

S&P Global Platts Hydrogen Market Coverage

Creating transparency for a new pathway to decarbonization



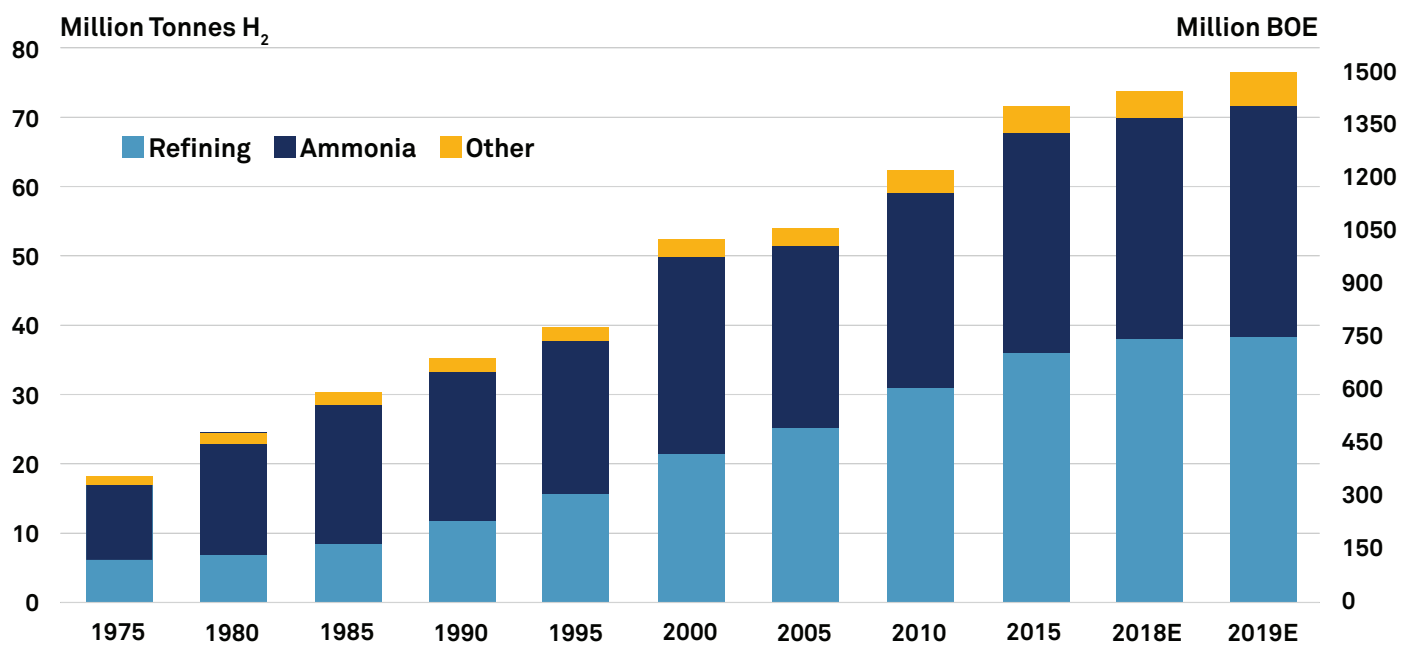
S&P Global
Platts

Why Hydrogen?

– Hydrogen is already used in industrial processes across the world, largely for oil refining and ammonia production. The vast majority of the world's current hydrogen production comes from fossil fuels, including natural gas and coal. Production is largely through Steam Methane Reforming (SMR) or gasification. These production pathways emit carbon into the atmosphere

– Hydrogen is attracting interest as a decarbonization tool from investors, policymakers and energy market participants, who see the potential of hydrogen as a clean fuel for transportation, and a lower-carbon substitute for natural gas in industrial processes power generation and materials production, as well as for commercial and residential use.

