



Hydrogen TCP, the key to international R&D collaboration

World PtX Summit – Session 5 Technology Challenges

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The Hydrogen TCP in a nutshell

Established in **1977** under the auspices of the **IEA** to pursue international collaborative research in hydrogen



33

Members

24 Member Countries
7 Sponsors
European Commission + UNIDO

40+

Tasks

3 Ongoing
38 Finished
≈ 10 in definition

250+

Experts involved

In collaborative research on hydrogen and hydrogen technologies

The immense challenge of scaling up H₂ production

Our goals...

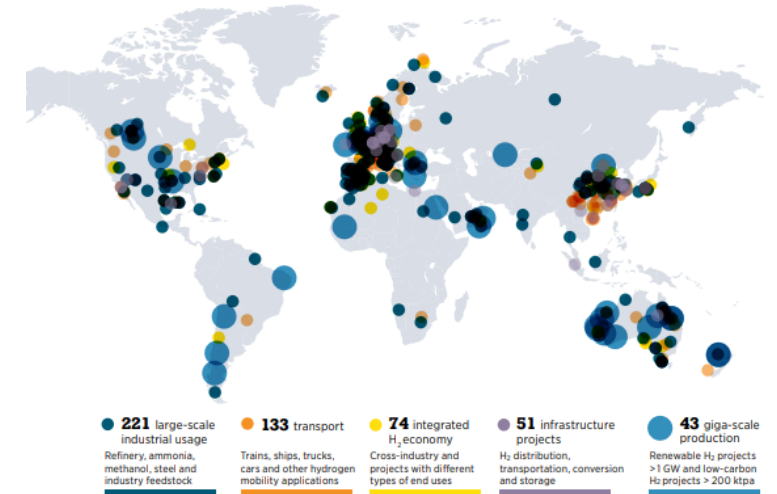
- NZE 2050 scenarios (1,5°C) estimate clean hydrogen production 400 - 800 Mt/year (IRENA, IEA, ETC, BNEF, Hydrogen Council...)
- Need to install 4000-5000 GW electrolysis by 2050
- That means 160 GW/year!

Vs Where we are...

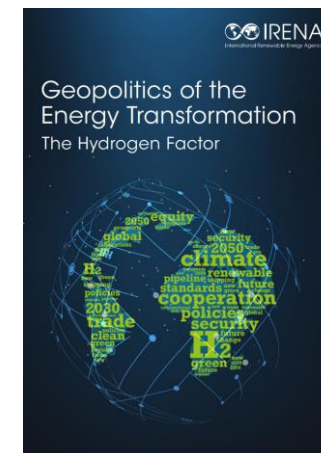
- The current portfolio of projects is around 280 GW to become in operation in the next decade (that means around 30 GW/year)
- To be on track we would need to launch every year for the next 30 years...
 - 2,5x "HyDeals"
 - or 11x "Asian Renewable/Oman Green Energy Hubs"

Despite an impressive portfolio of projects ... our pace is still too slow and subject to many hurdles

