



Natural Resources
Canada

Ressources naturelles
Canada

C E T C

CANMET ENERGY TECHNOLOGY CENTRE

CCS – The Canadian Experience

CLEAN ENERGY TECHNOLOGIES

2nd International Symposium

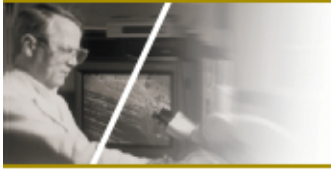
Capture and Geological Storage

October 4, Paris

Bill Reynen

Canada 





Outline

- Canada a Decade Ago
- Canada's Roadmap
- Critical Objectives
- Implementation
- Recent Developments



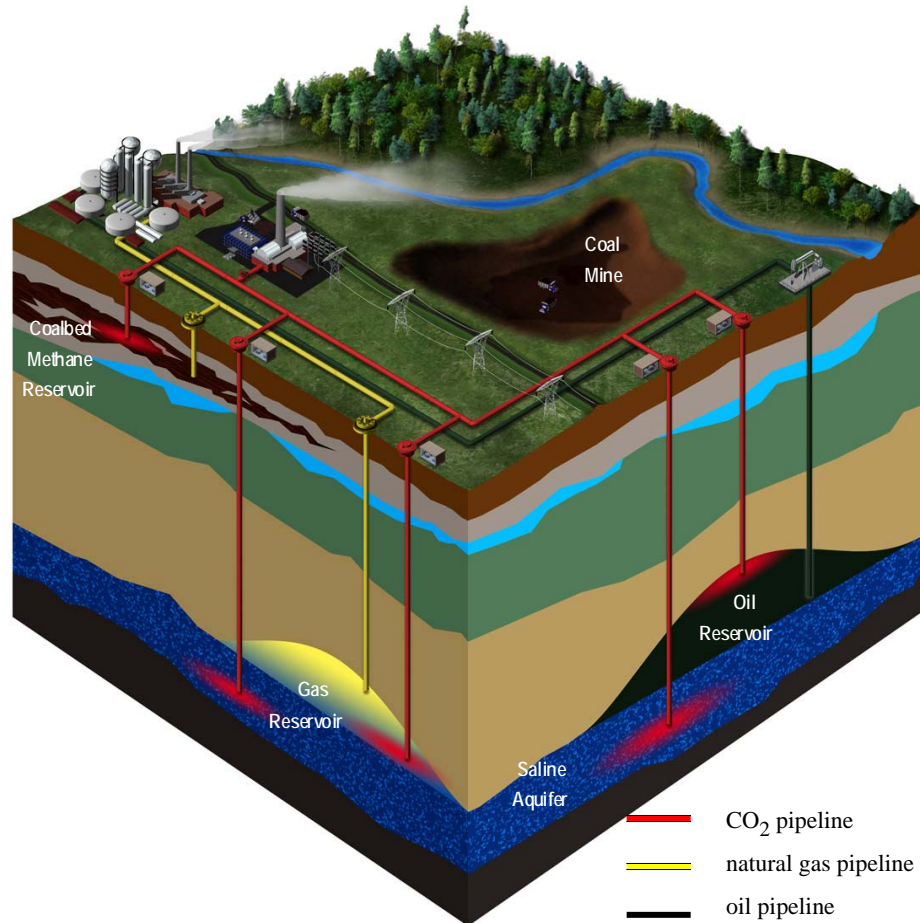
Canada – A Decade Ago

- Many of the CCS leaders at the time were Canadian
 - Bill Gunter, Stefan Bachu, Malcolm Wilson, Kelly Thambimuthu
- Opportunities for CCS in Canada well recognized
- Kyoto not yet ratified
- Splintered funding for R&D
- No incentive for action
- Technology largely unknown in senior circles





Geologic Storage of CO₂



- Storage in geologic formations over geologic time
- Options include: oil reservoirs, coalbed methane reservoirs, depleted oil and gas reservoirs and deep saline aquifers
- Injection into oil reservoirs and coalbed methane reservoirs produces oil and gas revenues which can offset costs
- Afford the time to continue to use fossil fuels until renewables are developed
- CO₂ for re-pressurization of gas caps





Why a Roadmap?

