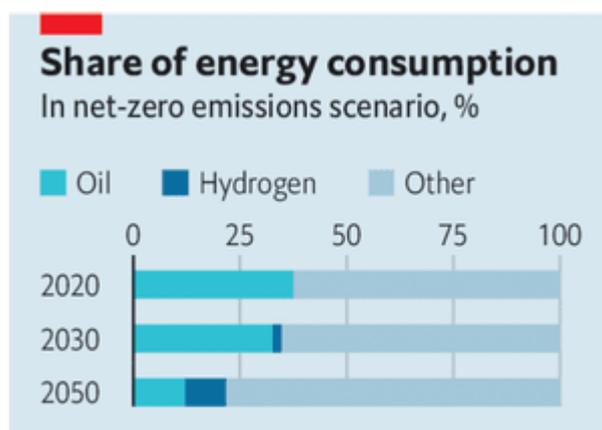


## Sustainability

24<sup>th</sup> November 2021

### The Hydrogen Economy – The next oil rush?

Hydrogen is a clean alternative energy source, like methane gas (also known as natural gas). At an estimated 75% of the universe's mass, it's an abundant chemical element. It can be produced from a variety of resources, such as natural gas, nuclear power, biogas and renewable power like solar and wind. Hydrogen technologies could eliminate perhaps a tenth of today's greenhouse-gas emissions by 2050. That is a sliver—but, considering the scale of the energy transition, a crucial and lucrative one. With a wave of climate change enthusiasm – there are presently more than 350 big projects underway, with cumulative investments potentially reaching USD 500 billion by 2030.



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Presently global hydrogen sales approximate USD150 billion annually. This is estimated to grow to USD 600 bn by 2030.

#### *Harnessing hydrogen energy*

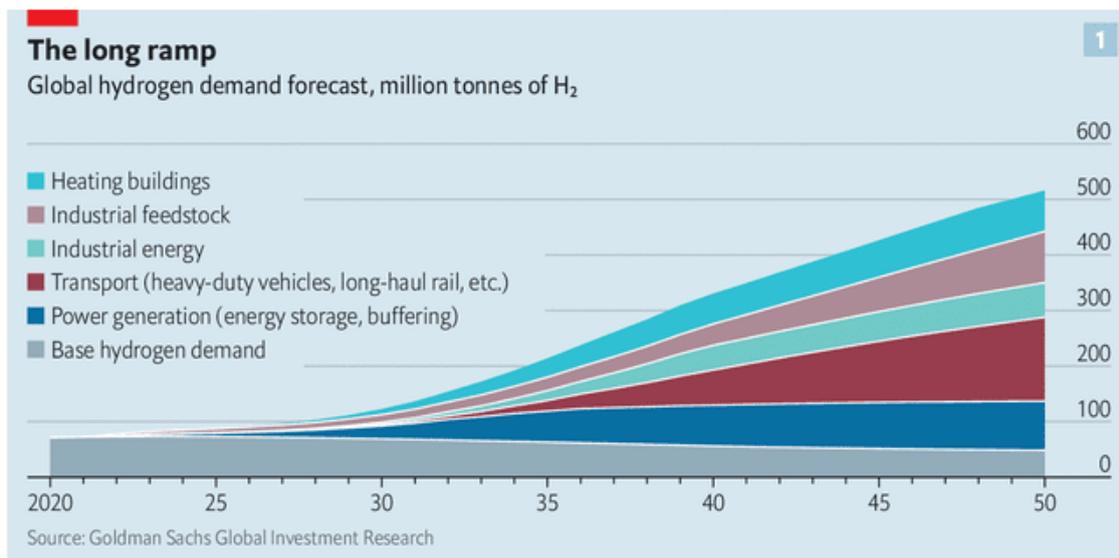
Toyota and Hyundai already have fuel cell electric vehicles publicly available. Both BMW and Audi are developing hydrogen fuel-cell passenger vehicle prototypes, alongside their fleets of battery cars. However, lithium battery powered cars are roughly twice as energy efficient. Some European countries hope to pipe hydrogen into homes, but heat pumps are more effective and some pipes cannot handle the gas safely. Certain big energy firms have plans to use natural gas to produce hydrogen without capturing the associated carbon effectively, but that does not eliminate emissions.

Instead, hydrogen can help in niche markets, involving complex chemical processes and high temperatures that are hard to achieve with electricity. Steel firms, spewing roughly 8% of global emissions, rely on coking coal and blast furnaces that wind power cannot replace but which hydrogen can, using a process known as direct reduction. In August this year, Hybrid - a Swedish consortium, sold the world's first green steel made using this technology.

Another industry is commercial transport. The high energy density of hydrogen enables easily integrated on-board gas storage without compromising either vehicle payload or operating range. Hydrogen trucks also take less time to refuel, than battery-powered rivals.

Cummins, an American multinational corporation, designing, manufacturing, and distributing engines, filtration, and power generation products, is investing across a range of technologies to support hydrogen-based transportation. This includes hydrogen engines, fuel cells, electrolyzers and storage tanks. Fuels derived from hydrogen may also be useful in aviation and shipping. Alstom, a French firm, is running hydrogen-powered locomotives on European tracks.

Lastly, hydrogen can be used as a material to store and transport energy in bulk (when converted to ammonia). Renewable grids struggle when the wind dies, or it is dark. Batteries can help, but if renewable power is converted to hydrogen, it can be stored cheaply for long periods and converted to electricity on demand. A power plant in Utah plans to store the gas in caverns to supply California. Sunny and windy places that lack transmission links can export clean energy as hydrogen or ammonia. Australia, Chile, Morocco, and Namibia, all have plans to produce and ship ammonia.



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### *Investing in hydrogen production and downstream service providers*

Rockman Capital, via its exposures to utilities, such as SSE and Total Energies, has invested in the hydrogen revolution. However, due to long lead times in developing big production facilities and supply chains, earnings from hydrogen related production, is not expected to be meaningful in the short-term. However, like the lithium battery, once adoption becomes more widespread, hydrogen is expected to make a more meaningful contribution to corporate earnings and returns.

## The Trend of Sustainability Investing

We continue to witness capital flows into companies or funds that aim to achieve above market returns, which also aim to make a positive ESG impact in their respective markets. With the influence of millennials rising, as both the clients and capital allocators, this sustainable investing has become an important factor for the selection of asset managers and investment analysts. The aim behind ESG investing, is to invest in counters that generate measurable positive social or environmental benefits alongside a financial return.. Signatories of the Paris Climate Agreement, an international treaty on climate change adopted in 2015, vowed to attempt to bring down the global temperatures in the fight against climate change..

Data from the Global Sustainable Investors Alliance (GSIA) report, recorded a rise in sustainable assets from \$30 Trillion in 2018 to \$35,3 Trillion in 2021. This growth is driven by consumer expectations, strong financial performance and the increased importance of social and environmental issues. Owing to this rising trend, at Rockman Capital, we see large institutions with long-term portfolio objectives (Pension funds, sovereign wealth etc...) increasingly taking on ESG exposures in their investment allocations.

### Global growth in sustainable investments (USD\$ Trillion)

