



SUSTAINABLE DEVELOPMENT
TECHNOLOGY CANADA™

Partnering for real results.

Canadian Environmental Technologies Development

Federal Remediation Technologies Roundtable

May 17, 2006



SUSTAINABLE DEVELOPMENT
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Partnering for real results.



**“The Foundation will act as the primary catalyst
in building a sustainable development technology
infrastructure in Canada.”**



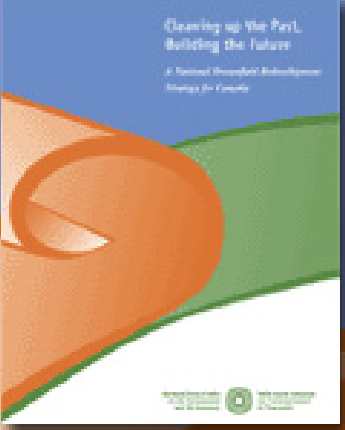
- SDTC began operations in November of 2001
- Registered as a not-for-profit, non-share capital corporation under the Canada Business Corporations Act
- Operates as an arms-length independent organization
- Funding allocation of \$550M from Government of Canada
- Accountable to Parliament through the Minister of Natural Resources
- 15 Directors on the Board, 7 appointed by Canada
- Member Council (15) – proxy for shareholders
- International recognition for this Canadian initiative



Statistics Canada

2002 Environmental Industry Survey

- Canadian Environmental Industry earned \$15.8 billion in 2002.
- Environmental Goods - \$6.6 billion
- Environment Related Construction - \$2.2 billion
- Environmental Services - \$7 billion
 - Waste Management and Remediation Services - \$5.1 billion
 - Increase of 27% from 2000 to 2002.
- www.statcan.ca/bsolc/english/bsolc?catno=16f0008XIE.



**Cleaning up the Past,
Building the Future**

*A National Brownfield Redevelopment
Strategy for Canada*

Executive Summary

Complete Document (PDF)

Glossary of Terms

Canadian Case Studies

Table of Contents

1. Introduction
2. The Case for a National Strategy
3. Recent Progress on Brownfield Redevelopment
4. Strategic Directions: A Blueprint for Action
5. Moving Forward

[/www.nrtee-trnee.ca/eng/programs/Current_Programs/Brownfields_Strategy/Brownfields_Strategy_e.htm](http://www.nrtee-trnee.ca/eng/programs/Current_Programs/Brownfields_Strategy/Brownfields_Strategy_e.htm)



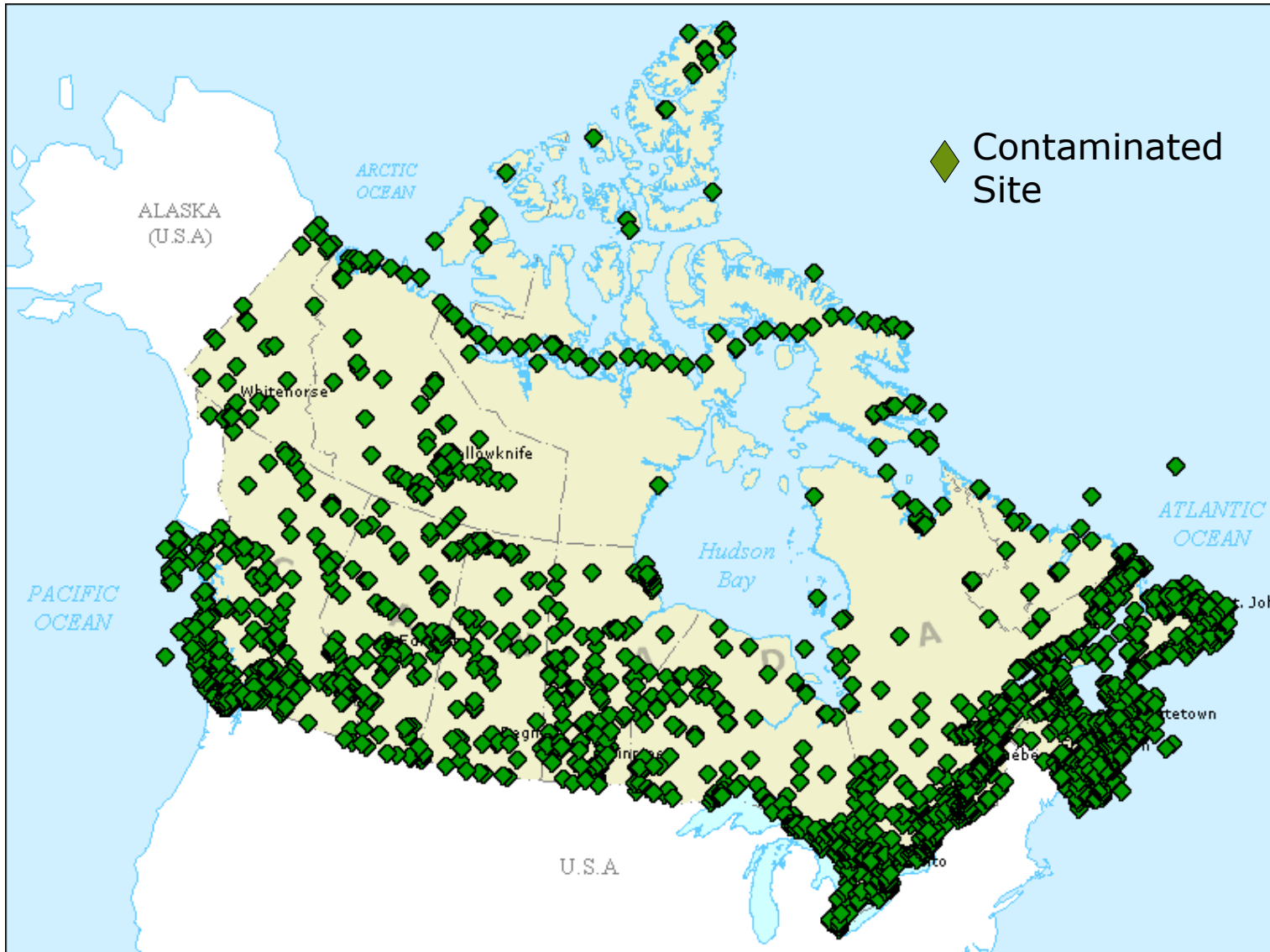
- Apply Strategic public investment to address upfront costs
- Establish an effective public policy regime for environmental liability and risk management
- Build capacity for and community awareness of Brownfield redevelopment
 - Increase capacity to undertake Brownfield redevelopment projects.
 - Facilitate the demonstration of innovative environmental technologies and remediation processes.