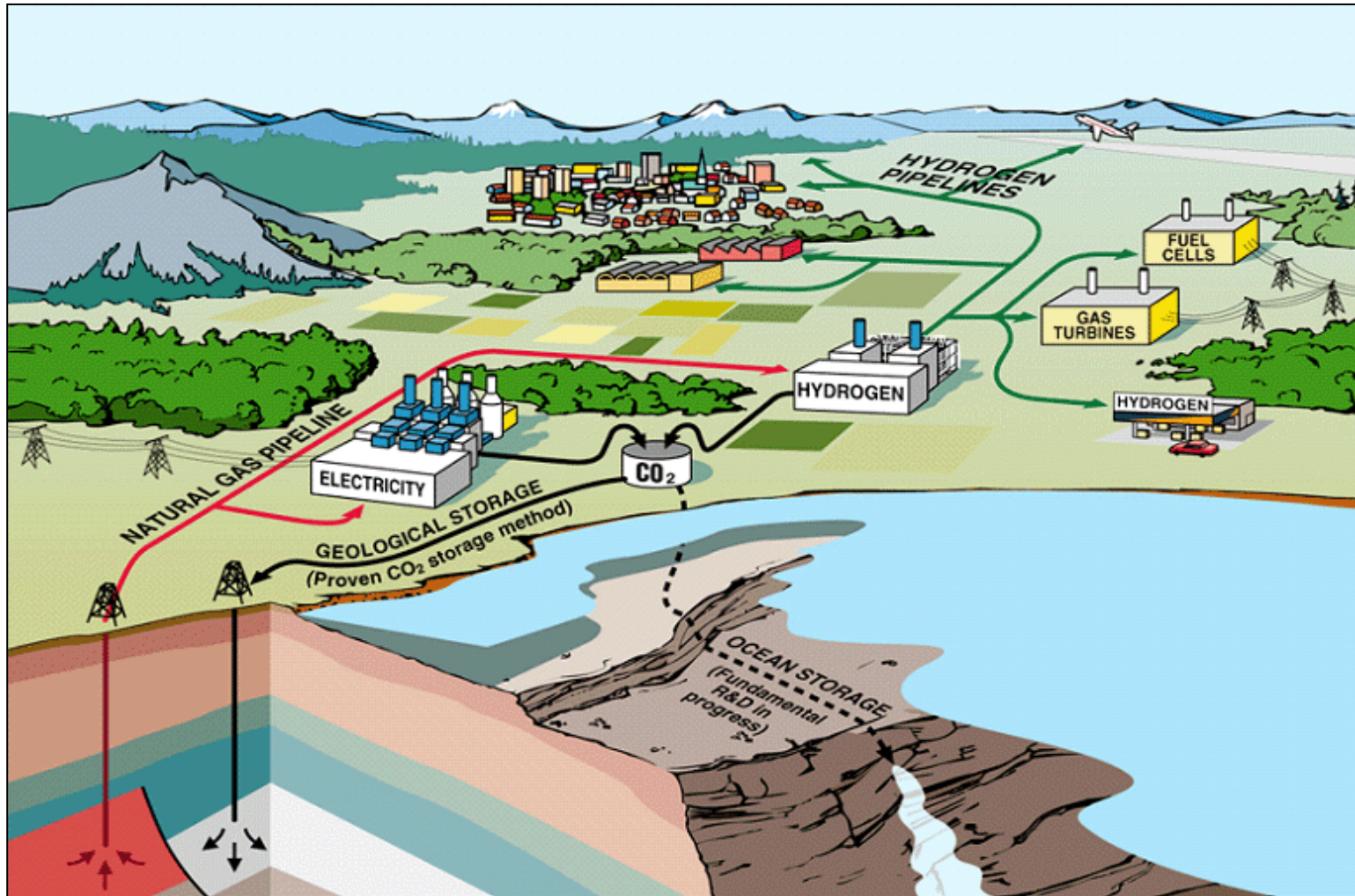
CO2 Capture & Storage Technology Roadmap

The Roadmap was developed in cooperation with industry and government stakeholders to help formulate a climate change mitigation strategy for large industrial emitters.

