



**Asia-Pacific
Economic Cooperation**

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Perspective and Actions Underway in the International Partnership for Hydrogen and Fuel Cells in the Economy

Submitted by: International Partnership for Hydrogen and Fuel Cells in
the Economy



**Policy Discussions on Trade-Related
Policies to Promote Trade in Environmental
Products and Technologies Including
Regulatory Issues, Contributing to Global
Carbon Neutrality
9 September 2021**



International Partnership
for Hydrogen and Fuel Cells
in the Economy

Asia Pacific Economic Cooperation – Policy Dialogue

Trade Policies to Promote Trade in Environmental Products and Technologies

Perspective and Actions Underway in the International Partnership for Hydrogen and Fuel Cells in the Economy

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Thursday 9 September 2021

IPHE: Global Government-to-Government Partnership

Accelerate Hydrogen and Fuel Cell (FCH) Deployments



Formed in 2003

Chair
The Netherlands

Vice-Chairs
Japan
United States

Past Chairs
United States
Canada
Germany
Japan
France

Priorities:

1. Share Information on Latest Developments
2. Inform Future Government Policy
3. Foster Collaboration

The IPHE addresses these Priorities by,

- **Coordinating and Sharing Information** – at Bi-Annual Steering Committee Meetings, and through Webinars, Brochures, Newsletter
- **Developing Economy Updates** – Economy Profiles at www.iphe.net
- **Working Groups:**
 1. Regulations, Codes, Standards & Safety (RCSS)
 2. Education & Outreach (E&O)
- **Task Forces:**
 1. H₂ Production Analysis
 2. H₂ Trade Rules

And by, Coordinating with International Initiatives and Organizations including the IEA, HEM, CEM/MI, HC, IRENA & Others

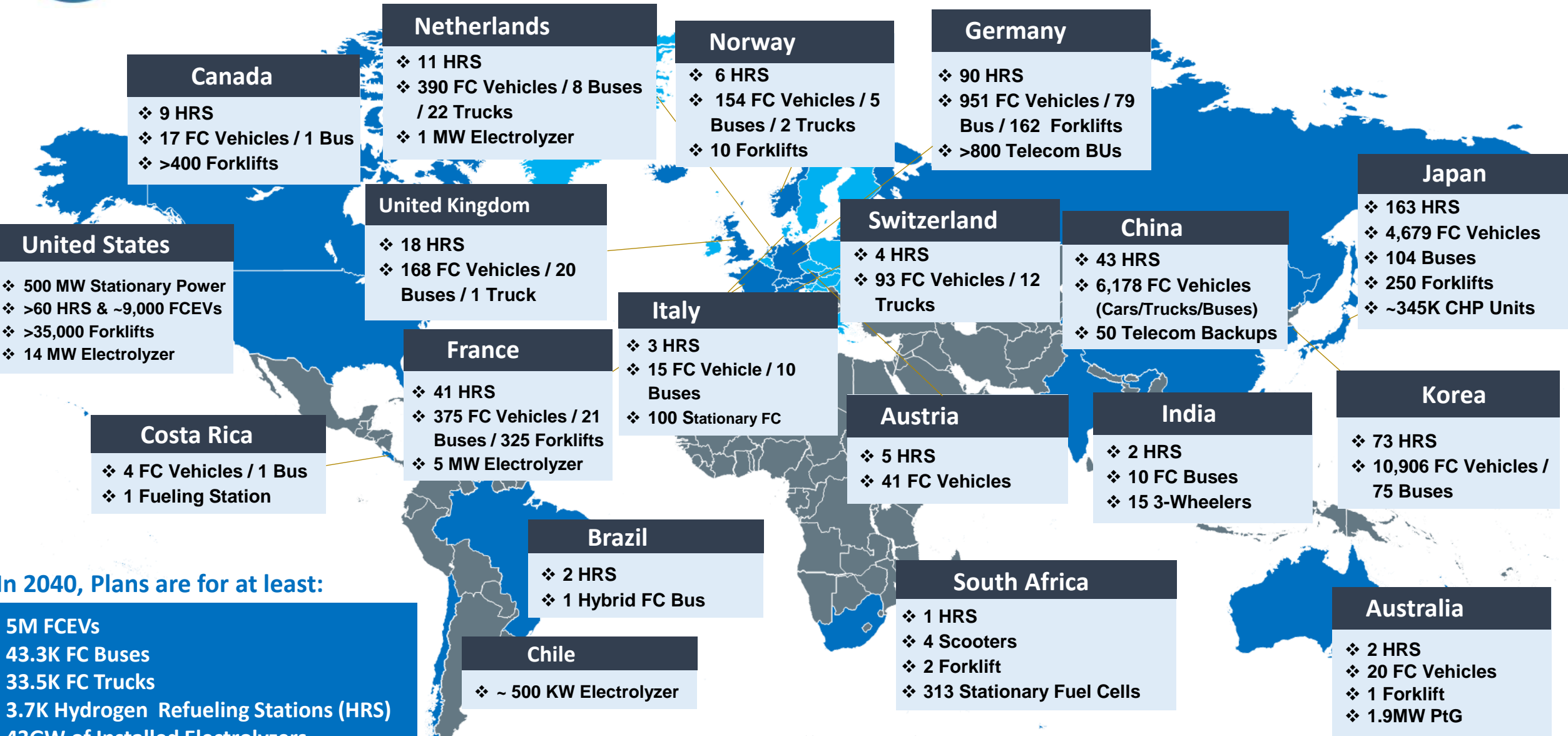
Australia	Japan
Austria	The Netherlands
Brazil	Norway
Canada	Russia
Chile	South Africa
China	Korea
Costa Rica	Switzerland
France	United Kingdom
Germany	United States
Iceland	European Commission
India	