Estimated that there are 30,000 Brownfield sites in Canada. Ensure governments “own house in order”.



- Federal Contaminated sites – 4,946 sites in Canada's inventory
- 122 Require immediate action (20% of classified sites)
- 285 Likely require action (46% of classified sites)
- 121 May require action
- 88 insufficient data or action not required
- 4,354 not yet classified (likely smaller sites)

Federal Contaminated Sites





Sydney Tar Ponds



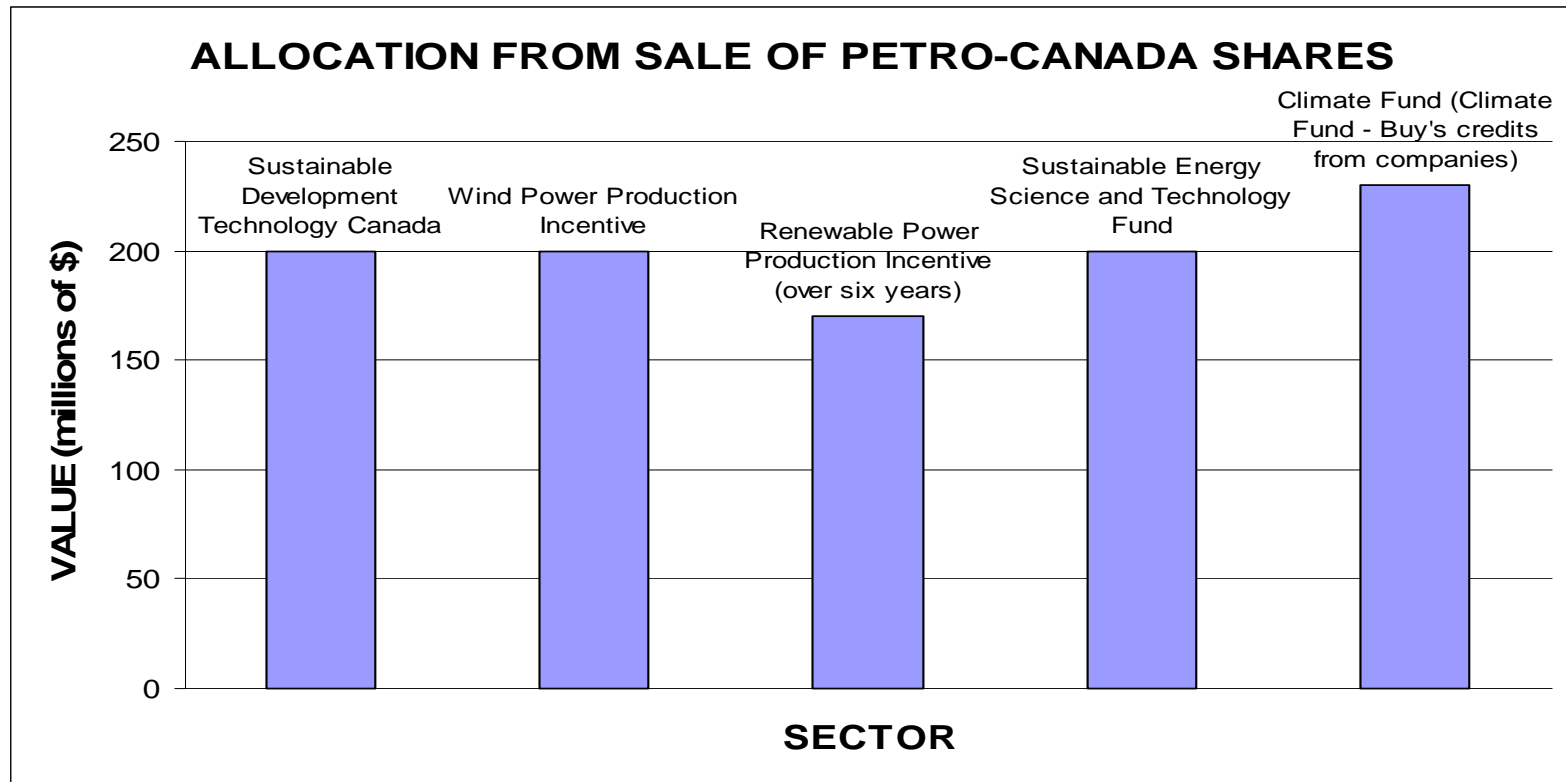
Oil Sands Excavation



Speech-from-the-Throne (SFT) Budget 2004 & 2005



- The Oct. 04 SFT reiterated Canada's commitment with an increased focus on energy efficiency and energy R&D, and commercialization
- The Budget committed \$4 Billion over 10 years to contaminated sites that under Federal responsibility.
- The Budget devoted \$1 Billion over 5 years from the sale of Petro-Canada shares towards the development of climate change technologies