Some of the questions addressed included:

- What will tomorrow's fossil fuel industry look like?
- What technologies will be required to support that vision?
- When should they be ready?
- What actions are required?

A vision for a hydrogen economy



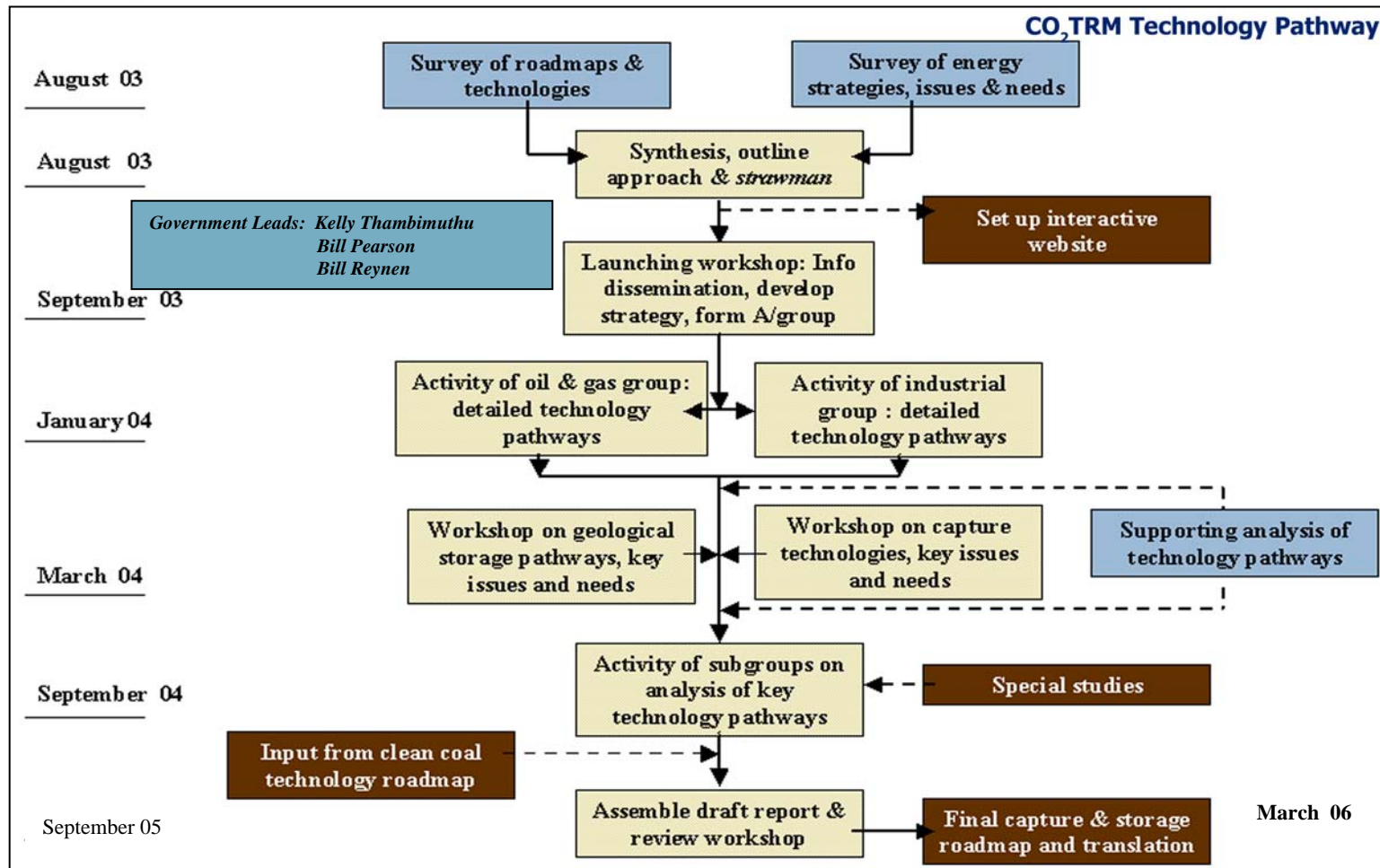


Participants

- 3 workshops were held over a 3 year time period
- Over 180 people from industry, academia, provincial & federal governments participated in these workshops and in developing Canada's Technology Roadmap
- Experts from other nation's also participated
- ENGO's were seen as a critical participant