Figure 3.3 Clean hydrogen projects and investment as of November 2021

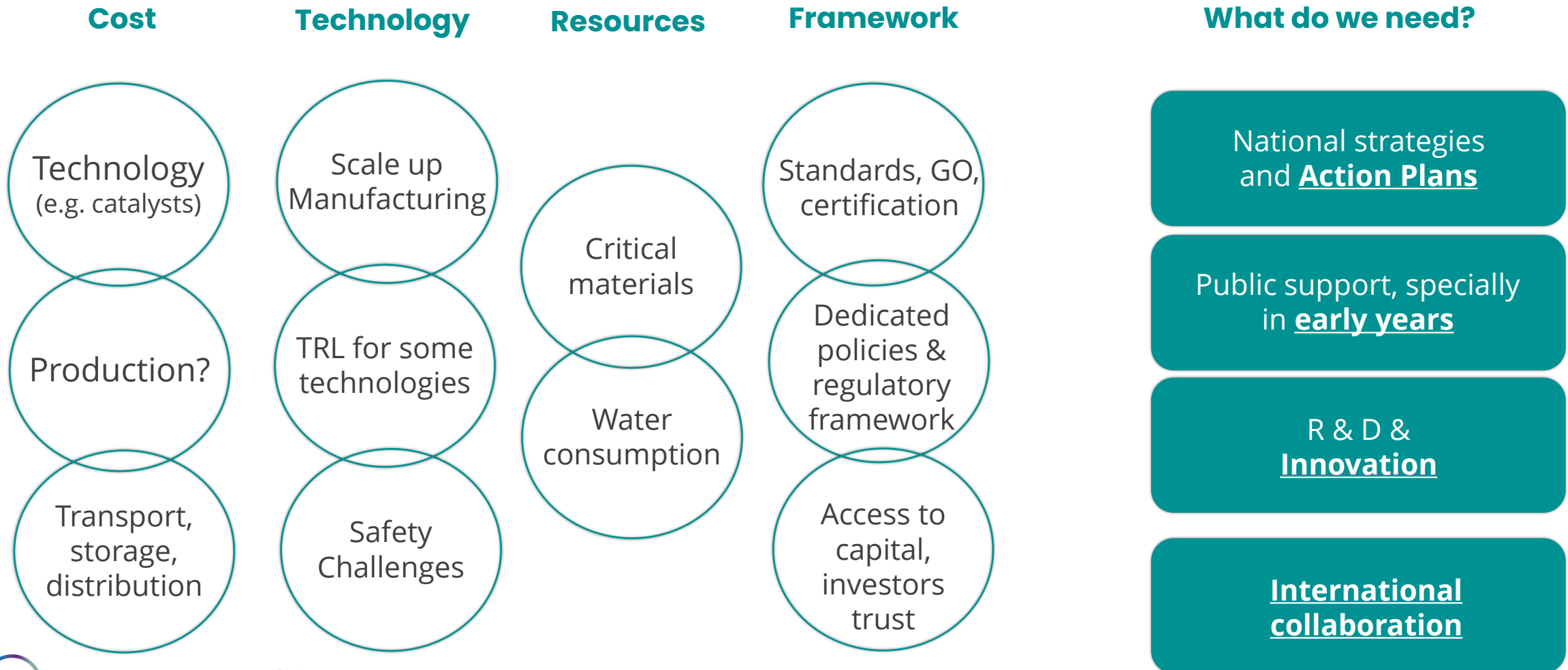


Source: Hydrogen Council (2021). Map source: Natural Earth, 2021
 Note: The figure describes large-scale projects only, including commissioning after 2030. It does not include more than 1 000 small-scale projects and project proposals. GW = gigawatt; H₂ = hydrogen; ktpa = kilotonnes per annum.



- 1 HyDeal Ambition (67GW) Western Europe
- 2 Unnamed (30GW) Kazakhstan
- 3 Western Green Energy Hub (28GW) Australia
- 4 AMAN (16GW)^a Mauritania
- 5 Asian Renewable Energy Hub (14GW) Australia
- 6 Oman Green Energy Hub (14GW)^a Oman
- 7 AquaVentus (10GW) Germany
- 8 NorthH2 (10GW) Netherlands
- 9 H2 Magallanes (8GW) Chile
- 10 Beijing Jilngeng (5GW) China
- 11 Project Nour (5GW)^a Mauritania
- 12 HyEnergy Zero Carbon Hydrogen (4GW)^a Australia
- 13 Pacific solar Hydrogen (3.6GW) Australia
- 14 Green Marlin (3.2GW) Ireland
- 15 H2-Hub Gladstone (3GW) Australia
- 16 Moolawatana Renewable Hydrogen Project (3GW)^a - Australia
- 17 Murchison Renewable Hydrogen Project (3GW) - Australia
- 18 Unnamed (3GW) Namibia
- 19 Base One (2GW)^a Brazil
- 20 Hellos green Fuels Project (2GW) Saudi Arabia

Main challenges for massive H₂ deployment



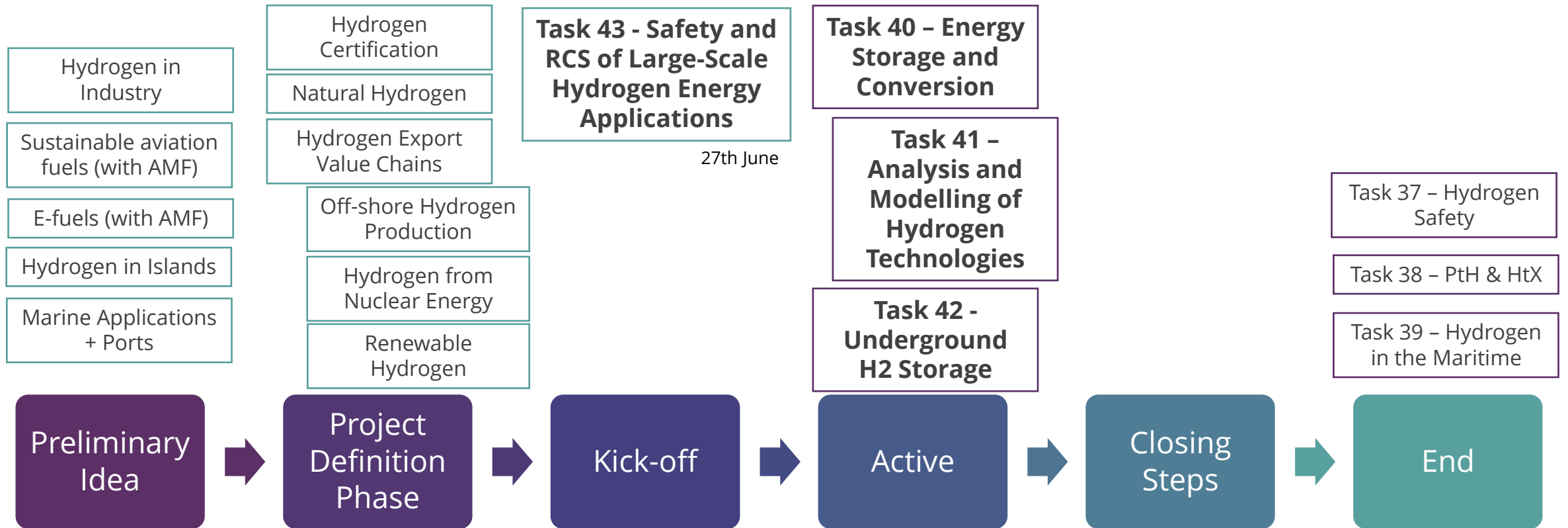
Why the Hydrogen TCP will play a key role?

- ✓ 40+ years of delivering high-value technical results to the hydrogen community
- ✓ 40+ successful Tasks
- ✓ Historical focus on R&D needs
- ✓ Results and findings publicly available on the Hydrogen TCP website
- ✓ Capability to mobilize hundreds of experts from around the world for a permanent effort over 3-4 years at a time
- ✓ The Hydrogen TCP covers the whole hydrogen value chain, when not alone in collaboration with...



- ✓ 2022 strategic activity on TRL Assessment
- ✓ The Hydrogen TCP can be the technical/operational branch to other international initiatives who could propose new topics for Tasks for ExCo consideration

Task portfolio status (June 2022)



- Document review for other organizations (IEA, other TCPs, international groups...)
- Planned strategic activities: TRL Assessment, Hydrogen TCP Awards

Thank You!

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