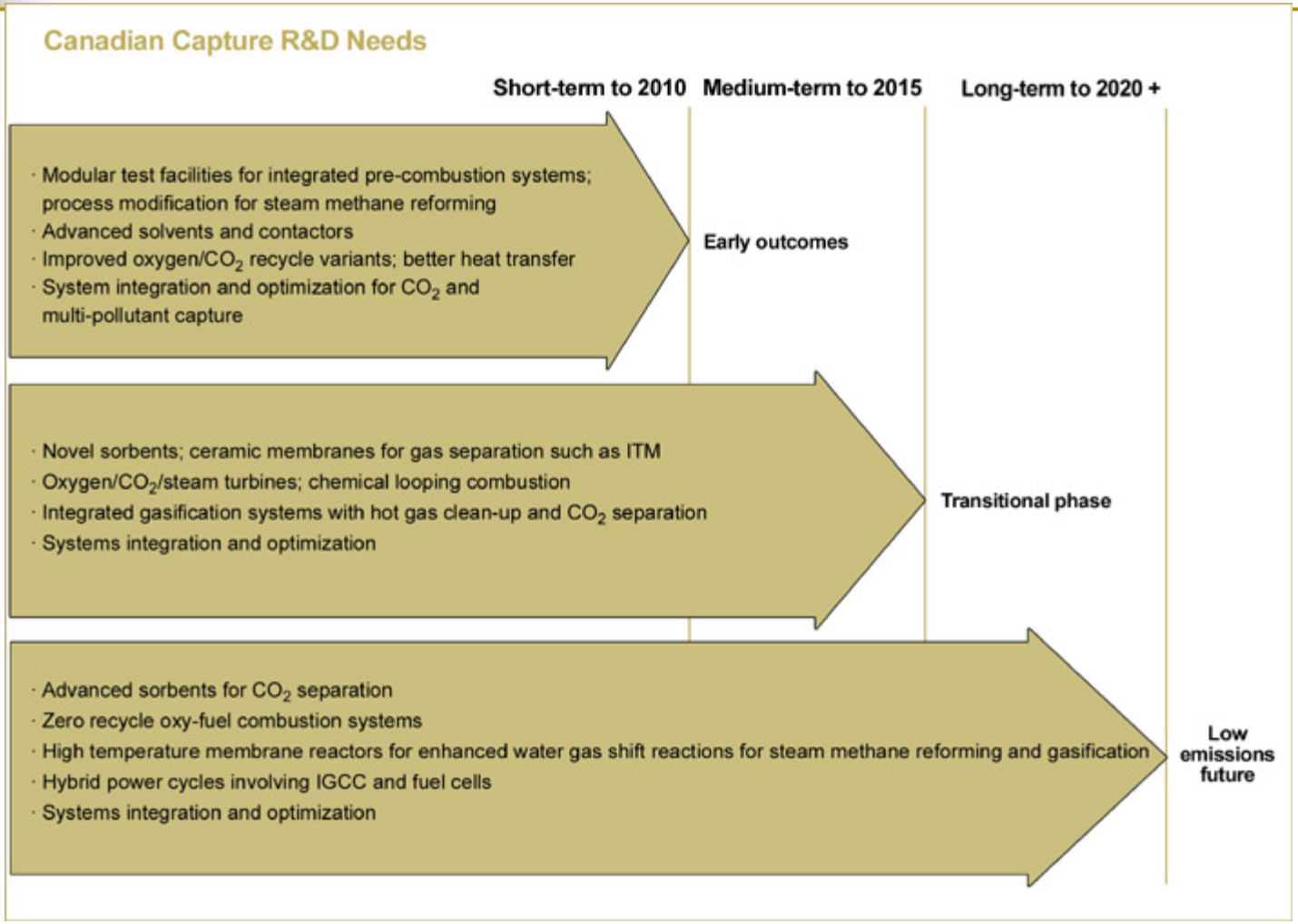