**21 Members &
European Commission**



The International Partnership for Hydrogen and Fuel Cells in the Economy

Deployments in IPHE Member Countries March 2021



In 2040, Plans are for at least:

- 5M FCEVs
- 43.3K FC Buses
- 33.5K FC Trucks
- 3.7K Hydrogen Refueling Stations (HRS)
- 43GW of Installed Electrolyzers

Source: IPHE Economy Updates (<https://www.iphe.net/partners>) and independent references and estimates.

International Developments

Global Momentum Growing Significantly:

- **+30 Domestic or Regional Hydrogen (H2) Strategies and Roadmaps** published in the past 2 years
 - **Clean H2 a Key Challenge**
- **As of June 2021** in IPHE member countries*
 - **\$30B in announced public funding for H2 specific actions**, 10% increase from December 2020
 - **18% increase in transport vehicle deployments** between December 2020 and June 2021
- **Trade Corridors:** Japan – Australia, MENA – Europe and more exploring opportunities; Ports as key hubs (e.g., Sines, Portugal; Rotterdam, Netherlands; Ministry of Energy, Chile)

* Does not include IPHE Members China and Russia



International Hydrogen Initiatives



Technology Focus

Policy & Markets Focus

Hydrogen Energy Ministerial

Global Action Agenda (GAA), framework & requests to 10's; 10, 10, 10 Targets + future targets; Platforms for H2 supply chain, mobility

International Partnership for Hydrogen and Fuel Cells in the Economy

Regulations, Codes, Standards, Safety; Education & Outreach; Facilitate Int'l Trade & Harmonization

Hydrogen Council (Industry)

Works with IPHE, CEM, HEM, MI, others: Deployments, Public Private Partnerships, Finance & Investment

IEA: Technology Collaboration Program - R&DP, techno-economic analysis, crosscutting issues, IEA's analytical support

IEA: Energy Technology Policy - Track tech deployment; policy & market analysis; scenarios; high-level gov't & industry exchange

Mission Innovation 2.0 (Clean Hydrogen)
R&D and Innovation-Push; Technology goals performance; Missions – pilot large scale projects

Clean Energy Ministerial (Hydrogen Initiative)
Policy and Market-Pull; Deployment/cost goals and targets; Policy/project review, analysis, and experiential learning

