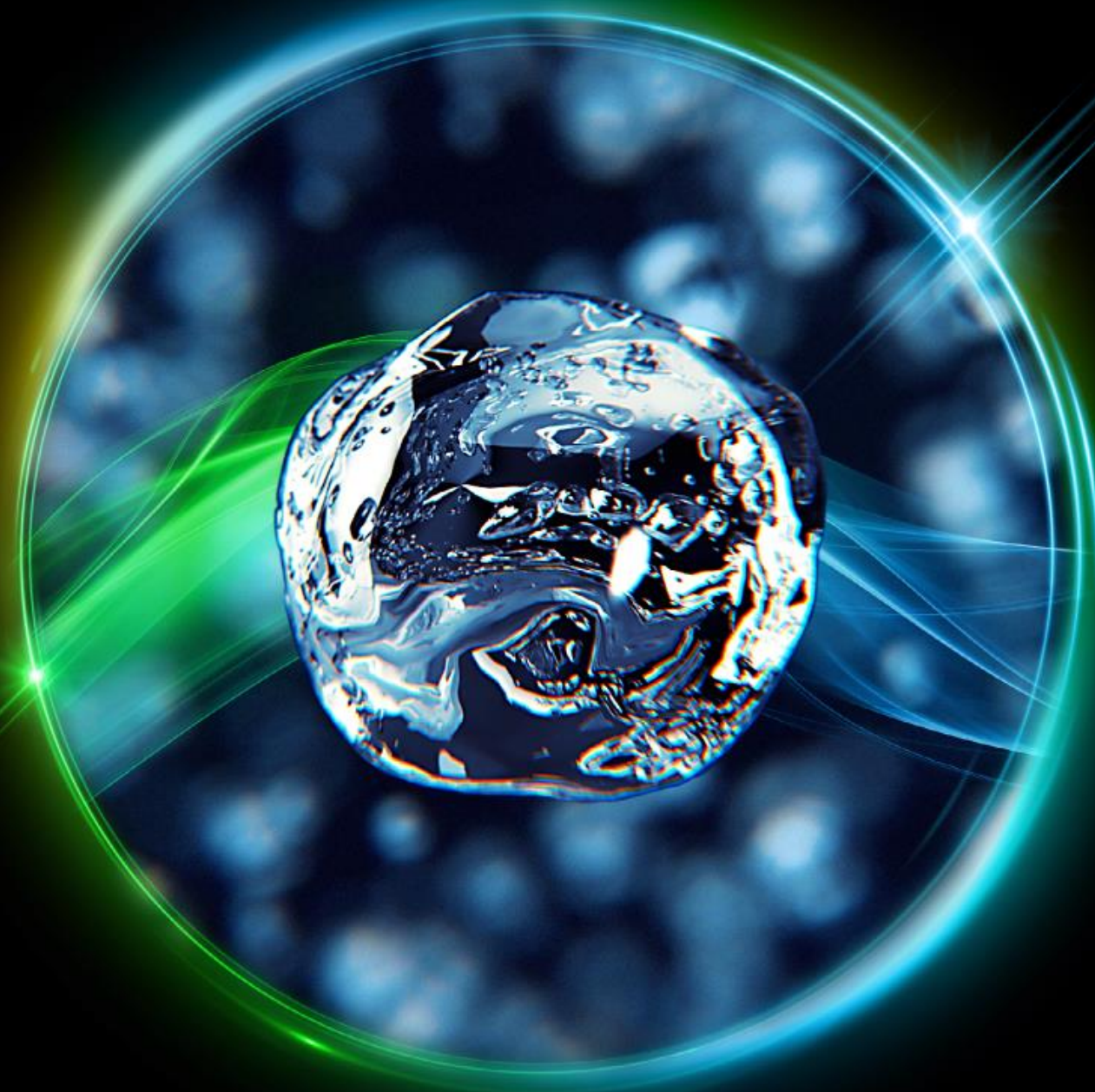


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Global Investment Innovation Incentives (*Gi³*)

