



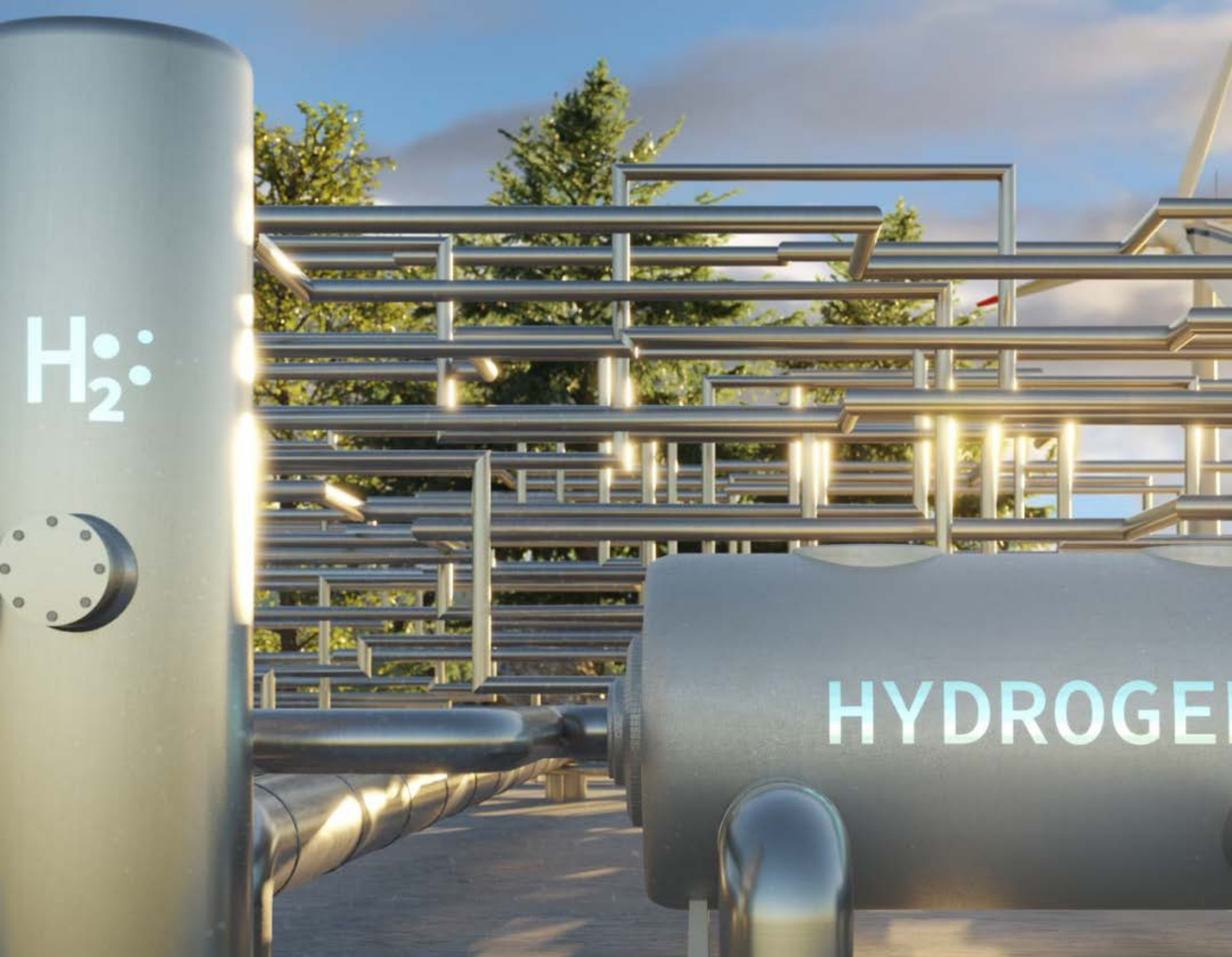
Key takeaways

HYDROGEN FORECAST TO 2050

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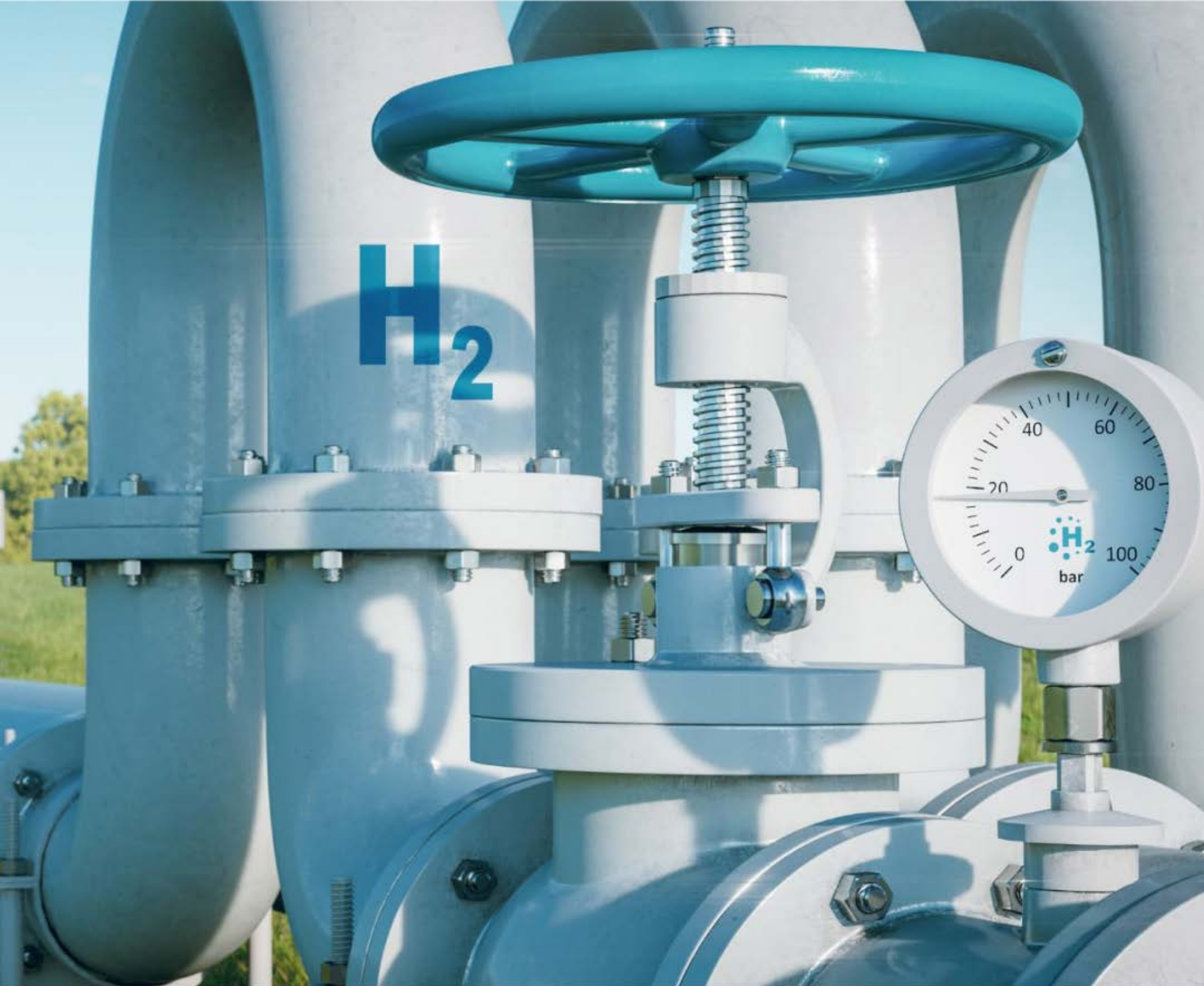
Hydrogen is essential to a clean energy future, but the lightest element needs a heavy lift if the world is to reach the Paris Agreement goals. There is no other energy carrier that can decarbonize hard-to-abate energy sectors at scale.



Hydrogen will undergo a shift to low-carbon production, enabled by scaling of renewable energy generation and carbon capture and storage.



Green hydrogen will increasingly be the cheapest form of production. By 2050, almost three quarters of hydrogen used for energy purposes will be electricity based, with green hydrogen costs falling to around 1.5 USD/kg.



More than half of hydrogen pipelines globally will be repurposed from natural gas pipelines, rising to as high as 80% in some regions.



Hydrogen will be transported by pipelines up to medium distances within and between countries, but almost never between continents.

