

# What Role Will Hydrogen Oils Play in the Low Carbon Future?

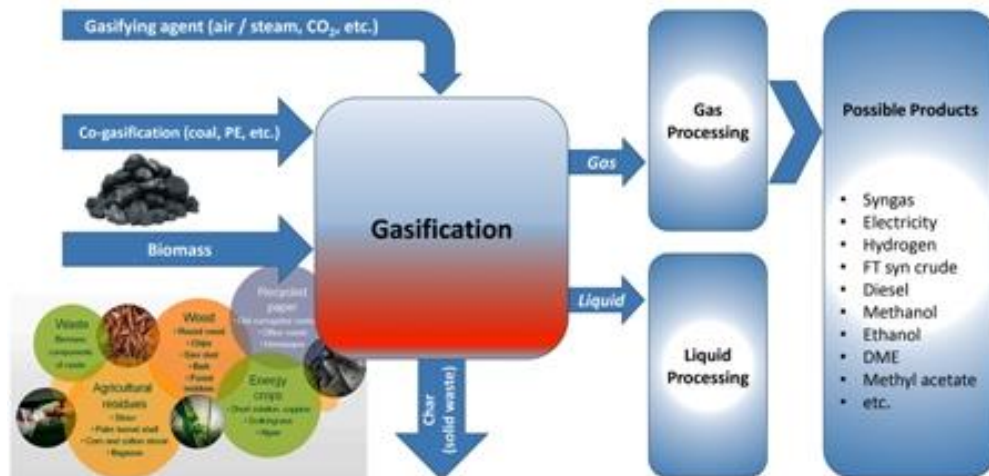
Renewable energy is a growing industry as countries worldwide seek to reduce their carbon emissions and transition towards a low-carbon future. One source of energy that is getting a lot of attention is hydrogen. With some parties claiming it is a suitable replacement for a range of fossil fuels.

However, a [debate](#) continues to rage over how efficient and renewable it is. To better understand why hydrogen oil is in the public eye, we need to break down its different types.

## The Elusive Element

Hydrogen itself is a chemical element that is the most common element in the universe. While hydrogen isn't hard to come by, hydrogen oils are a different matter altogether - they do not occur naturally.

Currently, hydrogen oils are [created primarily through coal gasification](#). Gasification is the partial oxidation of methane or manipulation of fossil fuels with steam. Two other popular techniques are splitting water molecules using electrolysis and the gasification of biomass.



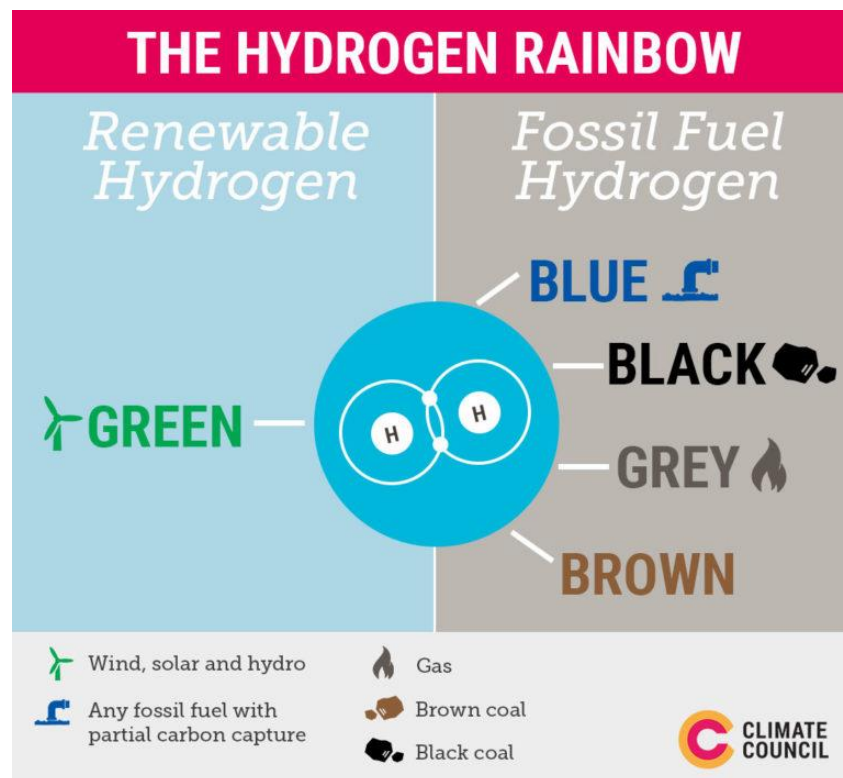
Once created, these oils are very versatile. Hydrogen's chemical properties mean that it [can burn cleanly](#) without producing particulate matter or releasing toxic fumes. Even better is that it has [similar efficiency](#) as fossil fuels for transportation needs.

