What Can We Learn from Forestry?
The country is a global leader in mining-related science, technology, social and environmental practices with a clear and predictable regulatory environment, innovative clean technology solutions, and best management practices.
Science, Technology, and Innovation

THE VISION A modern and innovative industry supported by world-leading science and technology—across all phases of the mineral development cycle

Overview of Canada’s Mining Innovation Ecosystem

Action Areas:
- CANADA’S INNOVATION ECOSYSTEM
- NEW FRONTIERS
- ADOPTING TECHNOLOGY AND INNOVATIVE PRACTICES
- NEXT GENERATION GEOSCIENCE
Fragmentation and a lack of coordination has impacted the value of the mining sector’s innovation investments and hinders the adoption of next-generation technologies.

**CHALLENGES:**

- Collaboration
- Fragmentation
- Complexity
- Short-termism
Addressing the Challenge

Culture, Leadership and Participation
- Executive participation
- Mobilize organizations
- Build partnerships
- Risk tolerance
- Long-term vision
- All types of innovation

Governance and Management
- “Call-to-Action”
- Industry-led
- Decision-making
- Strategic approach
- Core values
- IP Management

Project Delivery and Adoption
- Mobilize key expertise
- Clearly defined roles
- 70-20-10
- Technology roadmaps
- Regulatory support
- Flexible co-funding
Opportunity and Coordination: what we can learn from forestry

- Forestry contributed 1.4% to GDP vs. 3.6% for mining (2018)
- About 31% of Canadians (11 million people) live in/near forested areas
- Total employment 210,615 people (2018) at over 700 facilities
- 11,600 Indigenous people were employed in 2016 (StatCan)
  - 6% of the sector’s workforce
- Forests provide environmental benefits to all Canadians (GHGs)

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- 35% of Canada is forested. About 90% owned by provinces
- Removed 20 Mt CO2e in 2016
- 300 communities reliant on forests
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Forest Facilities
- Pulp and paper products
- Wood products
- Pellets

Gross Domestic Product
- 17% of GDP:
  - Canada’s natural resource sectors accounted for 17% of nominal GDP in 2017.
  - Nominal GDP
  - 11.9% Natural Resources DIRECT
  - 4.7% Natural Resources INDIRECT
  - 66% Other Sectors
  - Energy 6.0%

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Map of Canada showing forest facilities, with symbols for pulp and paper products, wood products, and pellets.
Opportunity and Coordination: what we can learn from forestry

**Issue:**
- The forest sector has faced significant **cyclical**, **structural**, and **environmental** pressures:
  - Challenges in global markets
  - Collapsing newsprint demand
  - Global recession
  - Insect infestations

**Opportunity:**
- Increasingly complex **societal**, **trade**, and **environmental** context in which we operate:
  - Expanding global middle class with new product demands
  - Forest products recognized as sustainable and climate change mitigation options
Opportunity and Coordination: what we can learn from forestry

Responding to crisis and industry pressure to consolidate a fragmented innovation system (FERIC, Forintek, PAPRICAN)

In this role, FPInnovations has become the central coordinating hub for the sector’s R&D providers

Fragmented

Coordinated
Opportunity and Coordination: what we can learn from forestry

One Element of a Coordinated R&D System

Basic Research

- Fibre Solutions (Canadian Wood Fibre Centre)
- Canadian Wildland Fire Strategy

Applied R&D

- Forest Innovation Program

Demonstration

- Investments in Forest Industry Transformation
- Clean Growth Program
- Strategic Innovation Fund

Commercialization

- Indigenous Forestry Initiative
- Green Construction through Wood
- Clean Energy for Remote and Rural Communities (Bio-Heat)
- Forest Bioeconomy Framework for Canada

Deployment

- Expanding Market Opportunities (EMO) Program
- Codes and Standards (lignin, cellulose nanocrystals, tall wood construction)
- Policy procurement influence (Bioplastic challenge)
Opportunity and Coordination: what we can learn from forestry

- Forest Management and Planning
- Harvesting and Log Merchandizing
- Transport Forest to Mill
- Solid & Engineered Wood Products
- Next Generation Pulp & Paper & Bio-refinery
- Secondary Manufacturing
- From Genes to Markets
- Intensive Silviculture, Breeding & Genomics
- Market Requirements
- Transport Mill to Market
Opportunity and Coordination: what we can learn from forestry

Understanding the Sector’s RDI Environment

Technology Derisking
- Research Alliance
- Licensing
- Joint-venture

Market Derisking
- Research Alliance

Scale-up
- Commercial demonstration
- Verification
- Early Adoption
- Partnerships with regulatory bodies

Governance
- Board of Directors
- National Research Advisory Committee
- Program Advisory Committees

Engineering Support

Collaborative Areas of Focus

Market Analysis

TRL: Technology readiness level
1 2 3 4 5 6 7 8 9 10

MRL: Market readiness level

CCRL: Climate change readiness level

Building a Unique Private-Public Research Partnership
Success Factors of FPInovations

Leadership, Participation and Culture
- Broad support
- Expertise mobilized
- Cross-sectoral partnerships
- Shared risk
- Long-term vision
- Genes to markets

Governance and Management
- Responded to crisis
- Industry-led
- Governance model
- Strategic approach
- Shared values
- IP management

Project Delivery and Adoption
- Core research teams
- Clearly defined roles
- Transformative R&D
- Research PACs
- Government engagement
- Flexible co-funding

“Expanding research capacity for innovation”
NEXT STEPS

How can we move forward together?

Is there industry leadership for a new approach to innovation?

What needs to be done to get us there?

What is the mining sector’s shared vision for the future?