



Natural Resources
Canada

Ressources naturelles
Canada

Canada's Perspective on Hydrogen Trade Technology, Standards, and Regulatory Alignment

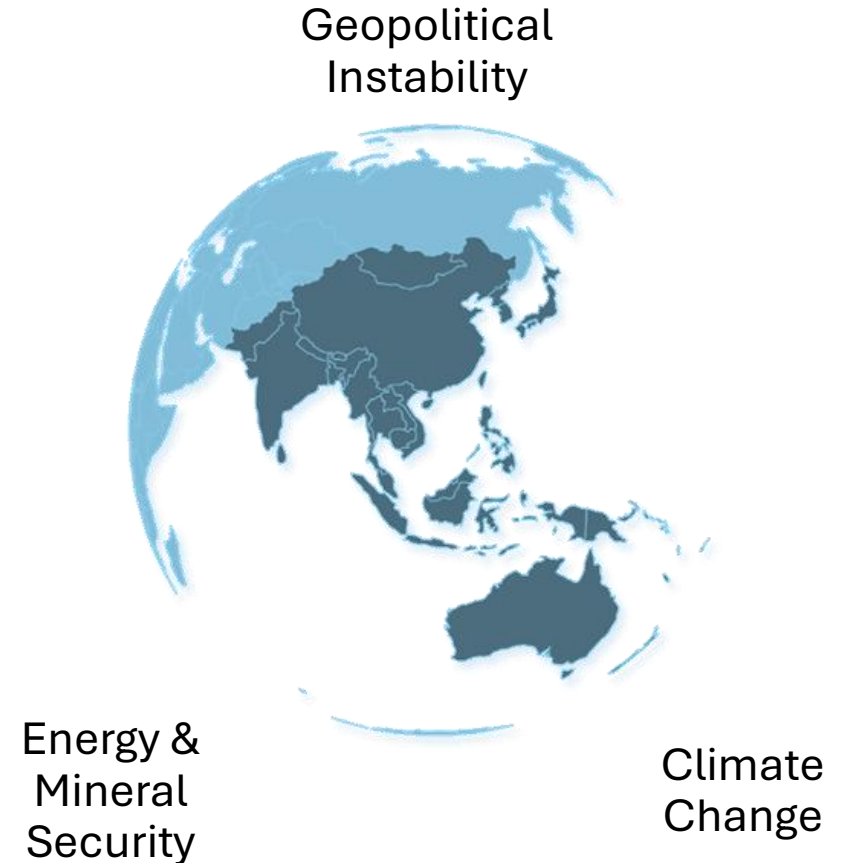
APEC CLCH Policy Convention |
Hong Kong, China | May 2026
Natural Resources Canada



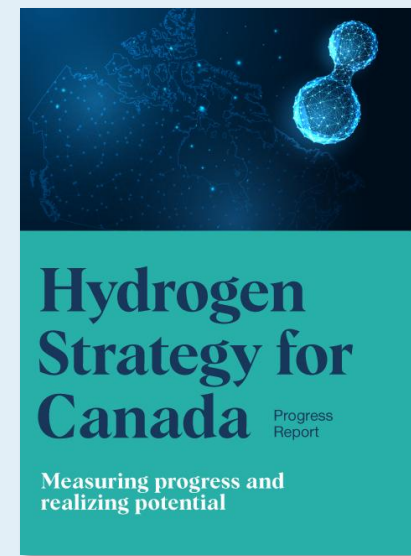
Canada

Hydrogen Trade is Emerging in a More Complex Energy Security Context

- Energy & mineral security and decarbonization are driving hydrogen strategies.
- Supply is scaling globally — but unevenly.
- Trade depends on trusted rules, infrastructure and standards.
- Canada is positioning itself to support the Indo-Pacific region in its transition to a low-carbon footprint using clean energy.



Canada's Hydrogen Opportunity is Moving from Strategy to Market Formation



- **80** production projects announced in Canada since 2020 represent potential **\$100 billion** in investment, **5 Mt** of H₂ production capacity
- **Heavy industry** and **transportation** (e.g., truck, rail, marine) as priority end-uses.
- **Export** a key driver of production growth
- Progress on enabling policies, codes and standards, regional development, and international partnerships...