Global Pure Hydrogen Demand



Source: Platts Analytics World Energy Demand Model; International Energy Agency

The fuel of the future

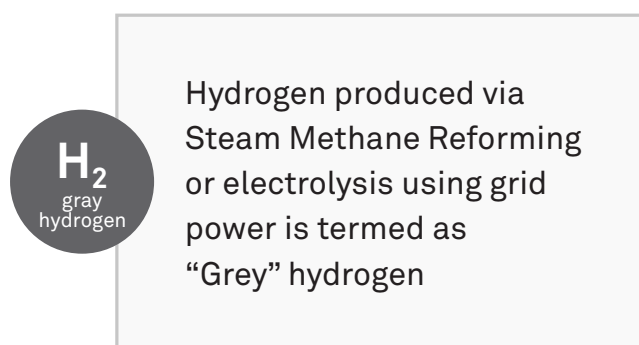
As investors, governments and industry look to a decarbonized future, they are eyeing technologies such as Carbon Capture and Storage (CCS), which captures carbon produced from fossil fuels, and Proton Exchange Membrane (PEM) and Alkaline Electrolysis, which use electricity to produce hydrogen from water.

The industry typically refers to Steam Methane Reforming with CCS as 'blue' hydrogen, or low-carbon hydrogen production, and refers to producing hydrogen through Electrolysis as 'green' hydrogen when the electricity is derived from zero-carbon sources such as wind and solar.

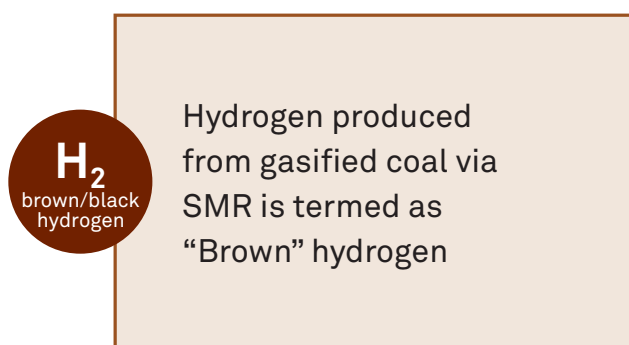
In a decarbonized world, the future of hydrogen will be blue or green. Energy companies are racing

to commercialize these processes. Its early days and the costs are high, but the potential prize is a material slice of future fuel, chemical and industrial feedstock markets.

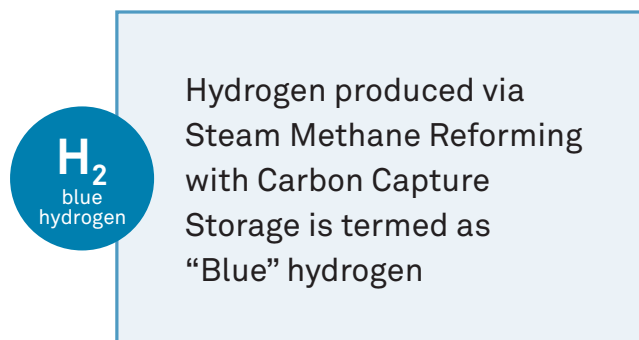
Each form of hydrogen has a different set of costs associated with its production. To come to a fair contract price for distribution, you require an independent, unbiased view of your specific product. Leveraging our global presence and long history in the commodities markets, Platts is dedicated to providing fair price assessments that reflect market conditions, giving you the confidence to quickly and confidently execute transactions in this growing market.



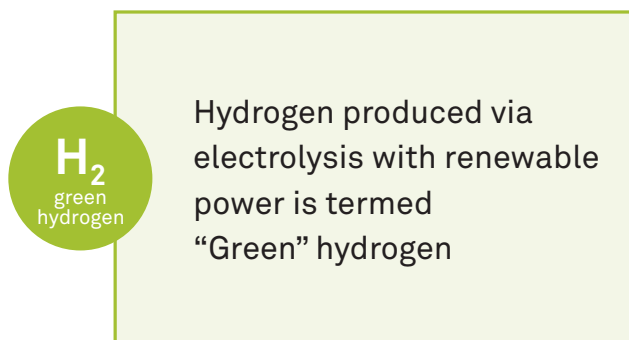
A diagram showing a grey circle with the chemical formula H_2 and the text "gray hydrogen" next to a light grey rectangular box. The box contains the text: "Hydrogen produced via Steam Methane Reforming or electrolysis using grid power is termed as 'Grey' hydrogen".