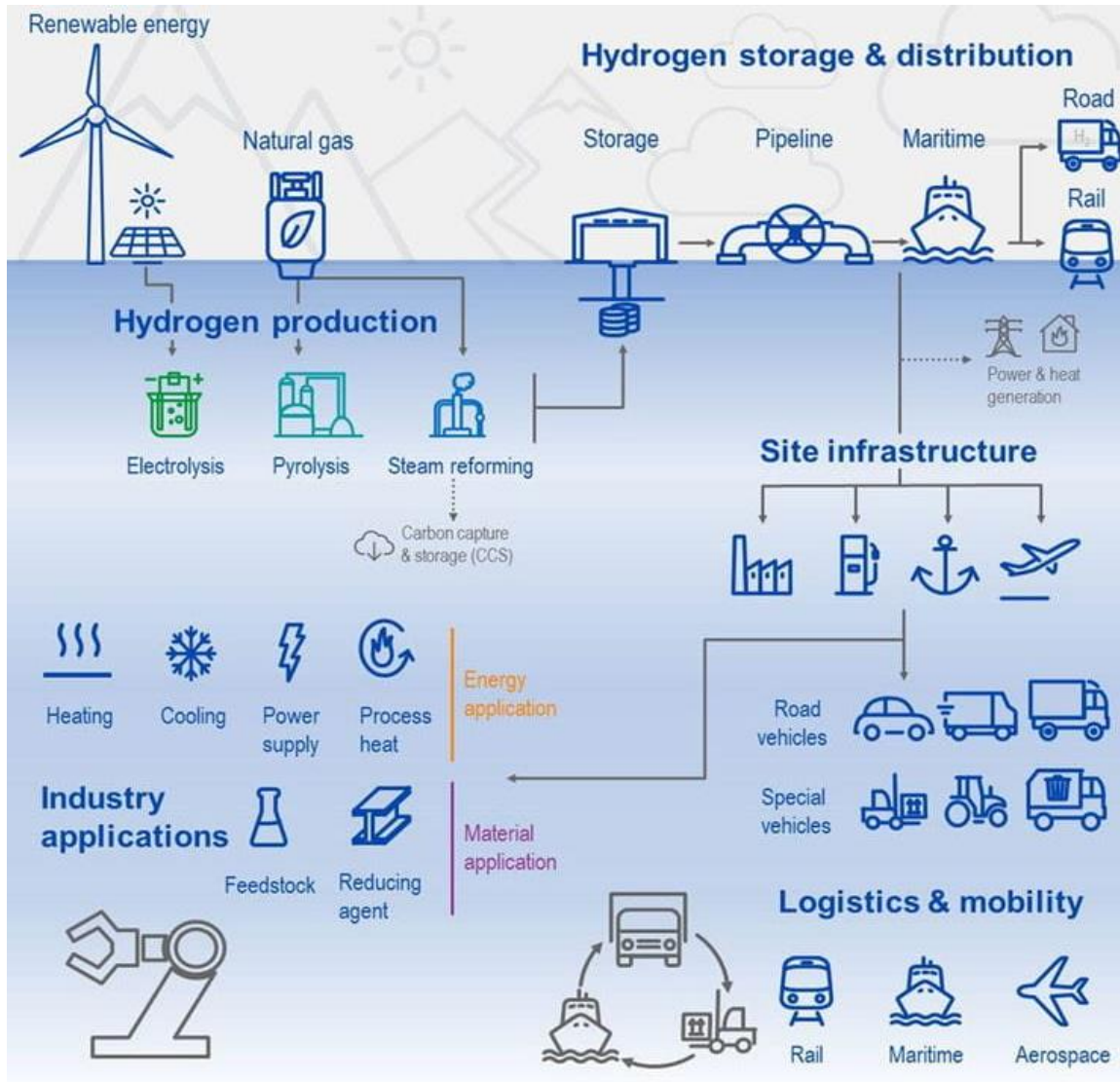
Hydrogen Experience

12 June 2023



Studio Tributario
e Societario

Hydrogen value chain



Source: WaterstofNet – Waterstof Industrie Cluster

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Grants and incentives available for the entire value chain around the world