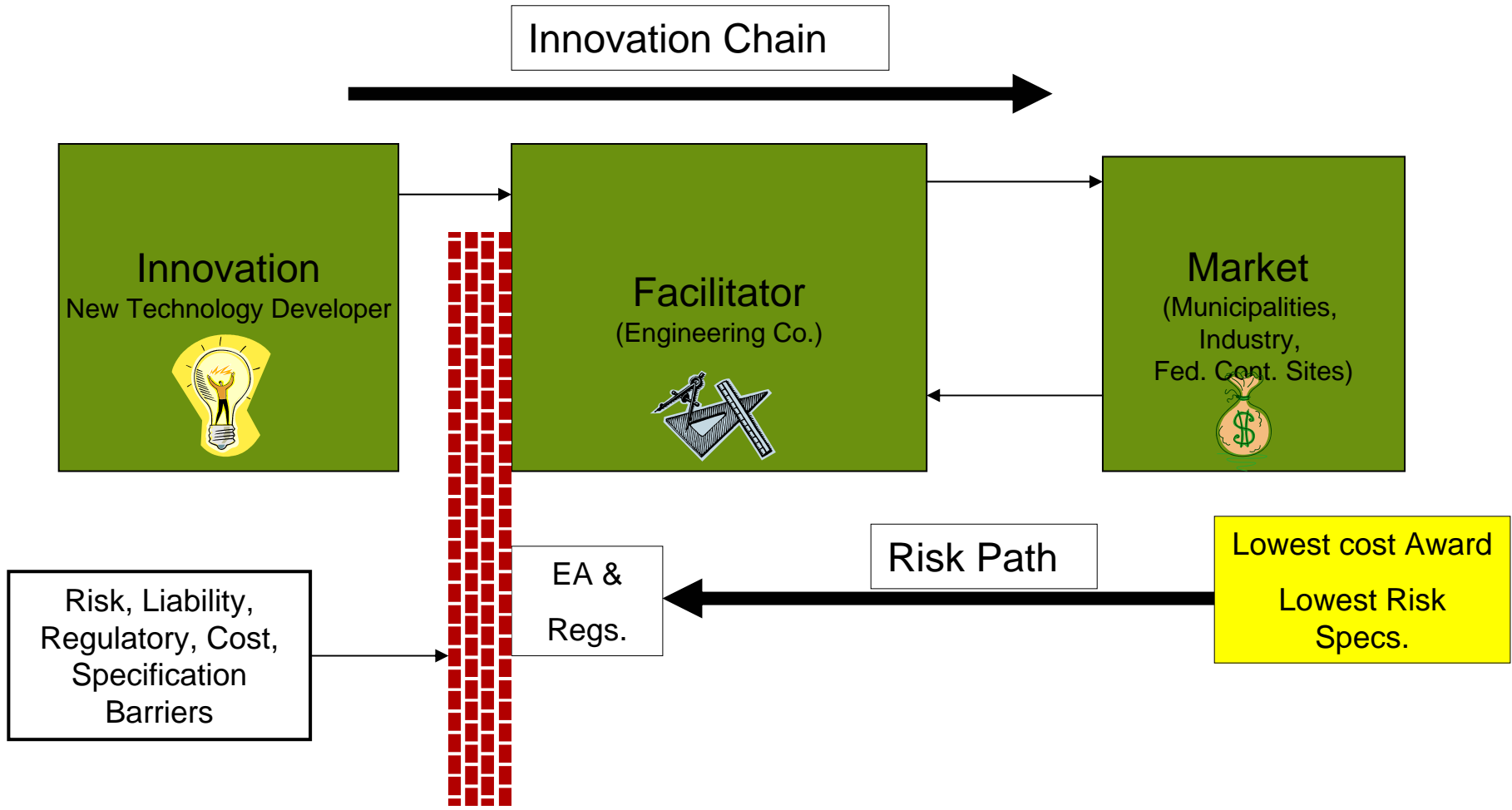




Government of Canada – Budget 2005 - Over the next 5 years invest \$5 billion to preserve the natural environment and to address climate change.

www.fin.gc.ca/budget05/bp/bpc5e.htm

Challenges in Addressing Innovations in Soil & Water





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- Emphasis on new technologies in the following areas:
 - Energy exploration, production, transmission and distribution
 - Power generation
 - Energy utilization (industrial, commercial and residential sectors) - buildings and processes
 - Transportation
 - Agriculture
 - Forestry, wood products and pulp and paper products
 - Waste management
 - Emission controls and enabling technologies



- Foster the development and demonstration of technological solutions that address:
 - Climate Change
 - Clean Air
 - Clean Water
 - Clean Soil
- Forge innovative partnerships representing multiple players in the Innovation Chain and build a SD technology infrastructure
- Ensure timely diffusion - increase number and rate of uptake of SD technologies into the marketplace across Canada, providing national benefits



- Increase the pool of available sustainable development technologies
- Fast track technologies to market
- Build private sector partnerships / leverage funding
- Reduce development, market and financial risk
- Build critical mass of sustainable development technology developers



Sustainable Development Technology Canada

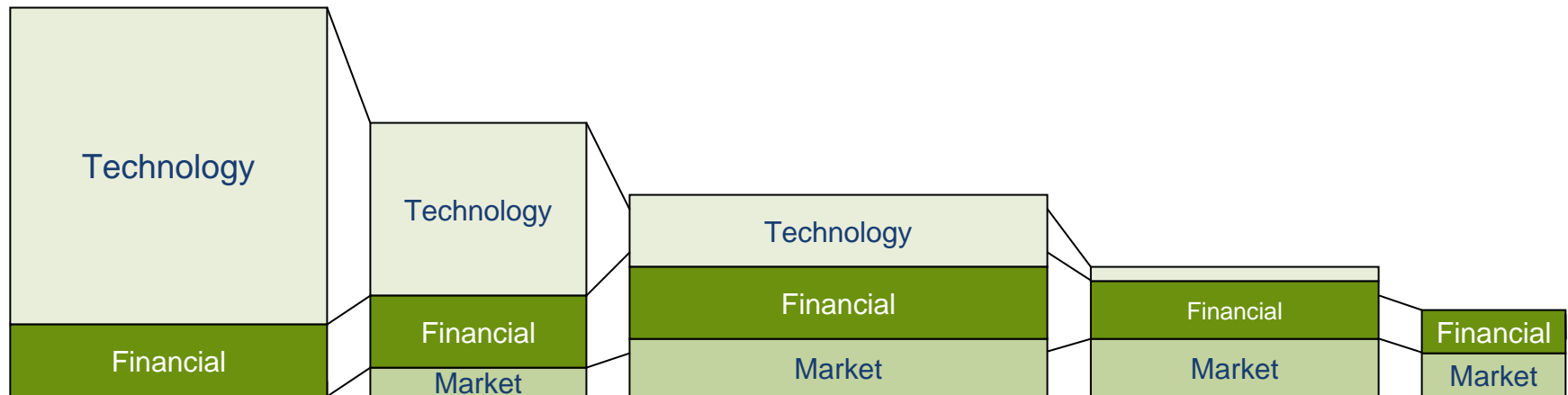
- “Go To Market Consortia” - maximizes representation of the different innovation chain players in each consortium
- Links and integrates a fragmented and diverse set of interests
- Creates innovative and robust partnerships with a greater likelihood of future market entry success
- Emphasizes pre-commercialization stage (technology pre-revenue) which is the weak link in the Innovation Chain
- Funds into the Pre-Private Sector Investment Stage – “Bridging the Gap”