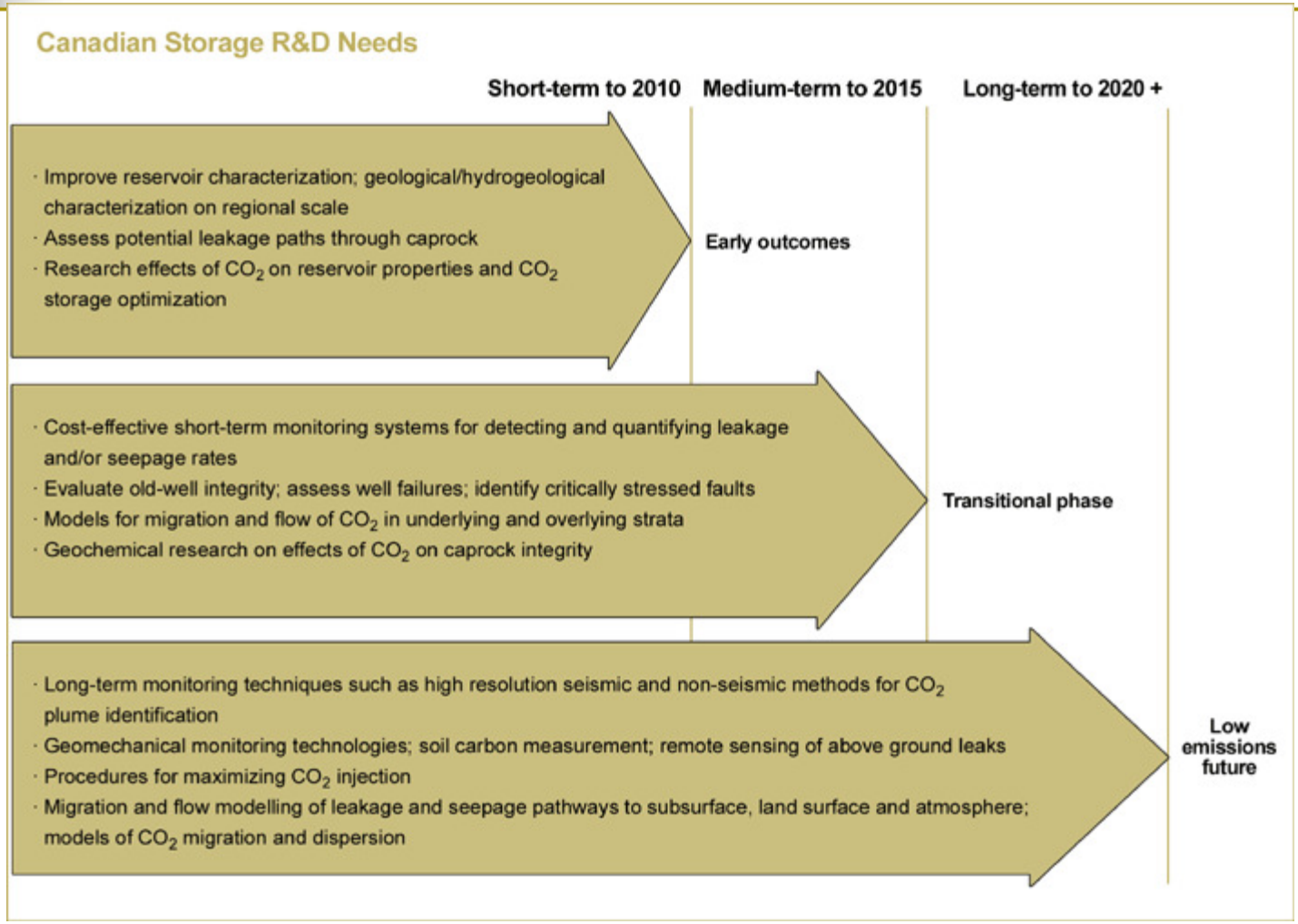
Canada' Technology Roadmap