Hydrogen production

- USA** : Clean Hydrogen Production Credit – 45V
- Europe** : European Hydrogen Bank
- Germany** : Carbon contract for difference
- China** : Subsidy for CAPEX investment regarding construction of Green factory

Hydrogen storage & distribution

- Europe** : Horizon-JTI-CleanH2 – Innovation Fund
- USA** : Hydrogen Shot – ITC 48
- Spain** : PERTE of Renewable Energies, Renewable Hydrogen and Storage (ERHA)

Site infrastructure

- Japan** : Development of hydrogen stations to promote fuel cell vehicles (FCV)
- Europe** : CEF
- USA**: H2 Hubs

Logistics & mobility

- China** : Nationalize subsidy for FC vehicle
- Europe** : Horizon Europe – Cluster 5 « Climate, Energy and Mobility »
- France** : CORAM 2022 & 2023

Industry applications

- China**: One project one discussion
- Germany** : Decarbonization of (Producing) Industry
- USA** : Regional Clean Hydrogen Hubs program
- Italy** : H2 in Hard to abate sectors

Main H2 trends worldwide

Main national plans for the development of the hydrogen energy industry

US

Obj: 10 million tons annually of clean hydrogen by 2030, 50 tons annually by 2050



> \$ 21 billions

National Clean Hydrogen Strategy

- **IRA: Clean Hydrogen Production Credit – 45V:** Provides until 0.60 cents for every kilogram of clean hydrogen produced
- **Regional Clean Hydrogen Hubs:** \$11 billion to develop regional clean hydrogen hubs
- **Electrolysis Program:** \$1 billion to facilitate commercial production of clean hydrogen using electrolyzers
- **CCUS plan:** \$ 8 billion for CCUS equipment

Europe

Obj: 40 GW by 2030, producing 10 million tons



ca € 20 billions

REPowerEU

- **Horizon Europe:** €300.5 million for renewable hydrogen projects
- **Innovation Fund:** EU invest € 1.8 billion in Clean Tech Projects including hydrogen
- **European Hydrogen Bank** – first pilot auction on renewable H2 in fall 2023 (€ 800 million)
- **Clean Hydrogen Partnership:** €195 million for projects development of cutting-edge clean hydrogen technologies

China

Obj: 100.000-200.000 tons green hydrogen by 2025



China's long-term plan for hydrogen

- **Nationalize subsidy for FC vehicle:** €230 million granted to selected city clusters for FC vehicle manufacturers
- **Subsidy for CAPEX investment regarding construction of Green factory:** Local government will grant subsidy based on certain percentage of CAPEX investment for construction of green factory

The IJA (Infrastructure Investment and Jobs Act) included \$21.5B in funding for low-carbon hubs, CCUS, and clean hydrogen technology, catalyzing demonstration projects in the U.S.