A diagram showing a brown circle with the chemical formula H_2 and the text "brown/black hydrogen" next to a light brown rectangular box. The box contains the text: "Hydrogen produced from gasified coal via SMR is termed as 'Brown' hydrogen".

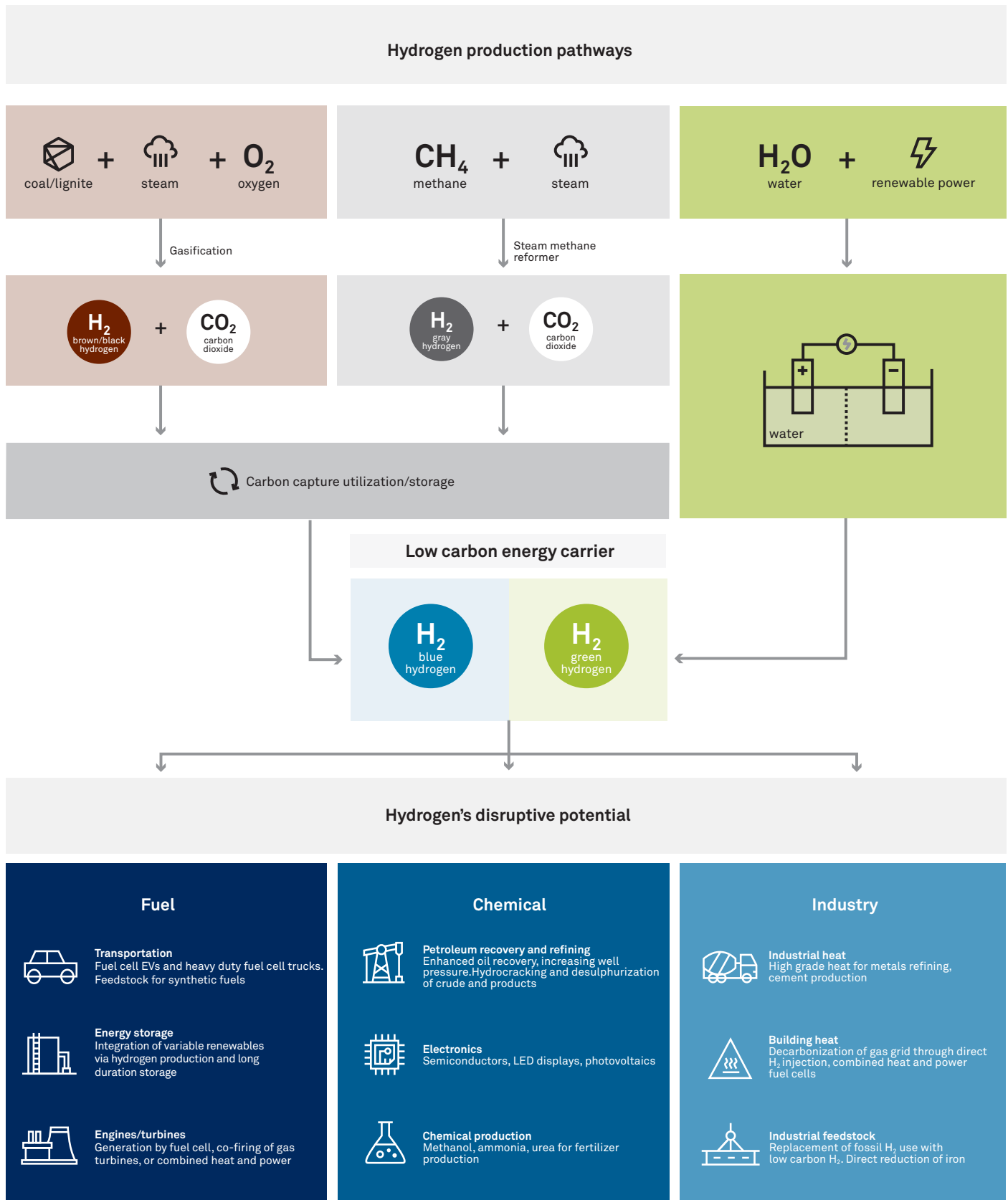


A diagram showing a blue circle with the chemical formula H_2 and the text "blue hydrogen" next to a light blue rectangular box. The box contains the text: "Hydrogen produced via Steam Methane Reforming with Carbon Capture Storage is termed as 'Blue' hydrogen".