Technology Principles and Emerging Technologies

Canadian Capture R&D Needs



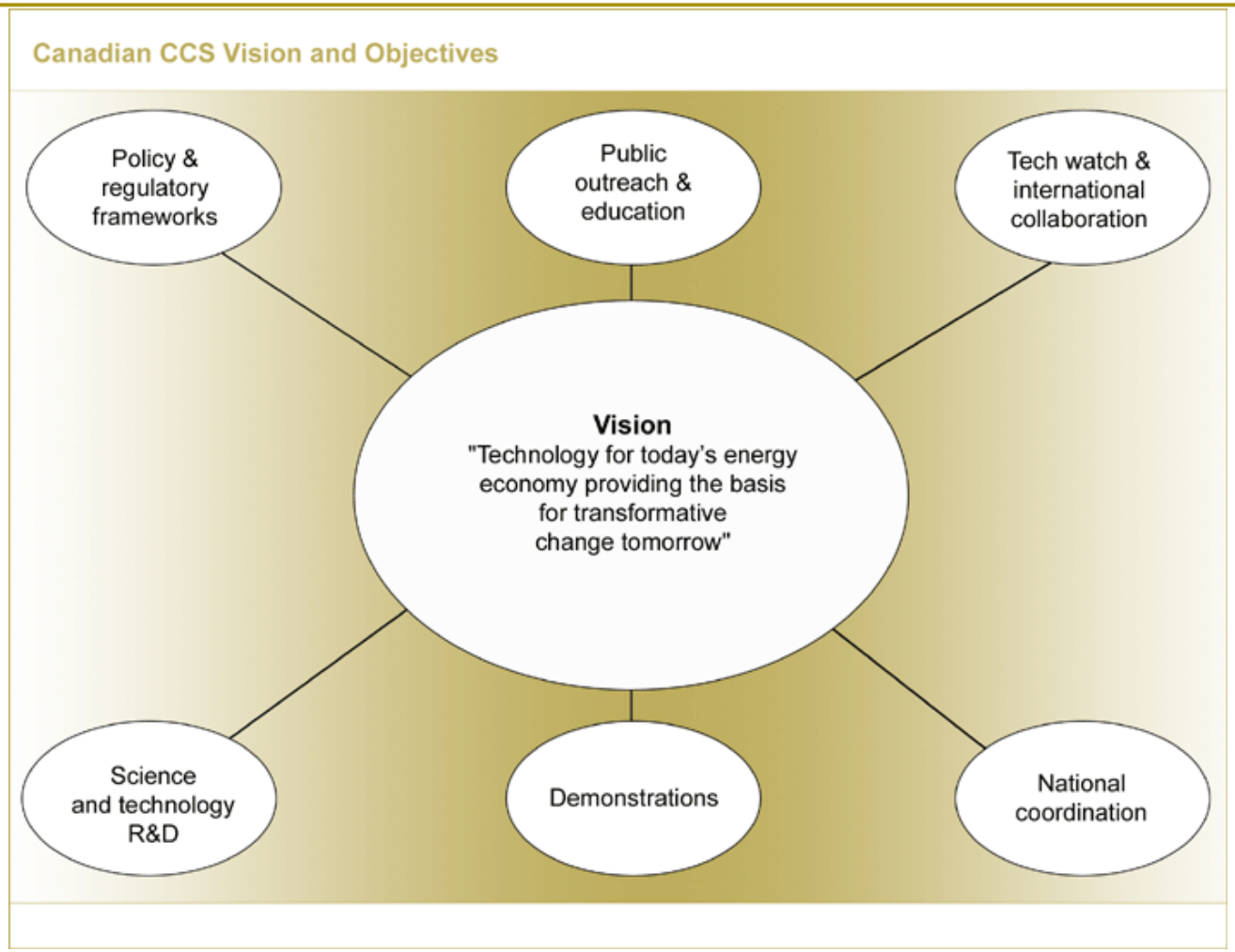
Technology Principles and Emerging Technologies



Issues and Opportunities

- **Achieving a number of critical objectives will help facilitate the development of CCS in Canada**
  - CCS policy and regulatory frameworks
  - Public outreach and education
  - Technology watch and international collaboration
  - Science and technology R&D
  - Demonstrations
  - National coordination

Issues and Opportunities



Technical Initiatives

State of the Art in Canada

Canadian Storage Projects

- Commercial-scale
  - 2 EOR PennWest (Joffre) and EnCana annd Apache (Weyburn-Midale)
  - IEA GHG Weyburn CO2 Monitoring and Storage Project

- Demonstration
  - 4 pilot scale EOR in Alberta, 1 with expanded monitoring program
  - 1 planned ECBM pilot with monitoring

- Acid Gas Disposal
  - Result of sour gas processing, gas stream containing CO_2 + H_2S
  - Can be up to 98% CO_2
  - Approximately 50 sites in AB and BC
  - Storage sites in depleted fields and saline aquifers
  - Approximately 1.5Mt have been stored so far

Technical Initiatives

PM announces $156 million in federal support for GHG reduction projects in Alberta, including pipeline infrastructure

SaskPower announces plans to construct near zero emission coal fired power plant employing oxy-fuel combustion

Federal government to spend $20 million on front end engineering design (FEED) studies for gasification, oxy-fuel combustion and storage projects

Policy Initiatives

Policy Initiatives

PM announces creation of a high level task force consisting of academic and industrial leaders to identify measures required to implement CCS

British Columbia (provincial government) declares no coal fired power plants without CCS

Federal regulations limiting GHG emissions to be announced in next few weeks

Resources

- Canadian Clean Coal Technology Roadmap
  www.cleancoaltrm.gc.ca

- Canadian CO2 Capture and Storage Technology Roadmap
  www.co2trm.gc.ca

- CO2 Capture and Storage Technology Network
  www.co2network.gc.ca