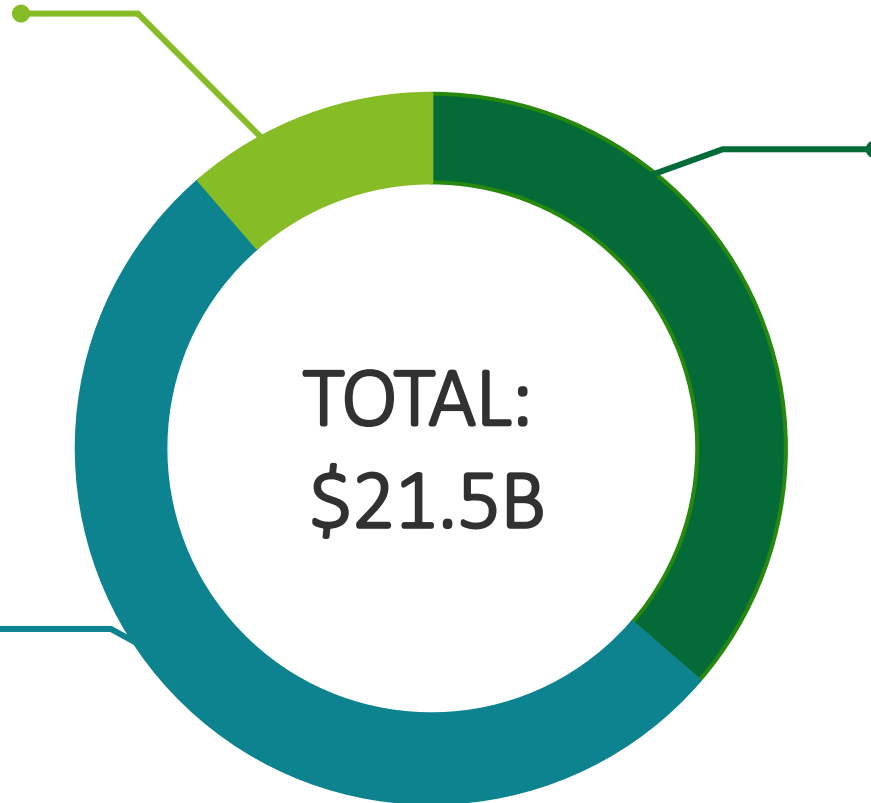


CLEAN H₂: \$2.0B

- Electrolysis hydrogen demonstration, commercialization & deployment
- Industrial research & assessment centers
- Clean hydrogen manufacturing and recycling

HUBS: \$11.5B

- Regional clean hydrogen hubs
- Regional direct air capture hubs



CCUS: \$8.0B

- Carbon capture demonstration & pilot programs
- Carbon storage validation & testing
- CO₂ transportation infrastructure finance & innovation
- Carbon utilization program
- Direct air capture technologies prize competitions
- Carbon capture technology program
Secure geologic storage permitting

45Q and 45V tax credits in the IRA will further accelerate the deployment of clean hydrogen and carbon capture technologies.

Tax Credit from Internal Revenue Code (IRC) and Inflation Reduction Act (IRA) for H2



Clean energy incentives

- Section 45 – Renewable electricity production credit modification and extension
- Section 48 – Energy credit modification and extension
- Section 45Y – Clean electricity production credit
- Section 48E – Clean electricity investment credit
- Section 45U – Zero emission nuclear power production credit

PTC - Renewable Energy Production

ITC - Storage

Transportation and vehicle incentives

- Section 45W – Qualified commercial clean vehicle credit
- Section 30C – Alternative fuel refueling property credit modification and extension
- Section 25E – Previously-owned qualified clean vehicles credit
- Section 30D – Clean vehicle credit modification and extension

ITC - Fueling stations

Fuels incentives

- Section 40B – Sustainable aviation fuel credit
- Section 45Z – Clean fuel production credit
- Sections 6426, 40(b), 40A - Alternative fuel credits extension

Manufacturing incentives

- Section 48C – Advanced energy project credit
- Section 48D – Advanced manufacturing investment credit
- Section 45X – Advanced manufacturing production credit

ITC – for recycling clean energy products

Carbon capture and hydrogen incentives

- Section 45Q – Carbon oxide and sequestration credit modification and extension
- Section 45V – Clean hydrogen production credit

TC – for CC equipment

PTC – for clean H2

Energy efficiency incentives (modification and extension)

- Section 179D – Energy efficient commercial buildings deduction
- Section 25C – Energy efficient home improvement credit
- Section 25D – Residential clean energy credit
- Section 45L – New energy efficient home credit