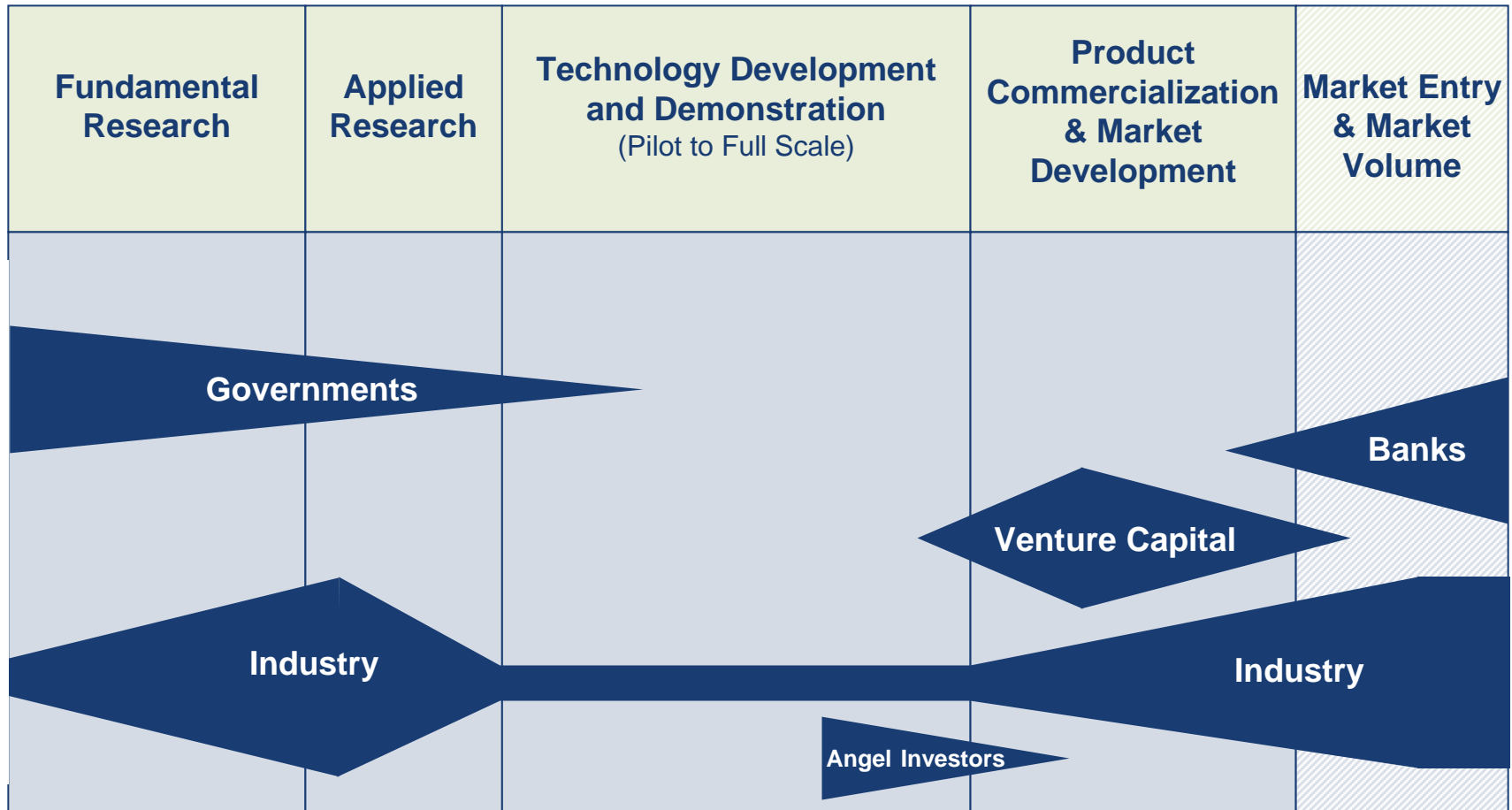
Stages of Technology Development



Risk Profile



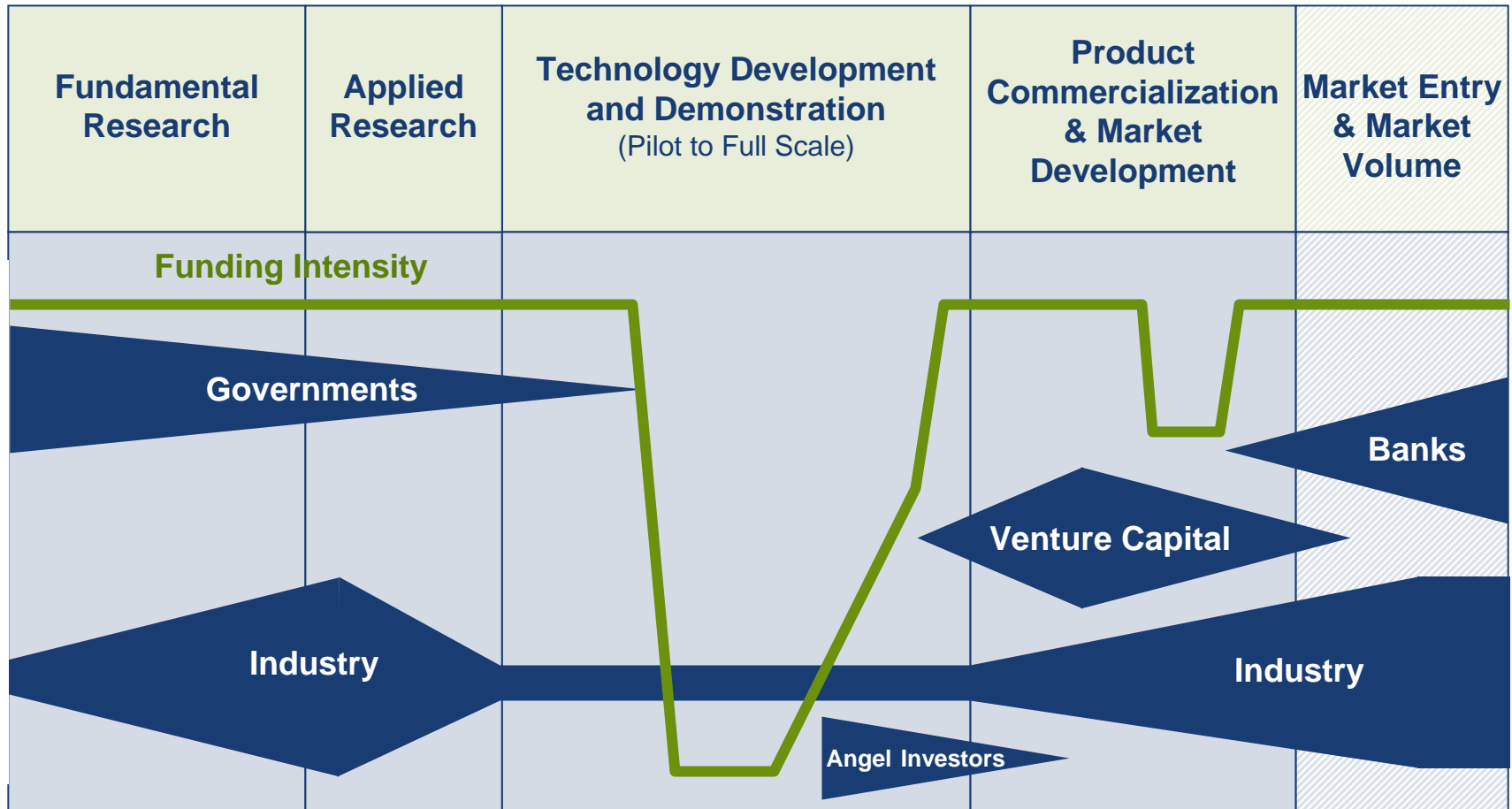
Sources of Funding