Hydrogen Value Chain Segments

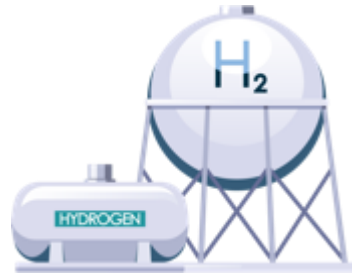
Production

Delivery & Storage

End-Use



- Carbon Intensity
- Electrolysis
- Reforming
- Other Emerging Technologies



- H₂ Carriers
- Gas/Liquid Delivery
- Storage, Conversion, Vapourization



- Power
- H₂ Gas-Burning Appliances
- Natural Gas-Hydrogen (NG-H₂) Blending
- Vehicles Fueled by H₂ and Blends
- Dispensing
- Mining and Industrial Use
- Oil and Gas

Hydrogen Requires Coordination Across Multiple Standards Systems

The national standardization system includes:



- Canadian regulators consider domestic, national, regional, and international standards to best meet their regulatory objectives

International Alignment is Critical to Enabling Hydrogen Trade

International Standards

- Developed by global organizations such as ISO and IEC
- Aim to harmonize technical specifications across countries



Regional standards

- Address shared needs among neighbouring economies
- May align with international ones or address regional-specific priorities



National standards

- Reflect domestic needs, regulatory requirements, and stakeholder input



Codes and Standards 101

Code: Legally enforceable rule mandating what must be done for safety (i.e., seat belts required in all cars).

Standard: Provides minimum requirements for the use, safety, and performance or design of products, processes, and services (i.e., reason why car seats plug into seat belts of all types of cars).

Standards are voluntary – unless referenced in regulation or legislation.

In Canada, standards are developed and maintained by Standards Development Organizations (SDOs).



Standards Development Organizations (SDOs) Enable Market Consistency and Trust

- In Canada, SDOs are accredited by the Standards Council of Canada.
- SDOs develop and maintain technical standards across the value chain.
- Standards are:
 - Developed by experts as part of technical committees and consensus processes.
 - Updated regularly Standards are reviewed periodically (e.g. every 5 years).
 - Critical to supporting safety, interoperability, and regulatory alignment.

Sustained coordination is required to keep standards current and relevant.



Standards Council of Canada
Conseil canadien des normes



Standards Systems Vary Globally – Alignment is Not Automatic

	Canada	USA	EU
Degree of government involvement	Moderate	Low	High
Primary standards developers	Private SDOs (and previously CGSB) accredited by SCC	Private SDOs coordinated by ANSI	EU Mandate to CEN/CENELEC/ETSI
International alignment	Strong focus on harmonization	Market-driven focus	Focus on strategic alignment with EU policy goals
Stringency of petroleum standards	Environmental stringency aligned with USA	Higher aromatic content allowed than EU, state level variation allowed	High stringency to align with climate change and air quality government priorities

Canada's Approach: Strategize, Roadmap, Co-ordinate, and Harmonize

2020



- [Hydrogen Strategy for Canada](#) identified codes and standards pillar as critical enabler in hydrogen deployment

2021



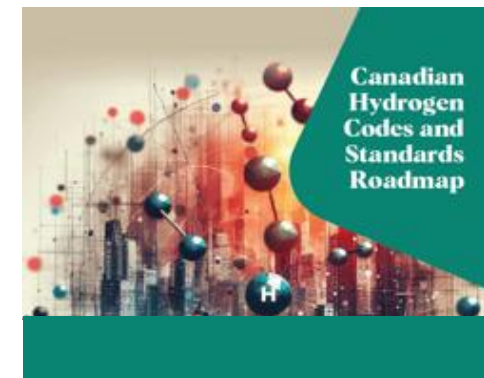
- Established the [Codes and Standards Working Group \(CSWG\)](#)

2022



- Formed 3 task forces (production, delivery & storage, end-use)
- Conducted gap analysis
- Engaged members in prioritization

2025



- Published the [Canadian Hydrogen Codes and Standards Roadmap](#)