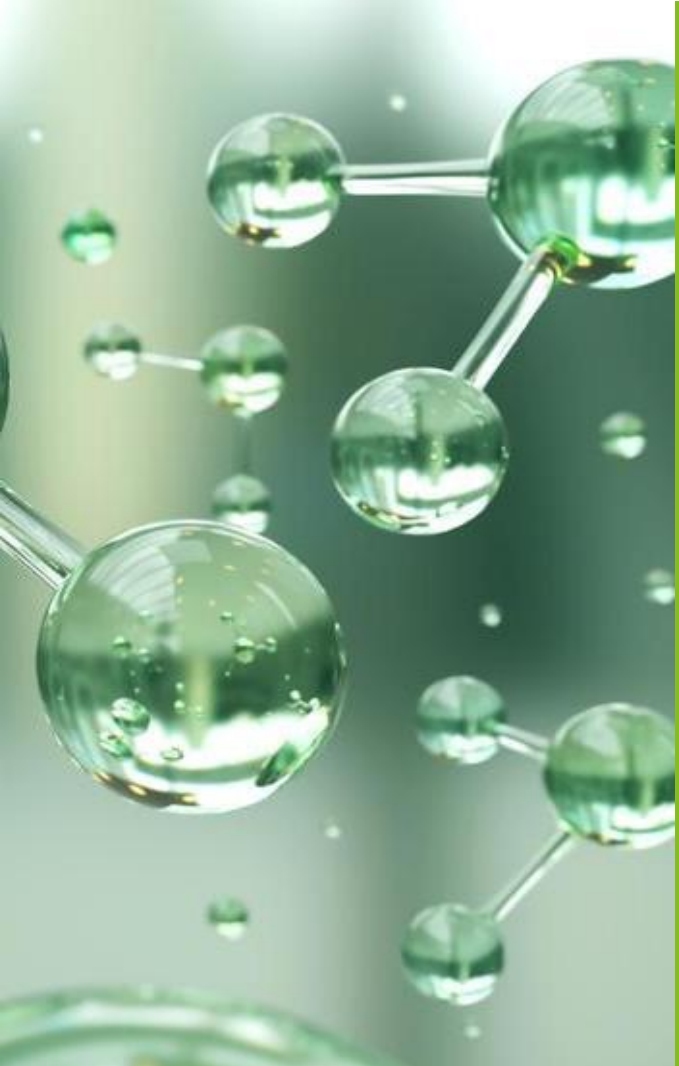
Other

- Section 6417 – Limited elective payment option
- Section 6418 – Transfer of certain eligible credits
- Section 38 – General business credits utilization modifications
- Section 55 – New 15% Corporate AMT

Note: Items in blue font are newly created under the IRA or CHIPS Act

IRA 45V or IRC48 for hydrogen

IRA provides lucrative incentive opportunities for developers of clean hydrogen production and storage projects.



Legislation

- IRC section 45V allows for production tax credits of up to \$3 per kilogram (“kg”) of **qualified clean hydrogen** produced by a taxpayer, based on the lifecycle greenhouse gas (“GHG”) emissions rate (<math> < 4 \text{ kgCO}_2 \text{ eq/kgH}_2 < /math>), at a qualified clean hydrogen facility during a 10-year period beginning on the date the facility is placed in service (“45V PTC”). Taxpayers may elect to claim an investment tax credit (“ITC”) of up to 30% under IRC section 48 in lieu of the 45V PTC.

Section 45V PTC/ITC Emissions Rate	Applicable Percentage	PTC/kg Base	PTC/kg Bonus*	ITC % Base	ITC % Bonus*
< 0.45 kg	100.0%	\$0.60	\$3.00	6.0%	30.0%
0.45 kg ≤ 1.5 kg	33.4%	\$0.20	\$1.00	2.0%	10.0%
1.5 ≤ 2.5 kg	25.0%	\$0.15	\$0.75	1.5%	7.5%
2.5 kg ≤ 4 kg	20.0%	\$0.12	\$0.60	1.2%	6.0%

**Must satisfy prevailing wage and apprenticeship requirements for the higher bonus rates.*

- IRC section 48 allows for an ITC of up to 30% (or up to 50% in some cases) for the installation of energy property, including “energy storage technology” which includes property which receives, stores, and delivers energy for conversion to electricity (or, in the case of hydrogen, which stores energy), and has a nameplate capacity of not less than 5 kilowatt hours.