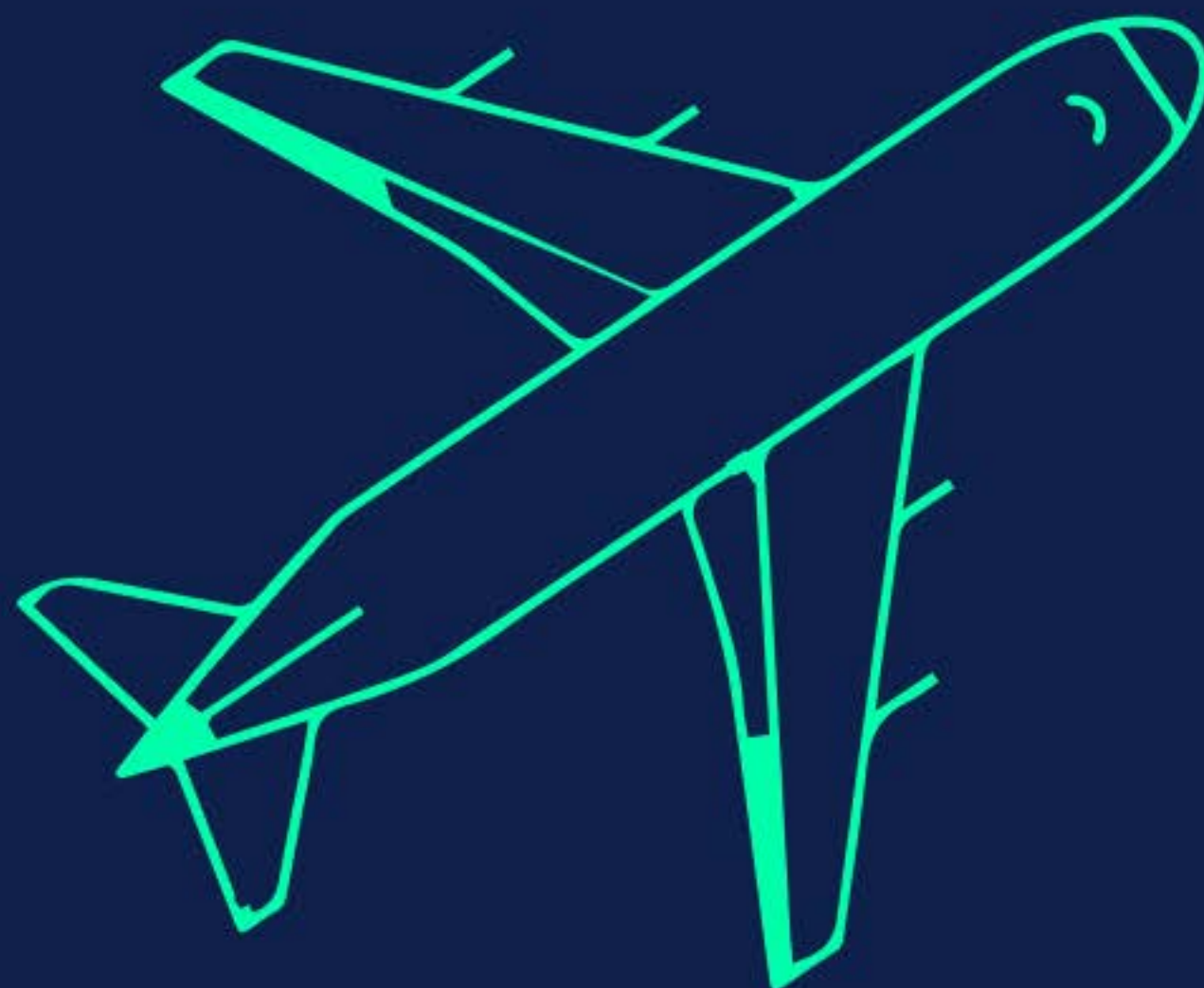
The derivative ammonia is more convenient to transport by ship, and the majority of energy-related ammonia will be traded globally.



Direct use of hydrogen will be dominated by the manufacturing sector, where it replaces coal and gas in high-temperature processes, starting in the late 2020s.



Hydrogen derivatives like ammonia, methanol and e-kerosene will play a key role in decarbonizing the heavy transport sector (aviation, maritime, and parts of trucking), but uptake only scales in the late 2030s.





We do not foresee hydrogen uptake in passenger vehicles, and only limited uptake in power generation.





Deep dive into the
future of hydrogen:

dnv.com/hydrogen-forecast