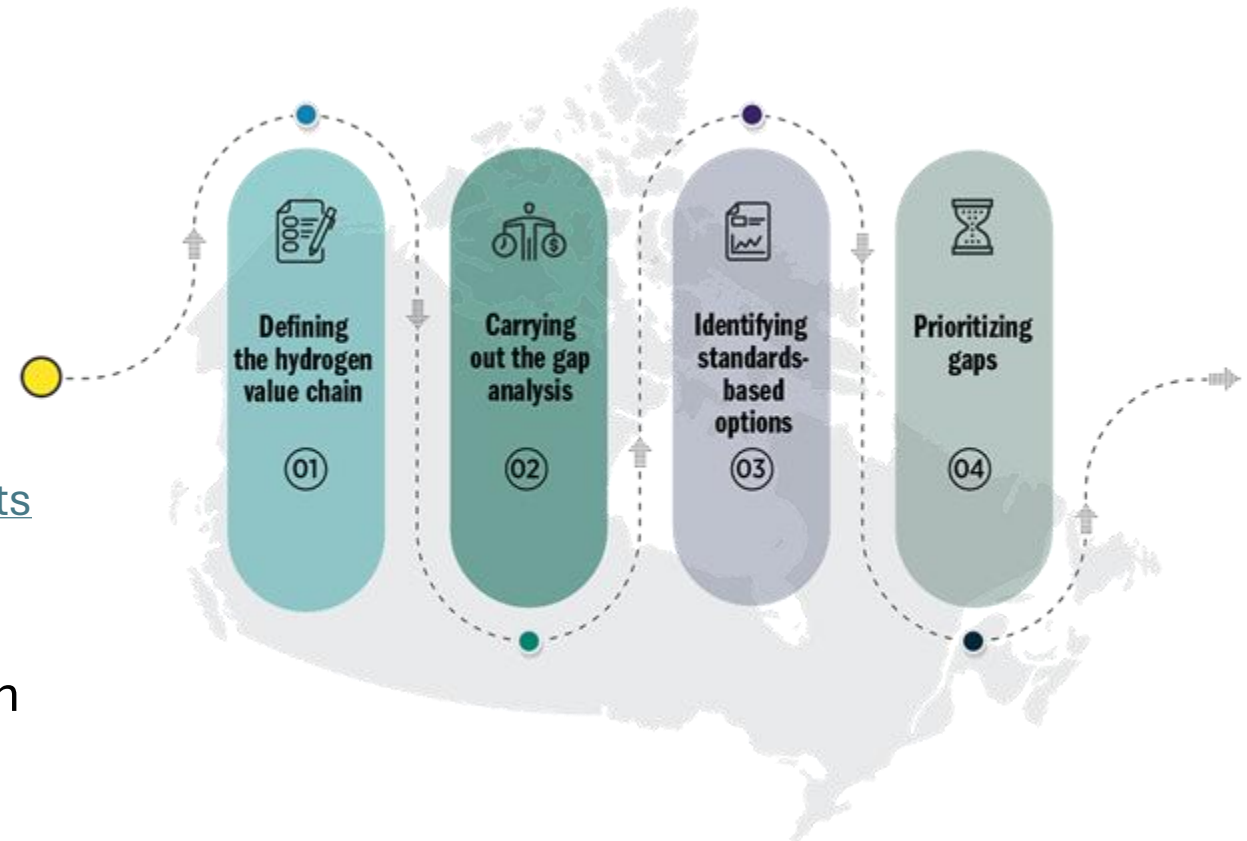
Codes and Standards Working Group

- Co-chaired by Natural Resources Canada & Standards Council of Canada
- Established in April 2021
- 230+ diverse members
- Quarterly meetings
- Knowledge-sharing platform
- Three task forces: production, delivery and storage, and end-use