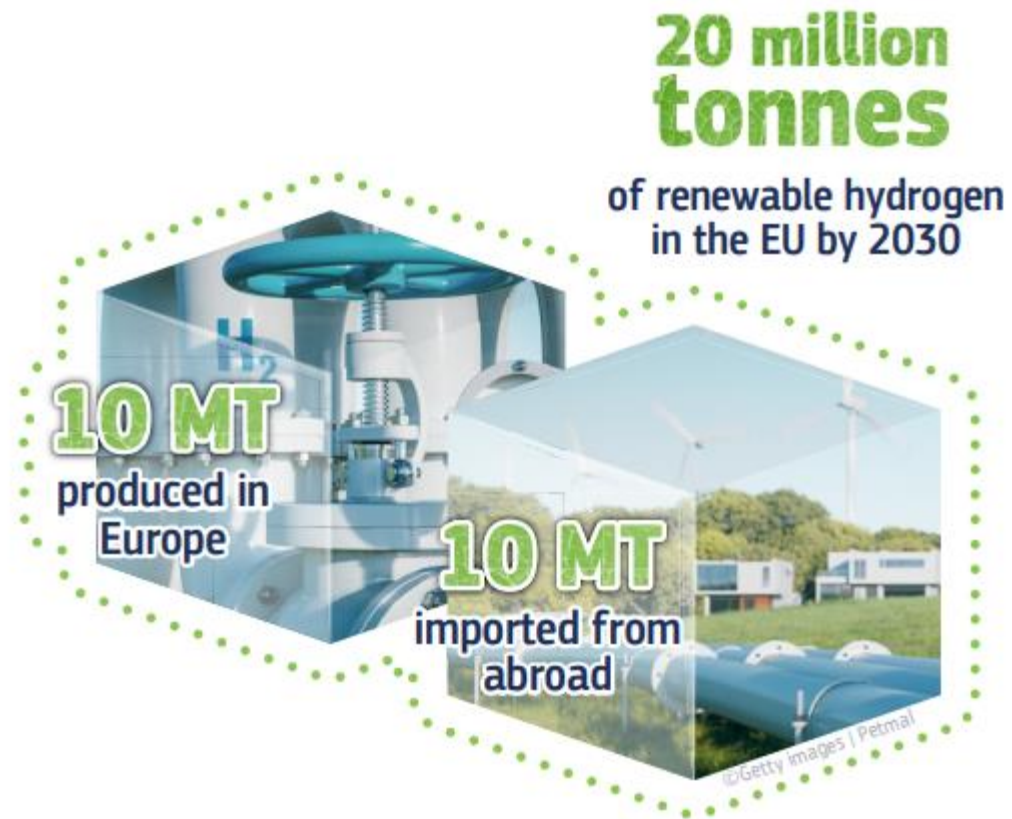
Section 48 ITC	Base Rate	Bonus Rate*
Base Amount	6%	30%
Domestic Content Adder	2%	10%
Energy Community Adder	2%	10%
Total Maximum Rate	10%	50%



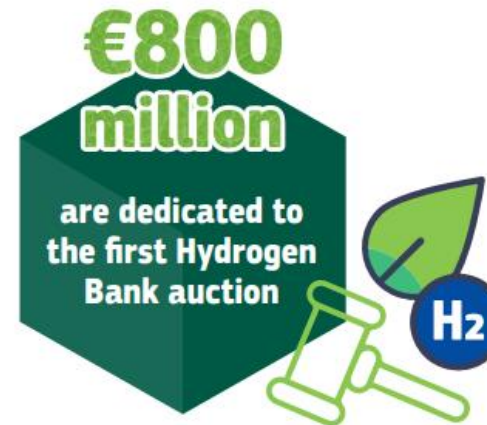
RePowerEU and European Hydrogen Bank

Hydrogen is one of the key technologies of Europe's Net Zero Industry Act

RePowerEU plan Targets:



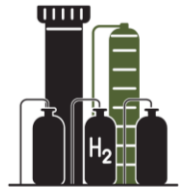
First Pilot Auction for renewable hydrogen production