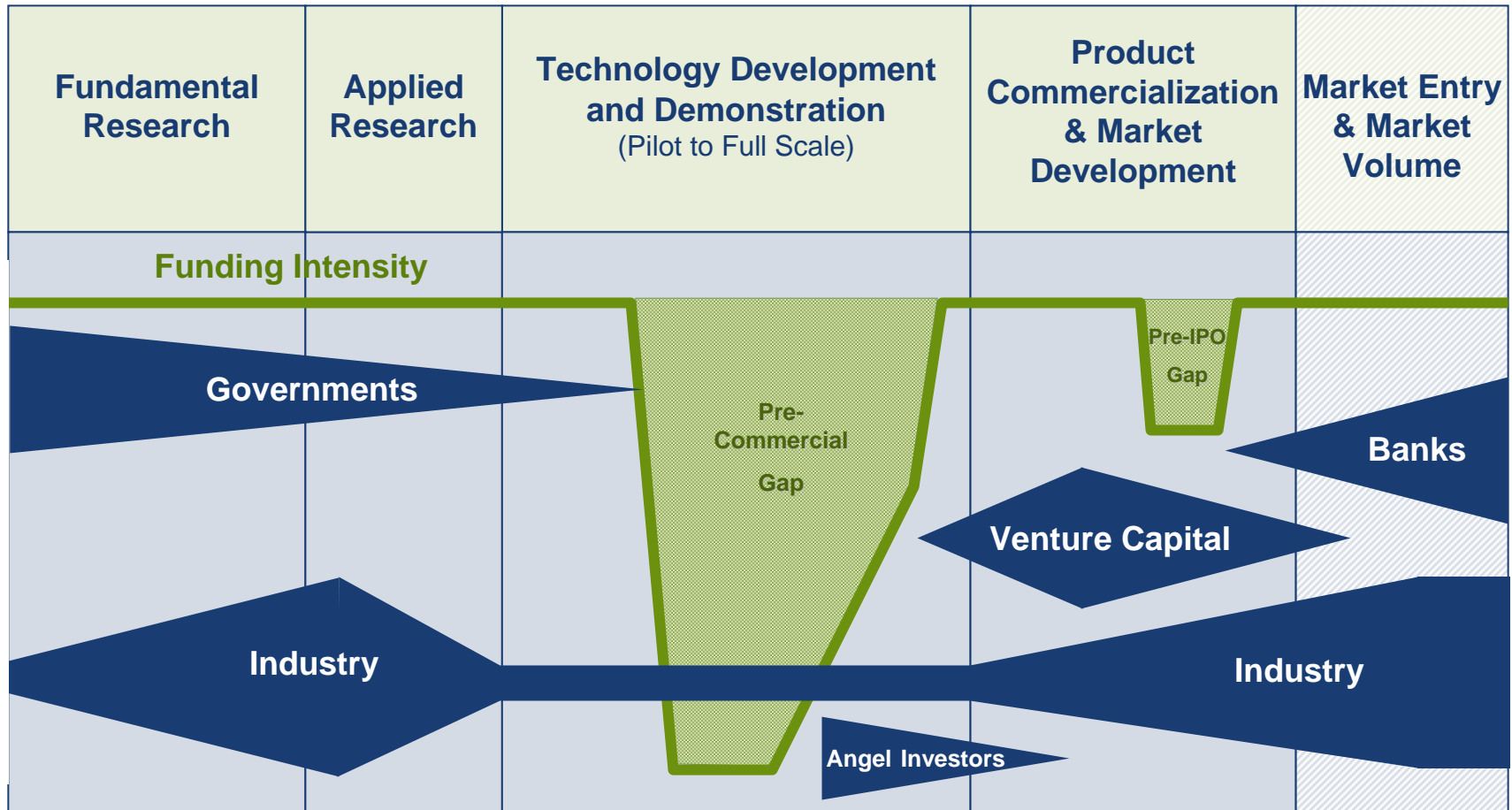
Public and Private Sector Research
\$23.3B/year
(Dec 2003)

VC Funding
\$2.3B/year
(Dec 2003)