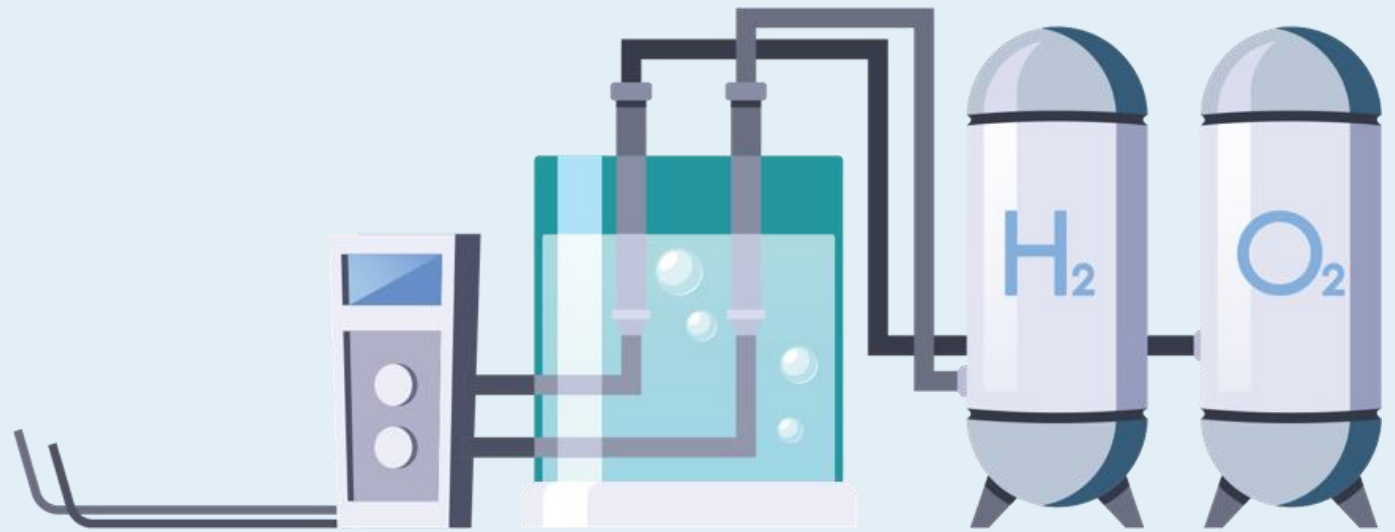
Scope and Methodology

- 72 hydrogen elements within three groups: Production, Delivery & Storage, End-Use
- Performed a global environmental scan
 - Existing and in-development standards
 - Roadmap is accompanied by the [List of Codes, Standards, and Guidance Documents](#)
- Standards-based options assigned (1 to 6)
- Prioritization of gaps and timelines for action
- Out of scope: emerging technology, export, etc.



