



Decarbonizing Canada

Concordia Early-Stage Researchers Dialogue

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Dialogue A Pan-Canadian Dynamics of Energy Transition, Multi-Factor Change, Broad National Impacts & Consequences

Dialogue B Risks: Affordability, Electricity System Stresses, Capital Bottlenecks & Strategic Synergy: Policy/Fiscal Mechanisms & Programs

Dialogue C Decarbonization Must be Grounded on Deep and Enduring Relationships, Holistic and Material Information/Perspective Dialogue - a Just Transition



**Our
Dialogues**

As Introduction

Chris Henderson is Founding Executive Director of Indigenous Clean Energy (ICE), Chair of Volt-Age Partnerships, and Curator of Transformative Energy. He has held a spectrum of prominent leadership positions at the intersection of clean energy, Cleantech, climate change, and sustainable prosperity for over four decades. He offers transformative analysis to accelerate Canada and the World's transition to a clean energy future grounded on "Intensive Inclusion". His first book *Aboriginal Power* was published in 2013. He is authoring a Trilogy of publications centered on global energy transition.





- ❖ A Remarkable Reconciliation Story
- ❖ +320 Medium-Large Renewable Energy Projects
- ❖ +2,900 Small Renewable Energy Projects
- ❖ \$300+ MN Annual Net Earnings
- ❖ ~21% Canada's Electricity Generating Capacity
- ❖ Diversified Net Zero Projects/Enterprises
- ❖ Broad-Based Social-Economic Impacts
- ❖ Essential Climate Action

Decarbonization is More Than Energy

It is Intersectional is Multi-Dimensional Prosperity, and Fundamental for Societal & Gender Inclusion – EDI & Generational Equity

- Relations Within the Federation
- Human & Community Health
- Ecological Restoration
- Technology Investment
- Climate Mitigation
- Built & Transport Infrastructure
- Food Security
- Regional Economic Development
- Foreign Affairs & National Security
- Turtle Island Habitat: Land, Waters, Oceans
- Competitiveness & Prosperity





Dialogue A:

Pan-Canadian Dynamics
of Energy Transition





Decarbonization's 'Big Bang'

- Accelerated fragmented change
- It's much more than a technology switch
- Individual-Industry behaviors are altering
- Technology integration is evolving fast
- Trade and supply patterns are in flux
- Energy security is rising in importance
- Climate action is paramount

The background of the slide is a complex, black and white geometric pattern. It consists of a dense, interconnected network of thin white lines on a black background. These lines form a variety of irregular polygons, creating a complex, almost crystalline or cellular structure. The overall effect is a highly detailed and textured pattern that fills the entire frame.

Patterns



Decarbonization - Multi-Factor Dynamics

Decarbonization Dynamics



A Sea Change is Essential for the 'How' of Research in Relation to Decarbonization

Critical to Recognize the Changing Patterns and Dynamics of Energy

Responsive to Societal Needs, and Specific Energy Infrastructure, Energy Efficiency, Renewable Energy Requirements

Of Communities, Companies, Municipalities, Industrial Sectors

Without Investment and Soft/Hard Technology Deployment – Decarbonization Fails

Research, One Part of the Solution





Dialogue B

Risks: Affordability, Electricity
System Stressors, Capital
Bottlenecks

Strategic Synergy: Policy/Fiscal
Mechanisms & Programs



Energy Living Affordability

Electricity Costs Higher % of Family Budgets

Industry Energy Cost Increases

Electricity Rate Rise Pressures (P/T)

Greater Low-Income Energy Poverty Experience

Life Cycle Cost Gains – Shorter Term Escalation

All Electrification Factors Labeled as Policy Effects



System Stressors



- Hydro Over Reliance
- Regulatory Misalignment
- Protracted Supply Chains
- Services/Employment Gaps
- Demand Spurts – Bumps
- Climate & Reliability
- Systems Adjustments
- Infrastructure Costs
- Technology Integration