The Roadmap's Roadmap



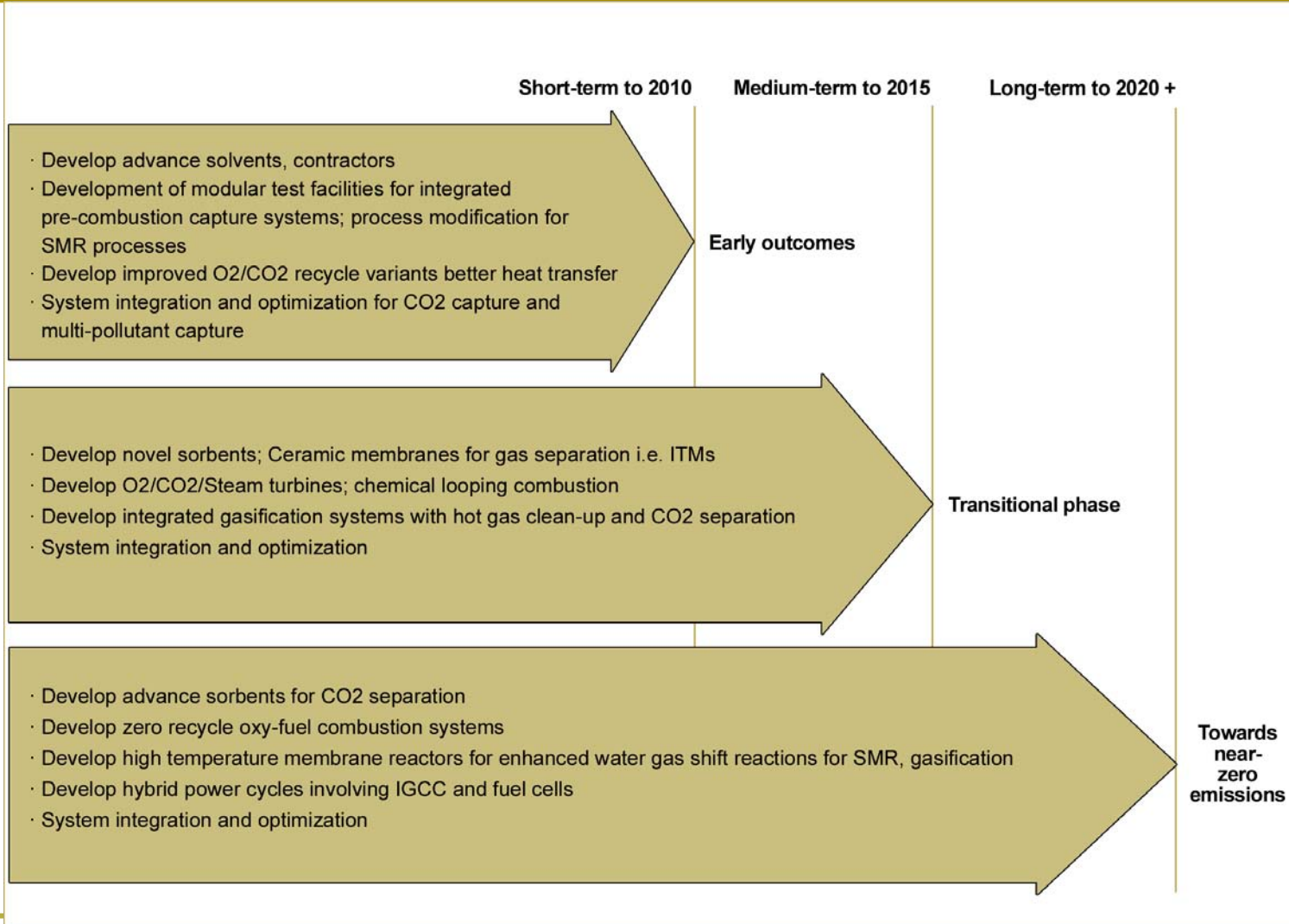


Roadmap Structure

1. The Canadian Advantage –
Carbon Dioxide Capture and Storage
2. The Global Challenge – an Issues Scan
3. The Opportunity – Cleaner Fossil Fuels
4. Technology Pathways
5. The Way Forward