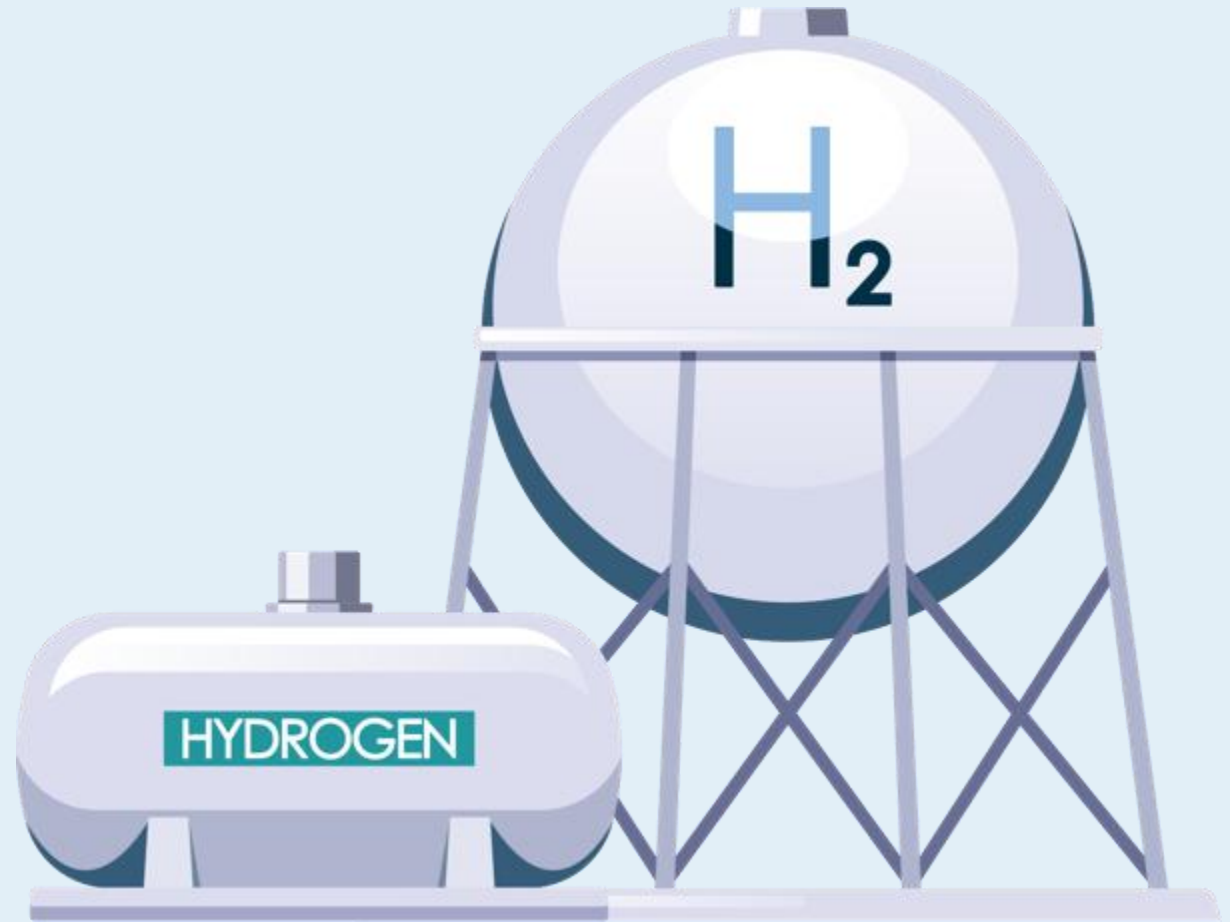
Gaps in Production

- Carbon Intensity
(production-related: CCUS, carbon market, clean grid, etc.)
- Water Electrolysis
 - Centralized or decentralized
 - Offshore



Gaps in Delivery & Storage

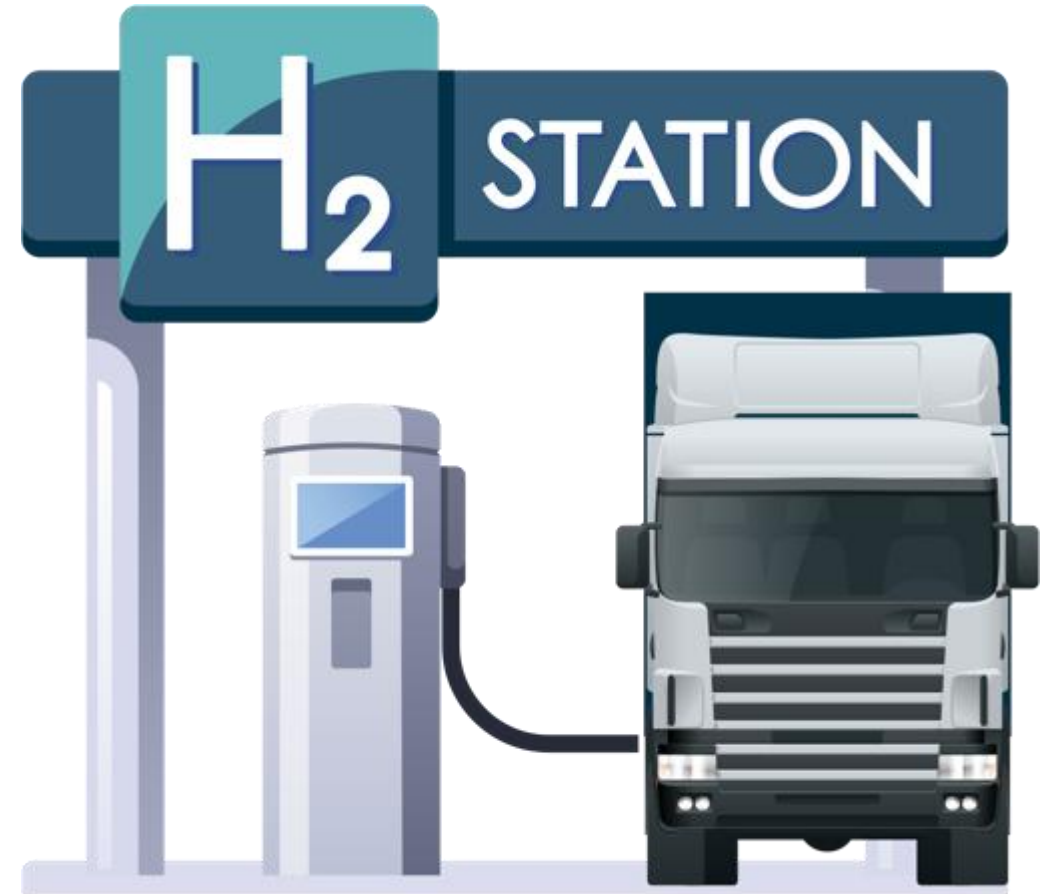
- GH_2 Storage
- GH_2 Delivery by Truck
- NH_3 for H_2 Delivery and Storage
- LH_2 Storage at Production Site
- NH_3 Cracking to Liberate GH_2