It is for this reason that hydrogen has gained popularity as an alternative for all types of vehicles. Additionally, it is a storage option within energy grids where excess energy is available to create hydrogen. This can then be run back into the grid when demand peaks.

## Future Considerations for Hydrogen Oils

While hydrogen's potential role in the global transition towards renewable energy is clear, so are its drawbacks.

The fact that its generation requires energy input and that most of this energy is fossil fuel sources means that hydrogen is not a green energy source for now. The vocabulary around hydrogen oils shows this distinction - there are three [main types](#): green hydrogen, blue hydrogen, and grey hydrogen.



### Green Hydrogen

Green hydrogen, as the name suggests, refers to oils made using sustainable or renewable methods. Namely, this consists of hydrolysis or biomass gasification.

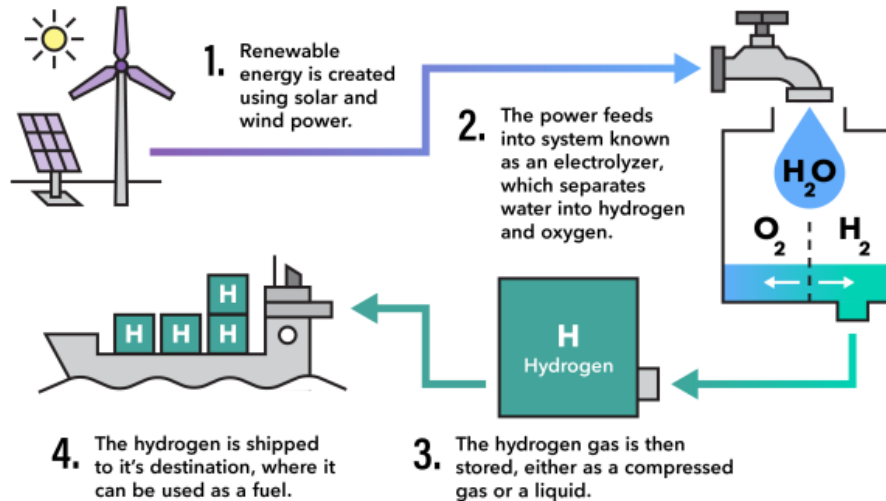
For the moment, these hydrogen production forms are in the minority. The limited use of electrolysis is due to its high costs and energy demands. At the same time, biomass gasification requires biological waste and specialized infrastructure.

Both sources of green hydrogen are under extensive research and development.

We expect electrolysis to become more popular once renewable energy forms a high percentage of national grids. As this happens, there will likely be excess power available for splitting water and hydrogen apart.

Additionally, decreasing costs associated with the electrolysis process could also drive more interest in green hydrogen.