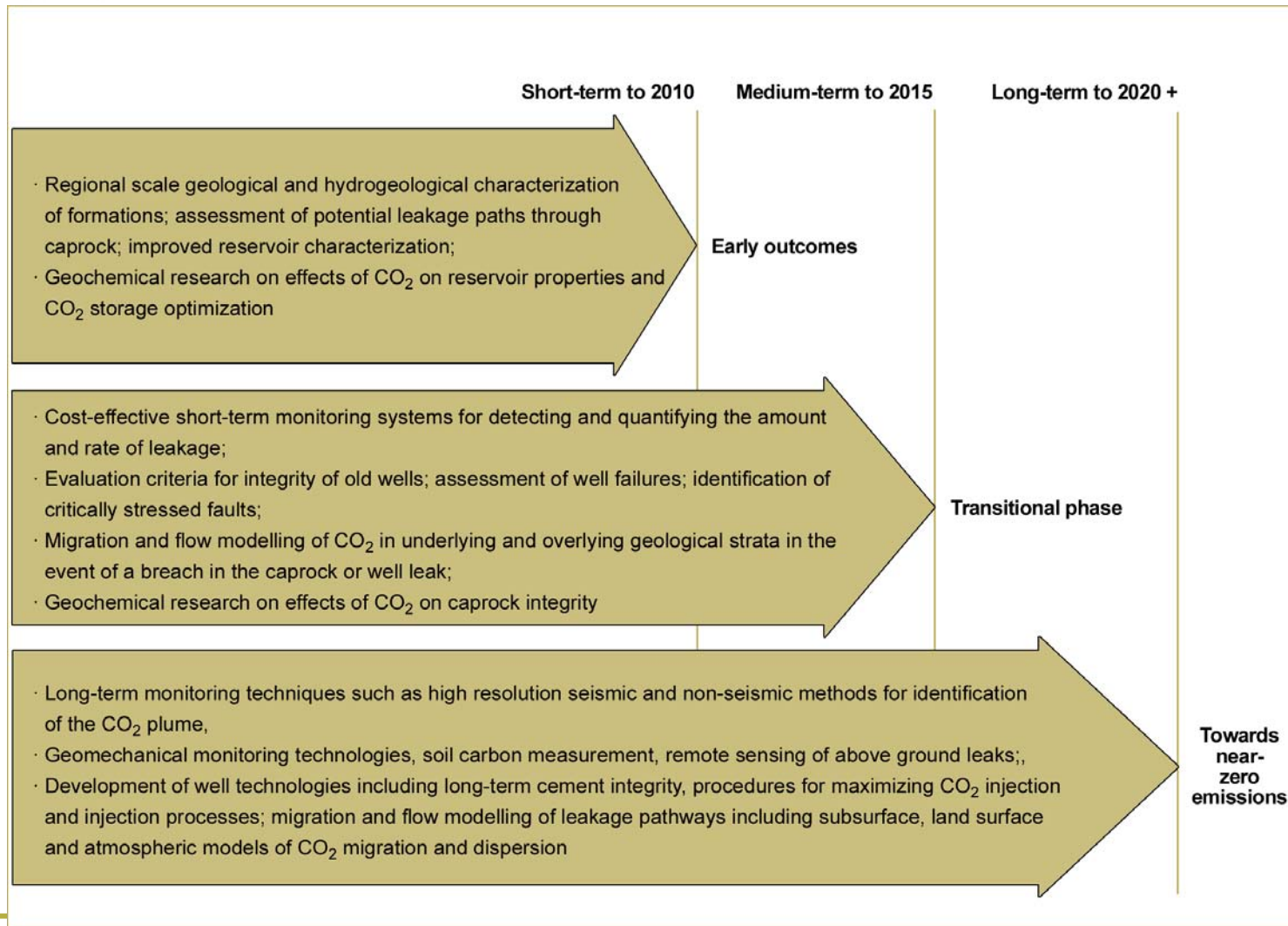


The Path Forward- Capture





The Path Forward - Storage





Critical Objectives

- Policy development
- Regulatory frameworks
- Public outreach and education
- Technology watch and international collaboration
- Address technology gaps
- Demonstration
- National coordination