Gaps in End-Use

Transport-related:

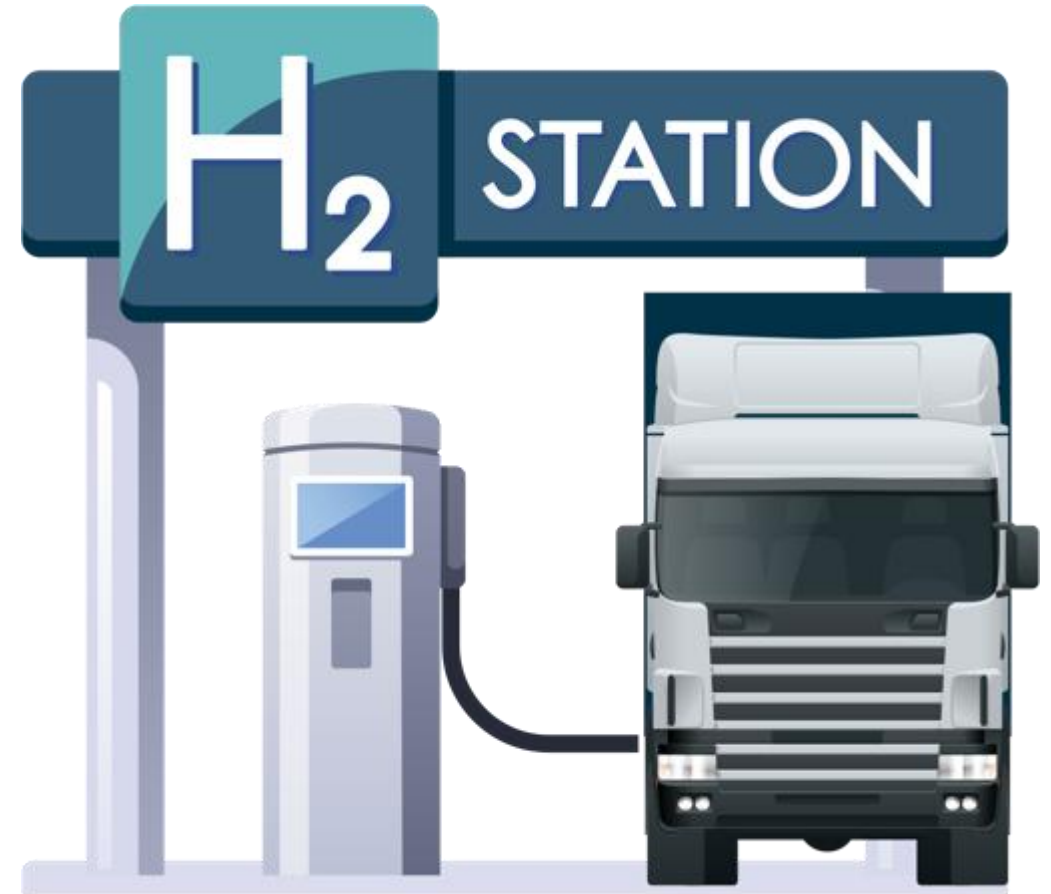
- H₂ Dispensers for Light-Duty Vehicles
- H₂ Heavy-Duty Buses & Trucks
- H₂ Light-Duty Vehicles
- H₂ Dispensers for Heavy-Duty Vehicles
- H₂ Materials Handling