International Renewable Energy Agency (CF on Green Hydrogen)
Renewable Energy (RE) based hydrogen, awareness & investment opportunities with RE

World Economic Forum (Accelerating Green Hydrogen)
C-Suite Industry and Gov't Engagement; UNFCCC focus

CLEAN HYDROGEN ONLY

Links between Ministerial meetings

Key Drivers: Based on Unique Circumstances

- **Environmental Benefits – Climate Change**
 - Climate Change, Clean Air/Local Air Quality, Noise Pollution
- **Energy Security**
 - Security of Supply and Resource Diversity
- **Energy System Resiliency and Stability**
 - Effective Use of Variable Generation – grid services, storage at scale, and sector coupling
 - Distributed Generation Option
- **Economic Growth: Innovation & Technology Leadership**
 - New Products and Supply Chains across Sectors
 - Skilled Jobs and Manufacturing Opportunities
 - Impact on Transportation (marine, rail, vehicles, trucks, air), Industry (e.g. steel, ammonia), Stationary power, and Energy Storage

Key Challenges: Need to Get to a Global Scale

1. Innovation

- Must get **low-carbon hydrogen cost competitive** – Requires Innovation and Scaling-up Production

2. Policy and Regulatory Framework

- Functioning market requires:
 - **Stable and strong Policy Signals** (e.g., Strategies, Road Maps, Tangible Targets and Goals)
 - **Regulatory Certainty** (e.g., Consistent Regulation, Codes, Standards & Safety requirements)
 - **Market Transparency** (e.g., Carbon Content)

3. Infrastructure Investment

- **New Production Methods** (e.g., Steam Methane Reforming with Carbon Capture Utilisation and Storage, Electricity (Renewable) and Electrolysers)
- **Efficient Transmission/Transportation** (e.g., Repurpose Pipelines, New Hydrogen Carriers)
- **Effective Use in Processes and Products** (e.g., Business Cases for different ways to make the same Products)

Issue: Facilitate a Global Market in Hydrogen

- Trade will benefit from ***common internationally agreed*** Standards for the safe transport/storage of H₂, and from tracing the environmental impacts of different supplies.
- Identical H₂ molecules can be produced from sources with very different GHG intensities.
- Accounting standards for different sources fundamental for a low-carbon hydrogen market.

Scope of the H2PA TF (*IPHE is not a Standards Body*)

- Develop a **mutually agreed methodology approach for determining the GHG emissions associated with the production** of a unit of hydrogen.
- Mutually agreed methodology will **help facilitate the market valuation and international trade** in 'clean' hydrogen by recommending a common approach established by several countries.

Goal: Near-term Outcome

Take initial steps to develop a mutually agreed methodology approach for determining the GHG emissions associated with the production of a unit of hydrogen.

IPHE Hydrogen Trade Rules Task Force (H2TR TF)

Issue: Facilitate Global Trade in Hydrogen

- Trade will benefit by **identifying tariff and non-tariff barriers on imports and exports of hydrogen.**
- **Understanding the trade rules** under the World Trade Organisation and various Free Trade Agreements for hydrogen to help identify potential barriers as trade in hydrogen scales up.

Scope of the H2PA TF

- Understand current trade rules across IPHE member countries including multi-lateral trading agreements – **initial focus is to understand the “playing field”**, and answer the questions:
 - What are the trade rules on H2 and H2 carriers?
 - And, what do these trade rules mean for the trade in hydrogen at large volumes?
- **“Trade Rules”** includes:
 - **Tariff Rates**
 - **Technical Requirements** such as Certifications for Safety and for Security
 - **Customs Procedures**

Goal: Near-term Outcome

Information on trade rules to help inform countries’ Hydrogen Strategies and Road Maps.

IPHE Working Group: Regulation, Codes, Standards & Safety



Approach:

- Identify areas for action, provide guidance and forum for progress towards common RCS&S protocols.

Role: *(IPHE is not a Standards Body)*

- Act as a catalyst for cooperation and facilitating harmonization with deliverables.
- A Forum where challenging regulatory issues can be discussed and recommendations put to IPHE members.