Funding Intensity



Funding Gaps



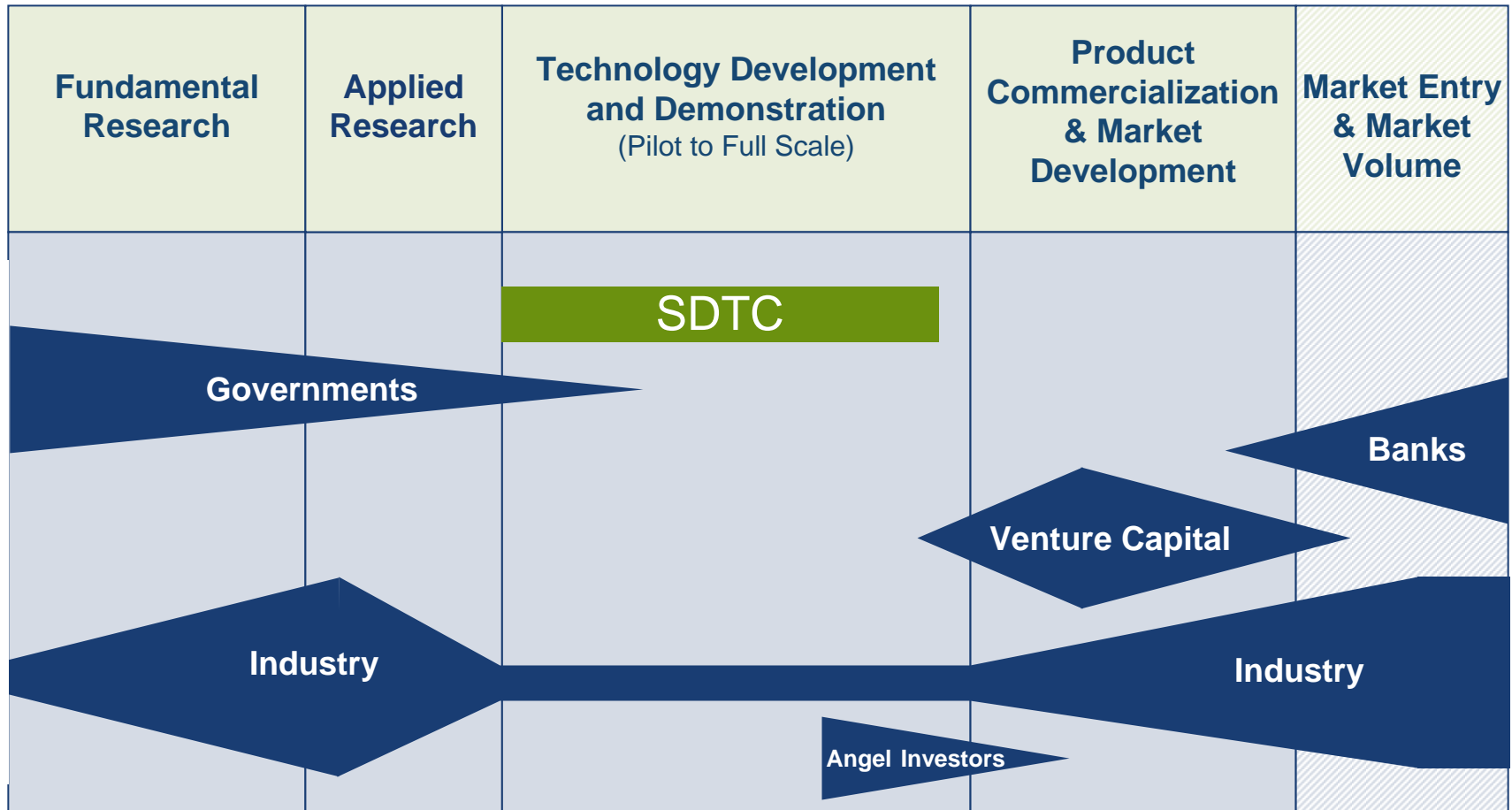
← Public and Private Sector Research →

 # of energy & environment deals by stage-seed, expansion & mezzanine.

 From 2000 – Q3 2004

Source: MacDonald and Associates, Oct 2004

SDTC Funding





Has two phases for applicants and four decision gates

- Phase I – Statement of Interest (SOI) – not too onerous, it is informative and sufficient to assess
- Phase II – Proposals by Invitation – equivalent to a business plan
- Gate I – SDTC review
- Gate II – technical and business experts
- Gate III – Investment Committee + Project Review Committee
- Gate IV – Board Approval

Screening Criteria

- Technical, Market, Business and Environment



- **Applications to Date (8 Rounds)**

- 1084 applications (>2,800 entities)
- \$2.3 Billion in funding requests
- \$9.2 Billion in total project value
- 82% industry-led

- **Projects Approved (7 Rounds)**

- 75 projects
- \$169 Million from SDTC
- \$449 Million leveraged from consortia members
- \$618 Million in total eligible project value

- **Emissions Reductions (undiscounted applicant projections for market rollout)**