Gaps in End-Use

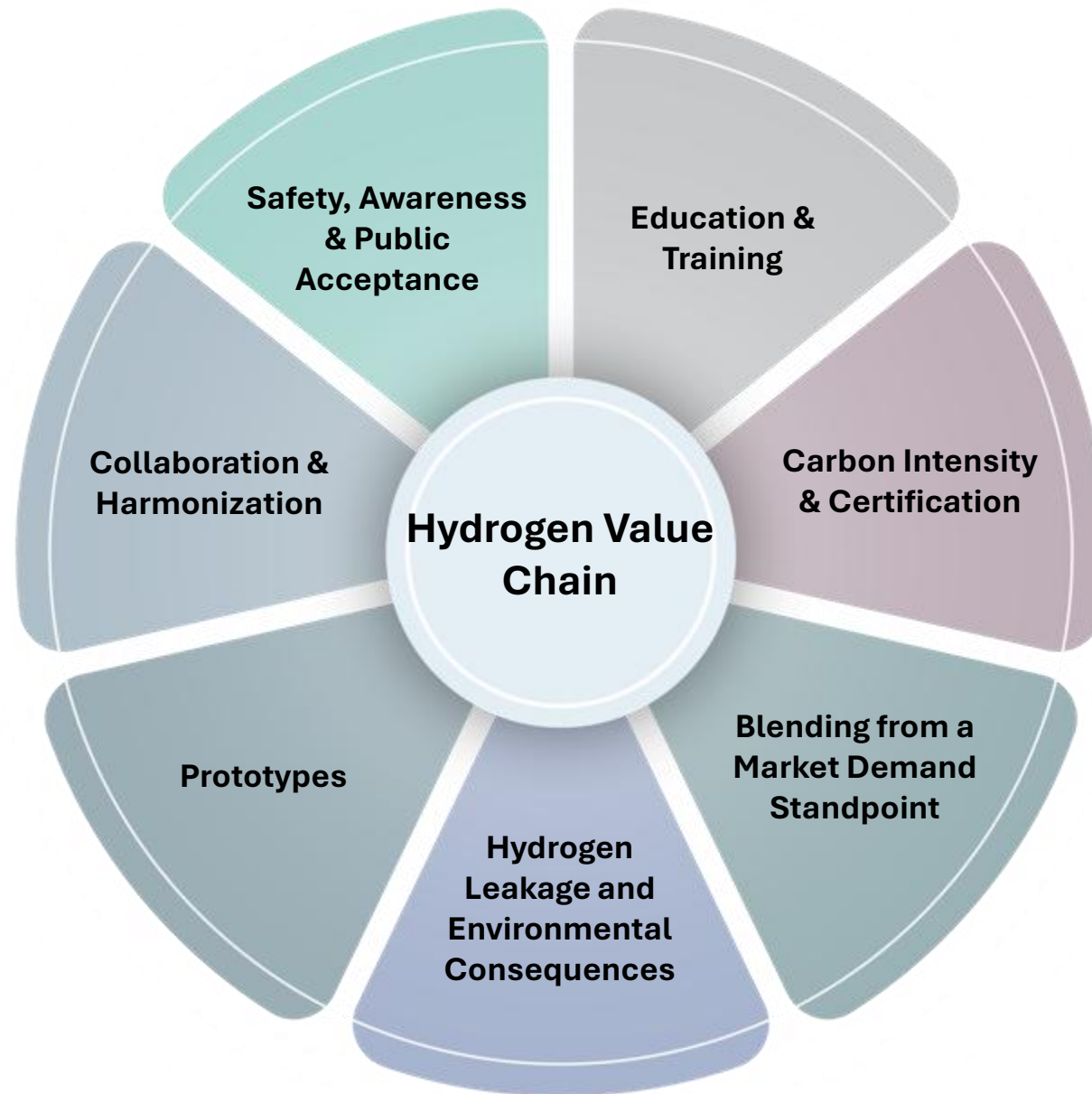
Blending, Appliances, Power & Industrial:

- GH₂ Injection into NG Pipeline Systems
- GH₂ Cooking Appliances
- GH₂ Furnaces & Burners
- Steel Production
- Portable & Micro Fuel Cell Power Systems



Cross-Cutting Issues

Addressing these key issues is vital for the safe and scalable deployment of hydrogen





International Initiatives

International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE)

- Founded in 2003 to facilitate and accelerate global hydrogen and fuel cell technologies adoption and applications.
- Government to Government partnership involving 27 countries and the European Union.
- IPHE has 3 Working groups and 6 Task Forces.



RCS & Safety
WG



Education &
Outreach
WG



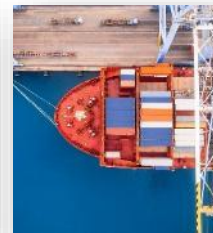
Environmental
Impact
Analysis
WG



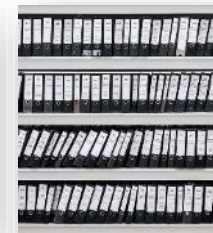
Certification
Mechanisms
TF



Trade Rules
TF



Maritime
TF



Permitting
TF



Bulk Storage
TF



Skills
TF

- Canada is Vice-Chair of the IPHE and is active in all Task Forces.
 - Co-chair of the Trade Rules Task Force
 - Co-chair of the Maritime Task Force