A diagram showing a green circle with the chemical formula H_2 and the text "green hydrogen" next to a light green rectangular box. The box contains the text: "Hydrogen produced via electrolysis with renewable power is termed 'Green' hydrogen".

Blue and Green Hydrogen – Pathways to decarbonization



A market in need

The current market for hydrogen is opaque, with little opportunity for price discovery. To help provide transparency, Platts hydrogen assessments provide the market different ways to value the cost of hydrogen production in order to more accurately evaluate it as a fuel.

5 reasons why price assessments matter to your business



Protect your margins

Unclear pricing can badly affect margins.



Comply with regulations

Mark your books with respected information.



Negotiate from a position of knowledge

Be confident that the price you're using is the market value.



Spot prices are vital

Spot prices are the basis for term contracts, futures settlements and derivatives.



Benchmark your position

Set benchmarks for your business with impartial and independent information.

5 characteristics of a good benchmark



Adherence to international norms of trading

For a price to be relevant, the conventions of a free and open market place must be adhered to. Any distortion could see prices vary from the true market value.



Development of a forward market

When an actively-traded forward market forms around the benchmark, it's a strong indicator that it's gained marked acceptance.



Market acceptance

The true definition of a good benchmark is when the market accepts it and utilizes it in legally binding contracts.



High degree of transparency

Transparency leads to the confidence needed for an assessment to become a benchmark.



Chain formation

The market needs to be confident of on-selling a commodity further down the value chain based on a certain price. Therefore the benchmark is a marker for other materials which will be priced against it.

Platts Hydrogen Assessments

- Platts hydrogen assessments reflect the cost of hydrogen production at hubs in North America, Europe and Japan using Platts daily gas and power assessments
- For each production method, Platts will publish an assessment reflecting the cost of production without capital expense assumptions, and with capital expense assumptions

The assessments will include a commodity price as well as a commodity plus production cost, for the following hydrogen production hubs:

Canada

Alberta (SMR w/o CCS, Alkaline Electrolysis, PEM Electrolysis, excluding and including CapEx)

United States

(SMR w/o CCS, Alkaline Electrolysis, and PEM Electrolysis, all excluding and including CapEx)

Appalachia • Gulf Coast

Midcontinent • Northeast

Northern California • Northwest

Rockies • Southeast

Southern California • Upper Midwest

The Netherlands

SMR w/o CCS • SMR with CCS

PEM Electrolysis • Alkaline Electrolysis

Japan

SMR w/o CCS • PEM Electrolysis

Alkaline Electrolysis

Platts Analytics Scenario Planning Service (SPS)

Platts Analytics Scenario Planning Service (SPS), offers clients insights into the different pathways around the Energy Transition and achieving long term climate goals – supporting informed decisions in this rapidly moving space. Hydrogen is a flexible energy carrier that can reduce emissions from key sectors where renewables/battery solutions are challenged to provide meaningful decarbonization. SPS combines global, comprehensive, cross-commodity modeling together with deep dives into transformative technologies and policies – with hydrogen a key areas of focus. Detailed research includes analysis of hydrogen production and transport pathways, cost trajectories and uptake in key sectors such as longhaul transport and steelmaking.

Platts SPS is:

Quantitative

Platts SPS focuses on and quantifies the parameters that are most important to you — namely, prices and supply/demand volumes — along with our assessment of probabilities.

Ongoing

Platts SPS is an ongoing retainer service — not a multi-client study — so that we can keep the scenarios evergreen, track the key assumptions behind each one, and let clients know if and when developments in energy markets change our views on possible outcomes and probabilities.

Customizable

Each client may have their own particular views or concerns over key assumptions. Platts SPS allows subscribers to get a consistent view of the energy world, under their assumptions, using S&P Global Platts proprietary models. We also work with clients to assist them in determining how best to incorporate the conclusions of the scenario work into their decision-making process.

Relevant

Platts SPS covers many of the most important and relevant issues affecting the global commodities markets today.

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S&P Global Platts

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