- Renewable Hydrogen (REDII)
- Payment per unit of certified production
- Fixed premium price: € 4/ kg H₂
- Price only ranking
- No minimum price
- Max: 33% of tot initial defined budget
- Min: 5MW electrolyser capacity
- Annual production over 10years

Hydrogen China Landascape

Medium & Long-term Plan for Hydrogen Energy Industry Development (2021-2035)



PRODUCTION *

100,000 - 200,000

tons/year green hydrogen
(3.3-6.7 TWh)



HYDROGEN INFRASTRUCTURE

ENCOURAGE

low carbon and renewables based
hydrogen production, steadily
construct hydrogen storage and
transport systems



INNOVATION

PROMOTE

R&D in key core technologies,
participate in international
standardization and cooperation, and
educate a hydrogen workforce



FUEL CELL VEHICLES *

50,000 FCVs

(from about 10,000 today)



DEMONSTRATION PROJECTS

ADVANCE

demonstration projects in transport, storage,
urban districts and the metallurgy and chemical
industries

- **Nationalize subsidy for FC Vehicle:** A total subsidy of RMB 1.7 Billion will be granted to selected city clusters under which each FC vehicle put into use will be awarded 0.25 pts for MEA manufacturers, representing a RMB 25,000 per vehicle subsidy by current rules
- **One project one discussion:** Local financial subsidy upon greenfield investment
- **Subsidy for CAPEX investment** regarding construction of Green factory: grant of 10% to 15% for CAPEX investment for construction of green factory

*Targets for 2025

Source: National Development and Reform Commission



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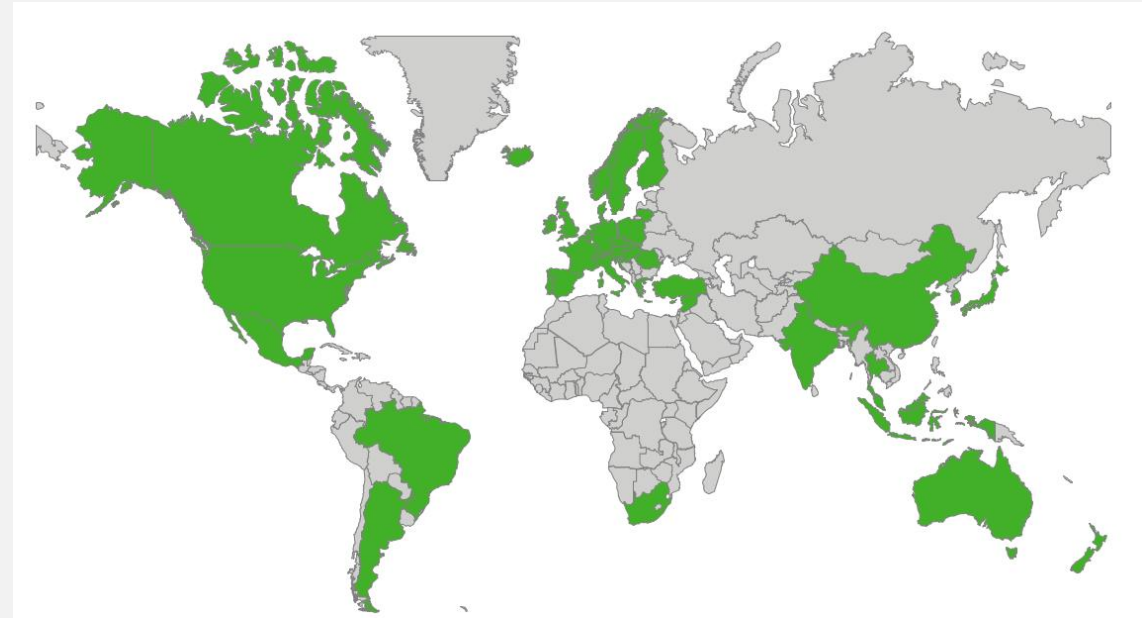


**MAKING AN
IMPACT THAT
MATTERS**

since 1845

**Global
Investment
Innovation
Incentives
(Gi³)**

**Hydrogen
Focus Team**



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