Advancing Hydrogen Trade Through International Collaboration



**Asia-Pacific
Economic
Cooperation**

- Canada will host a workshop in Western Canada relating to:

“Roadmapping Hydrogen Codes and Standards: Lessons Learned from Canada’s Roadmap Process”
- Objectives are to:
 - Collaborate with APEC member economies
 - Identify areas of common interest for consideration in developing international standards at the ISO
- Canada can also provide support to attendees in creating their own hydrogen codes and standards roadmaps by applying lessons from Canada’s experience



Policy & Investment

Canada's Financial Toolkit: Investment Tax Credits

A robust suite of refundable credits designed to lower capital costs and accelerate deployment.



Core Hydrogen & Carbon Support

Clean Hydrogen Investment Tax Credit

15 – 40%

Refundable tax credit based on carbon intensity.

New: Includes **methane pyrolysis** (Budget 2025).

CCUS Investment Tax Credit

Extended to 2035 (Budget 2025)

60% for Direct Air Capture equipment

50% for other eligible capture equipment

37.5% for transport, storage & use equipment



Clean Tech Ecosystem Support

Clean Technology ITC

30%

Refundable credit for zero-emission technology adoption.

Clean Tech Manufacturing ITC

30%

Refundable credit for manufacturing and processing equipment.

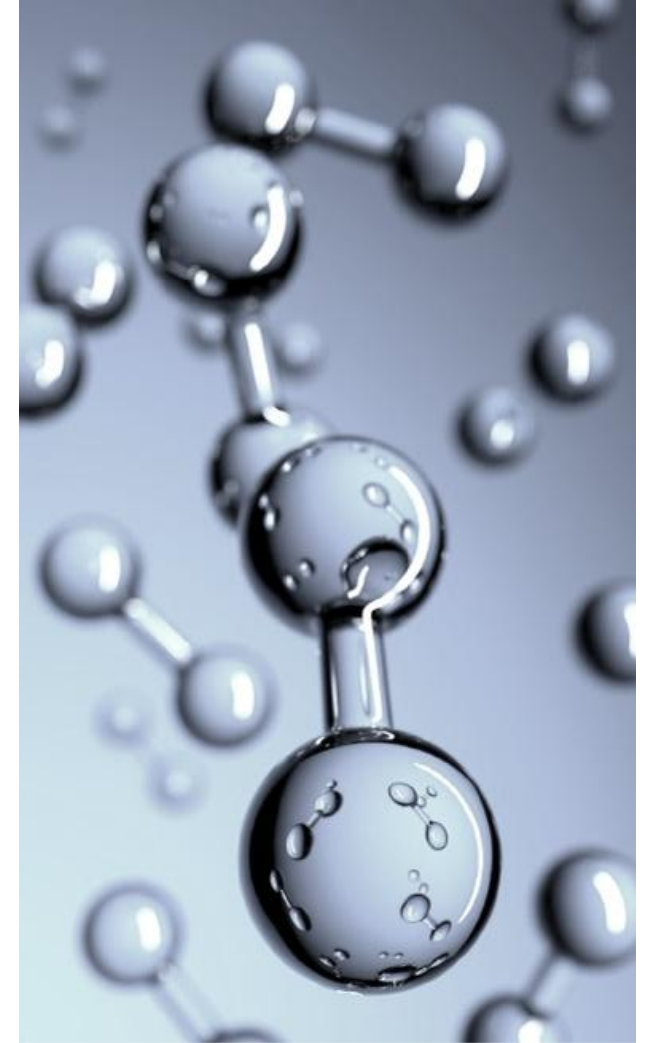
Clean Electricity ITC

15%

Refundable credit to support grid decarbonization.

Canada is Supporting Competitiveness

- ✓ [Canada Growth Fund](#) – potential equity financing and investments to support domestic end-use development
- ✓ [Export Development Canada](#) – able to provide credit and debt financing for export projects to help de-risk their development
- ✓ [Canada Infrastructure Bank](#) – potential debt financing and may provide support for FEEDs (Project Acceleration), expanded under Budget 2025
- ✓ [Alignment](#) of production and demand incentives to establish international hydrogen corridors





In Canada's View, Hydrogen Trade Will Scale Through Alignment

- Standards
- Certification
- Demand
- Investment
- Infrastructure



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