Capital Bottlenecks

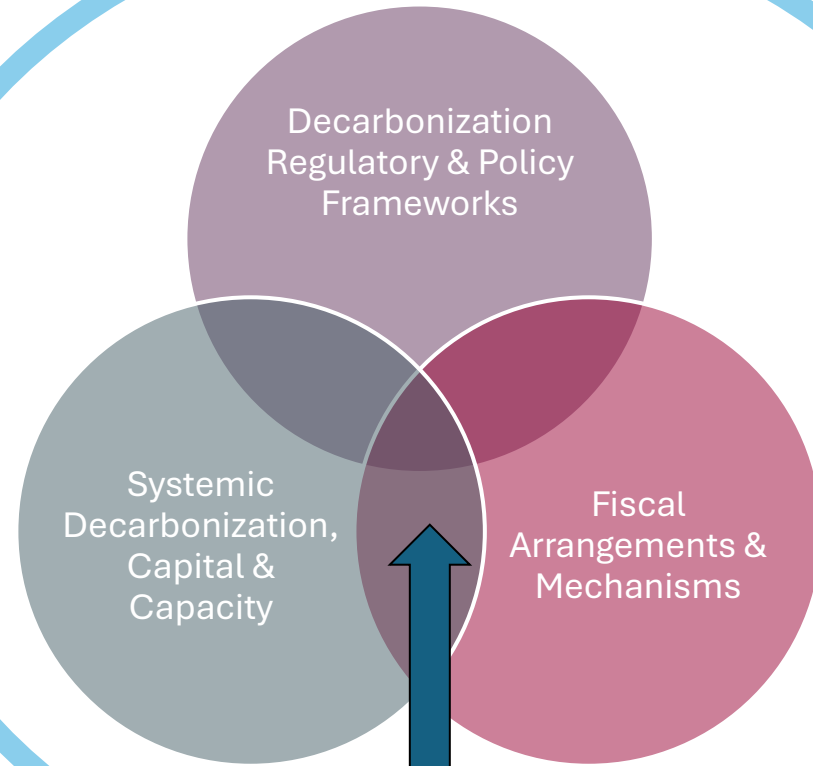
- Large Trunk High Voltage Transmission
- Higher Demand Local Distribution
- Technology Diffusion
- Variable Demand Electrification
- System/Jurisdictional Interties
- Peak Load Capacity - Storage +
- Digital Management Infrastructure



\$1.7 TN

‘Strategic Synergy’

Staged & Integrated
Public Roles
Catalyzing Private &
Institutional
Leadership

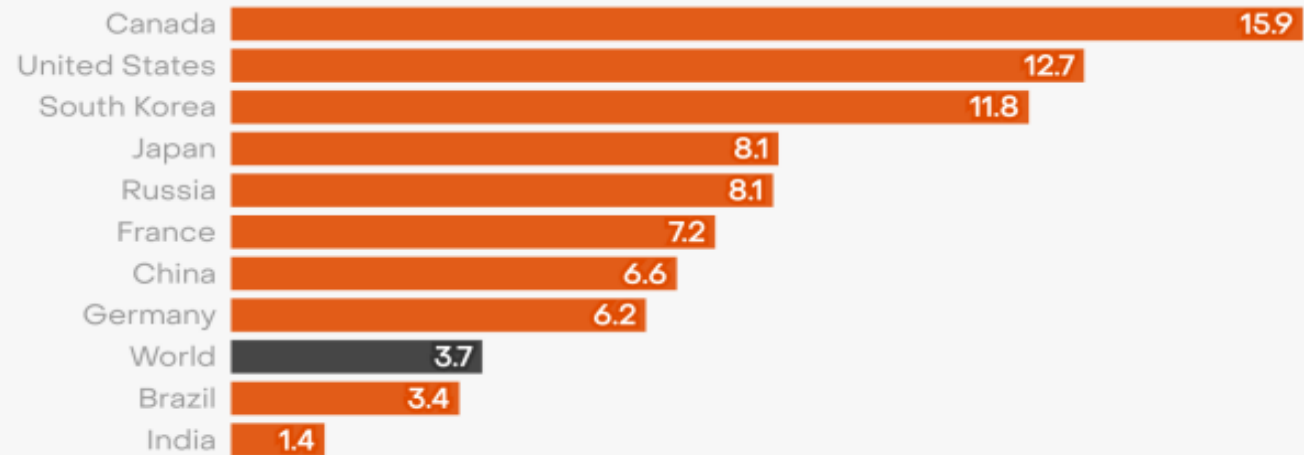


**Infrastructure, Projects &
Enterprises**

Energy Profligacy - National Dividend Opportunity

Demand per capita of top electricity consumers in 2023

MWh



Source: Annual electricity data, Ember
Graphic shows the ten countries with the highest electricity demand

EMBER



Dialogue C

Decarbonization Must be Grounded on Deep and Enduring Relationships, Holistic and Material Information/Perspective Dialogue - a Just Transition

Widespread Scalability & Replicability Drives Impact



Decarbonization Research – Core Competencies

- ❖ Externally-Oriented from Institutions
- ❖ Trends Tracking & Macro Information
- ❖ ‘Follow the Money’
- ❖ Fused/Integrated Technology & IP
- ❖ Transactional Literacy: Projects/Enterprises
- ❖ Continually Broadening Circles
- ❖ Intersectional Energy Futures
- ❖ Speed Counts



Accountability of
Early Stage
Researchers



Decarbonization DNA

The National Imperative is catalyzing impactful Decarbonization that achieves broad-based societal interests

Achieved through knowledge application in a people-centered economy that reflects enduring relationships



With Appreciation

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