- 125 Million tonnes annually undiscounted

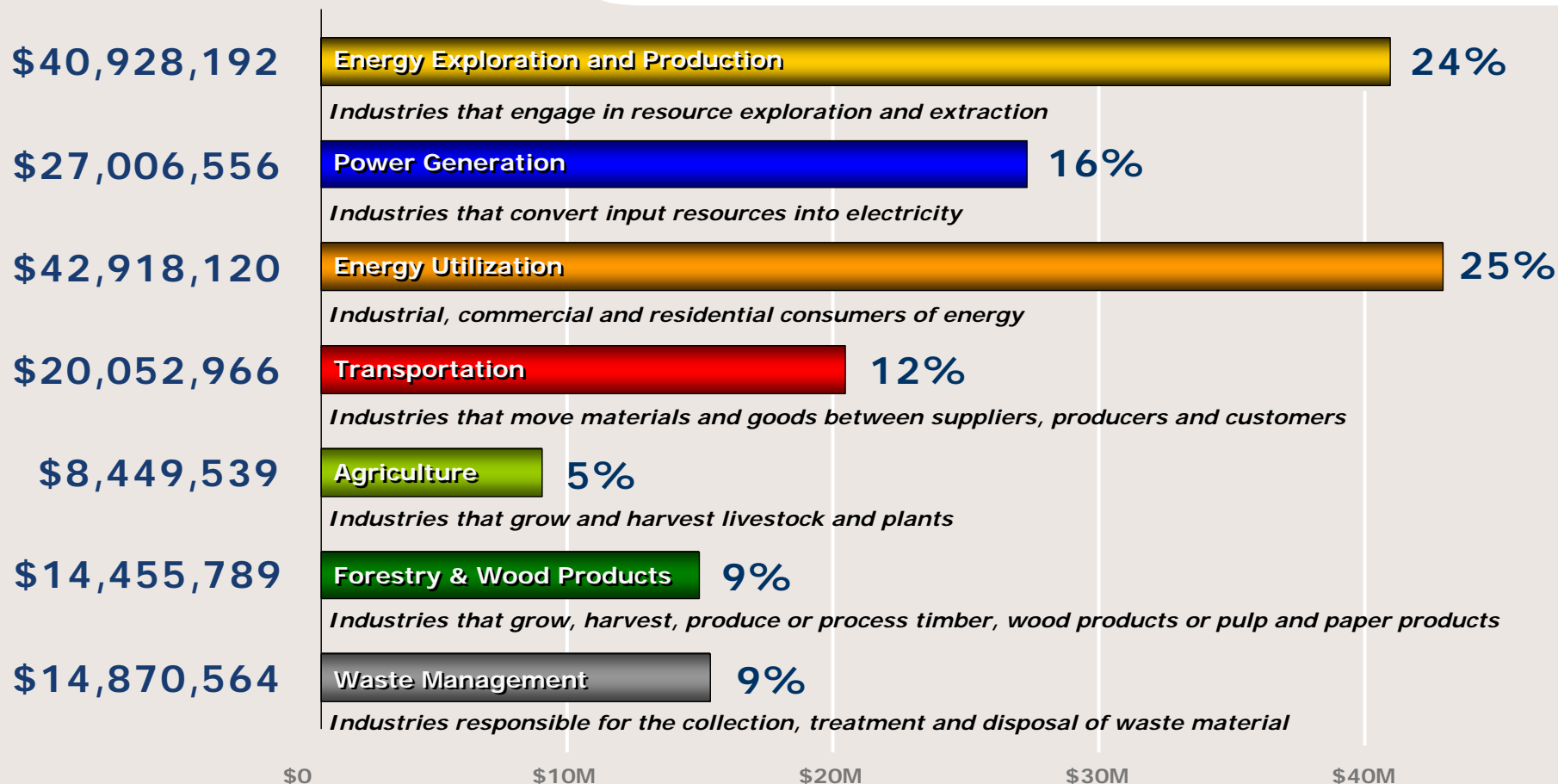
- **SDTC Discounted Emissions**

- 12.5 Million tonnes annually in 2010

Investment Portfolio



SDTC's current investment in 75 projects totals \$169 million.

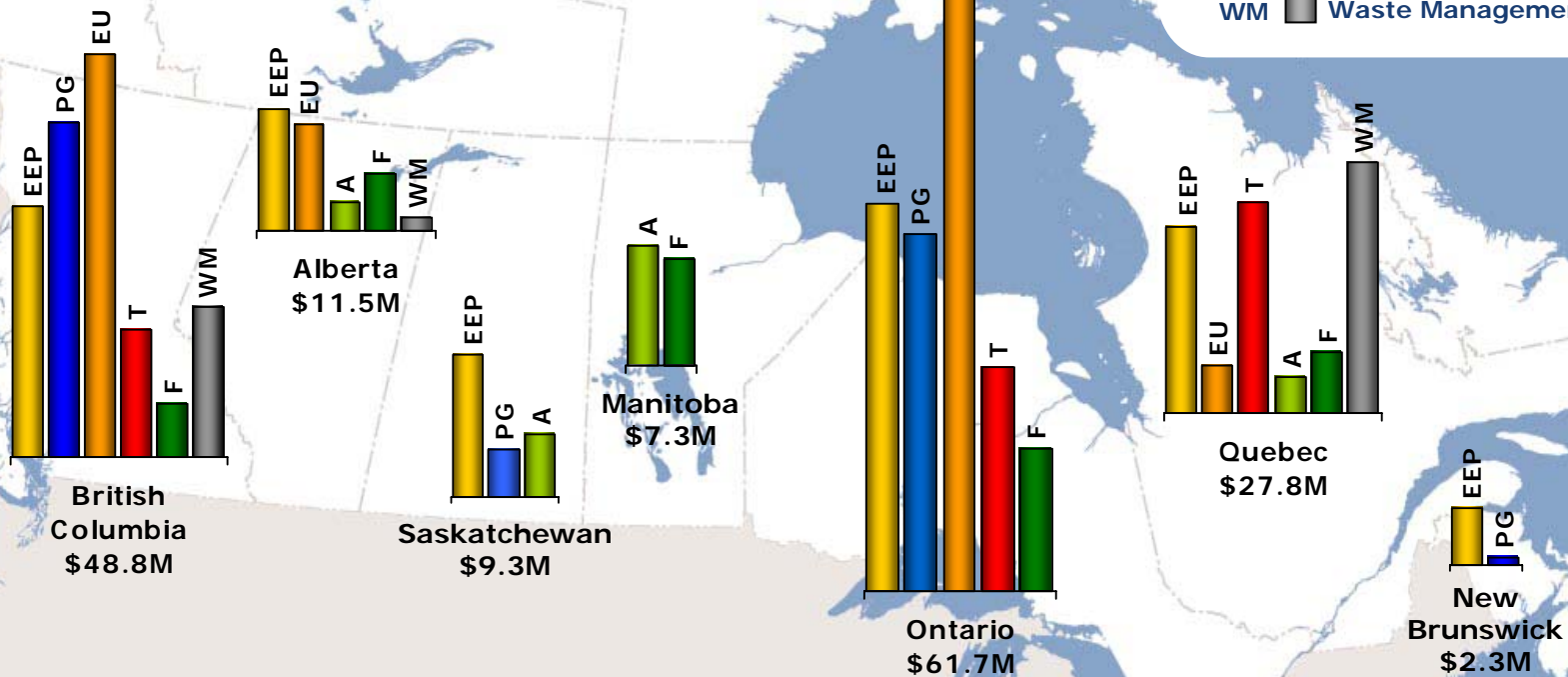


SDTC Funding Breakdown by Sector
(up to last Board funding approval, October 5, 2005)