### How is Green Hydrogen Produced?



Source: solarthermalworld.org

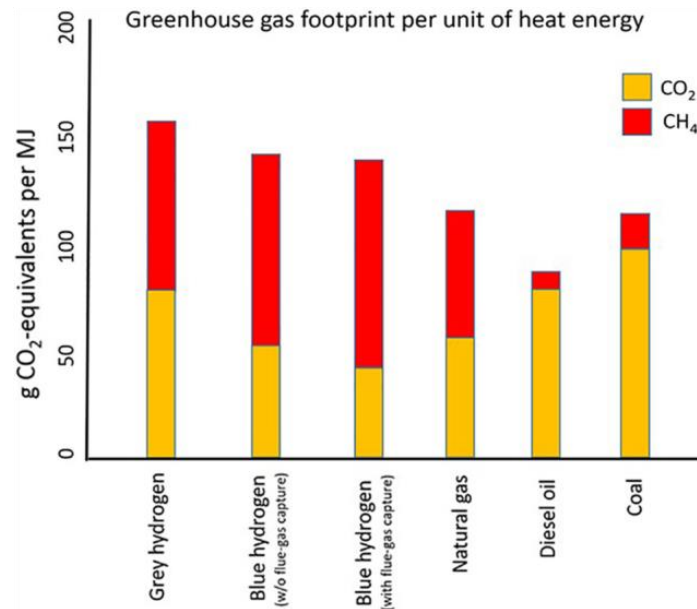
Bloomberg Law

[Biomass gasification](#) is seeing a rise in popularity due to its capacity to be paired with carbon capture. This pairing ensures the reuse of biological waste into usable energy while also reducing carbon emissions.

### Blue & Grey Hydrogen

Both of these processes are similar to those used to create [blue hydrogen](#). Blue hydrogen is a product of Steam Methane Reforming (SMR), where natural gas splits into hydrogen and carbon dioxide. And typically, it is part of a more extensive system with carbon capture storage for further efficiency.

The creation of hydrogen using SMR or other methods without using carbon capture technology to absorb carbon dioxide is grey hydrogen. The latter has been one of the more common forms of hydrogen creation, but with the development of carbon capture, grey hydrogen has shifted towards being blue.



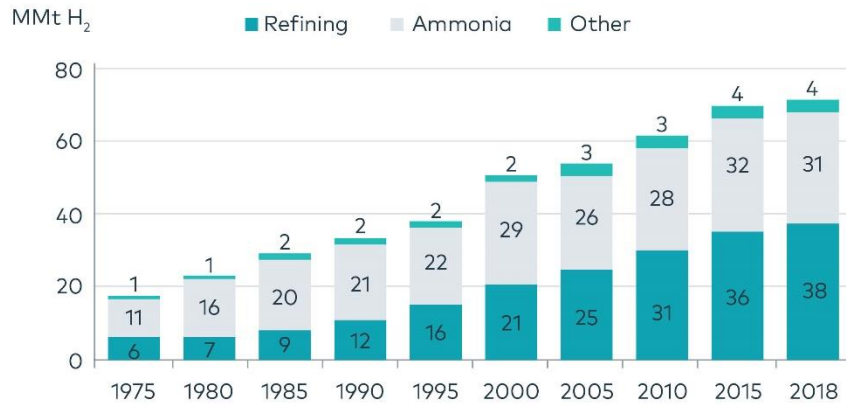
## What is Carbon Capture?

Carbon capture has made grey and blue hydrogen more palatable for many looking to participate in the energy transition. However, the use of natural gas, or in some cases coal, has raised questions.

## The Potential for Hydrogen Oils

Green hydrogen remains the most desirable form of hydrogen oil, but the infrastructure and capacity to produce it are not yet widespread. There has been some [diversification](#), such as pink hydrogen (nuclear-based) and yellow hydrogen (solar-based), but they make up a smaller market share.

## Global hydrogen demand



Source: International Energy Agency

The future potential of green hydrogen is undeniable, and its versatility is unmatched. Further investment in hydrogen production is sure to decrease operating costs while popularizing its use.

Using renewable energy or biomass to create hydrogen remains the only real low-carbon option. Hydrogen is certain to play a role in the global transition towards a low carbon future - it just remains to be seen how it will be implemented.