Current Work Item:

Compiling database of technical regulations related to:

- **Hydrogen Infrastructure:** NG streams, H2 refueling, maritime rules
- **Hydrogen Mobility:** Fuel Cell mobility units and rules for approval of H2 and H2-based fuels for vessels

Goal: Identify areas for action, make recommendations on Standards work for the safe and effective handling of H2 in these areas.

IPHE		RCS&S Compendium
Scope	Develop a Compendium of relevant Regulation, Codes & Standards, leading to identifying gaps for action by countries and organizations. Focus on Technical Regulations related to government policies to ensure that the regulations are not a barrier to action.	
Topics	Hydrogen Infrastructure <ul style="list-style-type: none"> - Harmonise national and across borders regulations on injection of hydrogen in natural gas streams (permitting requirements, injection limits, gas quality, safety and end-user equipment requirements, payment and remuneration mechanisms) - Harmonise HRS regulations (land and use plan, permitting requirements/process, safety requirements and process (safety distances internal / external) including multi-fuel refueling stations, on-site production stations) - Maritime: rules for the landing and bunkering of hydrogen and on-shore and off-shore refueling of hydrogen and hydrogen-based fuels vessels Hydrogen Mobility <ul style="list-style-type: none"> - Harmonization of regulations for broad deployment of fuel cell mobility units (tunnels, bridges, underground parking) - Harmonization of regulations of fuel cell heavy duty mobility units not covered by UNECE GTR 13 (ships, trains, aircrafts, trucks) - Rules for the type of approval of hydrogen and hydrogen-based fuels vessels (ships, boats, utility vessels...) 	
Actions	<ul style="list-style-type: none"> - For each topic, a specific sheet has been developed to describe the existing regulations - It is followed by a questionnaire to better describe the process and prescription of your country. Fill as much questions as possible to facilitate the gap assessment - Please fill at least the 2 questions per item: "Is it a barrier?" and "type of barrier". PLEASE EXPLAIN WHY IT IS BARRIER - A glossary is proposed to use the same terminology 	
Access to the sheets	H2_Infra_Injection_Legal H2_Infra_Injection_Question H2_Infra_HRS_Legal H2_Infra_HRS_Question H2_Infra_Maritime_Legal H2_Mob_Infra_Legal H2_Mob_Infra_Question H2_Mob_HDV_Legal H2_Mob_HDV_Question H2_Mob_Vessels_Legal	

Item	Country	Is it a barrier?	Type of barrier	Comments
H2_Infra_Injection_Legal				
H2_Infra_Injection_Question				
H2_Infra_HRS_Legal				
H2_Infra_HRS_Question				
H2_Infra_Maritime_Legal				
H2_Mob_Infra_Legal				
H2_Mob_Infra_Question				
H2_Mob_HDV_Legal				
H2_Mob_HDV_Question				
H2_Mob_Vessels_Legal				

IPHE Working Group: Education and Outreach

Approach:

- Sharing information on FCH technologies, status, challenges, opportunities, and initiatives
- Increasing awareness of FCH across diverse audiences by develop various materials and approaches

Current Actions:

- **Hydrogen & Fuel Cells Day Oct 8** celebrated around the world
- Publishing **Newsletters based in Economy Updates, Brochures**
- Hosting and Posting Webinars (<https://www.iphe.net/webinars>)
- Student Infographic Challenge
- **Early Career Network** (Contact early.career@iphe.net)
- Convening **Student Education & Outreach events** in concert with the biannual IPHE Steering Committee meetings

Goal: Broaden the understanding and engagements of Students and Public leading to Social Acceptance of H2 in the economy.



Summary: Actions Supporting Global Hydrogen Trade



1. Innovation

- Continued fundamental Research through to Development & Demonstration at-Scale Applications

2. Market Frameworks: Policies and Regulations

- Strong Policy Signals
- Regulatory Certainty
- Market Transparency

3. Infrastructure Investment

- Large Scale Investments
 - Governments, Industry, International Financial Institutions, and Investment Houses

Set Targets, Track, and Report – Hydrogen Energy Ministerial

Thank you

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