Investment Portfolio

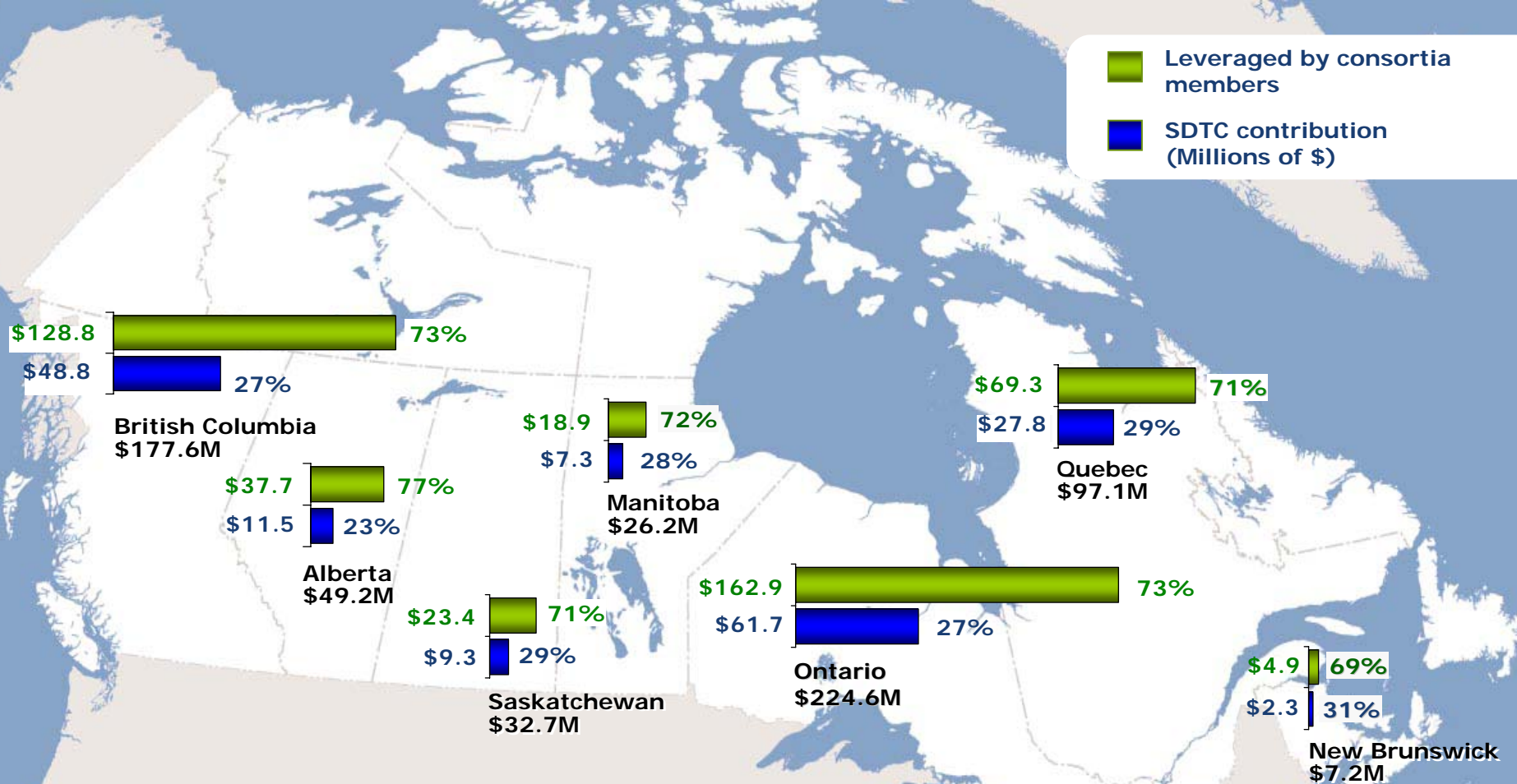


- EEP Energy Exploration & Production
- PG Power Generation
- EU Energy Utilization
- T Transportation
- A Agriculture
- F Forestry & Wood Products
- WM Waste Management



SDTC Sector Funding by Province
 (up to last Board funding approval, October 5, 2005)

Investment Portfolio



SDTC Leveraged Funding by Province
(up to last Board funding approval, October 5, 2005)



For more Information:

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Ottawa, Ontario K1P 5E4

www.sdtc.ca



- ***Mikro-Tek Inc.*** – Mikro-Tek plans to demonstrate its technology to increase carbon sequestration through the application and management of naturally occurring soil fungi called mycorrhizae.
- **Consortium members:** North Sun Nurseries Inc., Woodrising Counsulting Inc.



- ***Paradigm Environmental Technologies Inc.*** — Paradigm developed a process for efficiently breaking down biological wastewater sludge. This technology, which the proponent calls *MicroSludge*, uses chemicals and rapid depressurization and deceleration from a high pressure homogenizer to pre-treat waste sludge before it goes into an anaerobic digester, where decomposition is far more efficient. Conventional waste-treatment methods are inefficient, and only break down 35 percent of the sludge. The remaining 65 percent, teeming with microbes, usually goes into a landfill, where subsequent uncontrolled decomposition releases significant amounts of methane into the atmosphere.
- **Consortium members:** CH2M HILL, Chilliwack Waste Water Treatment, National Research Council, Natural Resources Canada, Powertech Labs Inc.



- ***Gradek Energy Inc.*** — Developed a process for separating bitumen from oilsands (primary extraction), low-grade oil sands ore, and from tailings ponds. The process is based on re-usable plastic beads to which hydrocarbons adsorb. Current oil sands processes leave vast, environmentally hostile tailings streams and ponds, in which the proponent estimates there are a billion barrels of unrecovered bitumen. The process also extracts the significant concentrations of titanium, aluminum, and zirconium oxides embedded in oil sands.
 - **Consortium members:** SNC-Lavalin, Syncrude Canada, University of Alberta



- ***Terra Gaia Inc.*** — Terra Gaia will demonstrate technology that eliminates two of the largest hazardous wastes produced by the steel industry: electric arc furnace dust and waste hydrochloric acid. Current disposal practices for these wastes results in a substantial cost to the industry, including significant environmental liabilities, energy consumption and greenhouse gas production. Terra Gaia's patented technology involves a low-pressure, low-temperature process which is cost-competitive, produces significantly less greenhouse gas emissions and provides additional revenue streams through the generation of saleable byproducts.
 - **Consortium members:** Bateman Engineering, Enpower Corp., Norambar (Stelco Inc.)



- ***Envirogain Inc.*** — Envirogain and its partners will develop and demonstrate a fertilizer stabilizing and drying process that uses heat from both a previously commercialized hog manure treatment system (Biofertile ®) and the new process. The new approach converts a cost centre to a revenue centre by taking hog manure that would otherwise require treatment and disposal and converting it into saleable fertilizer, while also reducing emissions of greenhouse gases. The project is an example of environmental co-benefits that include soil and water.
 - **Consortium members:** F. Ménard Inc., William Houde Ltée.



- ***Plasco Energy Group Inc.*** — Plasco and its partners will demonstrate a Plasma Gasification Process that will economically convert municipal solid waste (MSW) into synthetic gas, inert solid material and heat. The heat and gas will be utilized in a combined cycle co-generation power plant to produce electricity for sale into the electricity grid. Plasco has developed an economically viable means of treating MSW that reduces the environmental impact compared with current disposal methods such as landfill. The project will process up to 75 tonnes/day of MSW at Ottawa’s Trail Road landfill site and generate a net 4 megawatts of electricity for sale to the grid. The City of Ottawa will provide a site and related services for the demonstration project while Hydro Ottawa will facilitate its integration into the grid.
 - **Consortium members:** Ameresco U.S., City of Ottawa, HERA Holdings S.L.