Implementation

- Climate Change now high on the public and political agenda
- Consultations with industry
- Prime Minister announces Task Force on CCS
 - Led by key industrial representatives representing power generation, oil and gas sector, pipelines and academia
 - Three sub-groups, technical, regulatory and economic
 - Recommendations for implementation due in December
 - Recognition by politicians and policy groups that implementation will require billions of dollars in investment



International Momentum

- G8 Summit in 2005 called on IEA and CSLF to conduct workshops on early opportunities for CCS
- First Workshop in San Francisco in August, 2006 to identify issues
- Second Workshop in Oslo in June, 2007 to assess options
- Third Workshop in Calgary on Nov. 27-28 to provide recommendations
- Over 32 recommendations currently under review by 60 organizations in preparation for workshop
- Priorities: Financial, regulatory, PEO, developing countries

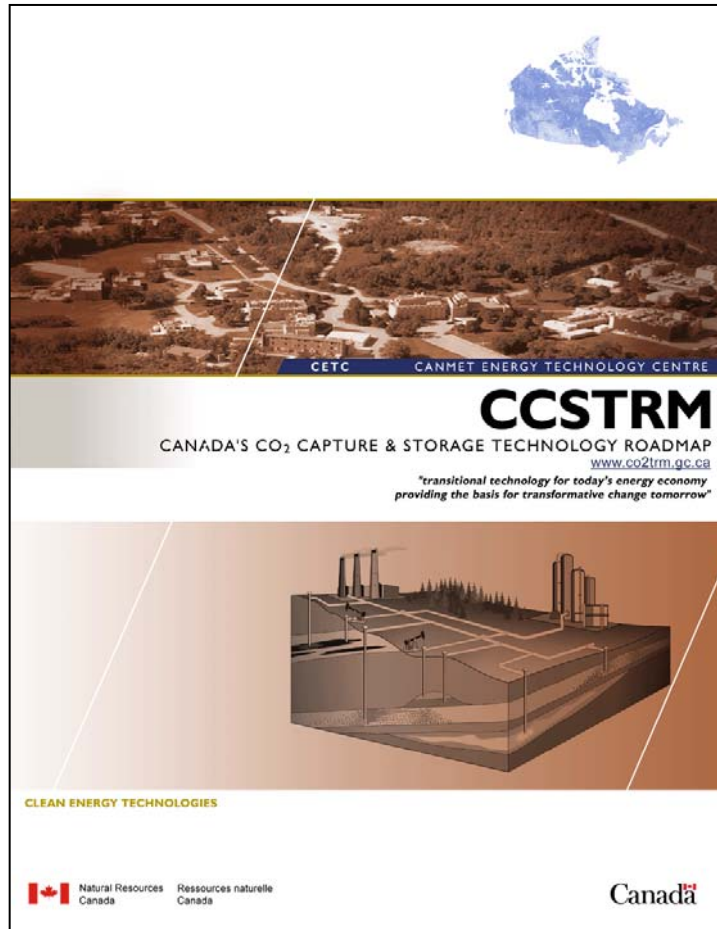


SaskPower Update

- Last fall, SaskPower announced oxy-fuel combustion as process of choice for world's first clean coal power plant, subject to FEED studies and firming of contracts
- SaskPower recently deferred plans for the plant
- Reasons:
 - Price escalation
 - Risk
 - No market for CO₂
 - Need power sooner than expected
 - Will use gas turbines on interim basis, peaking power in future
 - New announcement in 2009



Thank you!



- Be sure to visit our website for updates
www.co2trm.gc.ca