

HYDROMARK: We have already scanned key demand geographies to identify large hydrogen consumers across various industry segments

ILLUSTRATIVE

Filter by country

Geography | Segment | Largest Potential Offtake Consumers & Demand

- USA
- Germany
- Netherlands
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- South Korea

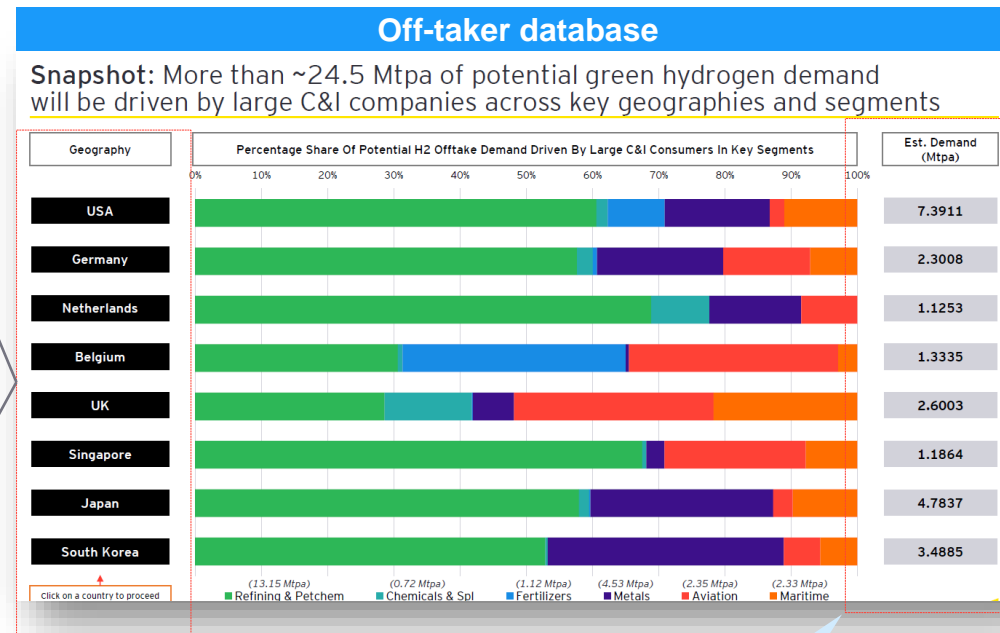
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Filter by market segment

Geography | Segment | Largest Potential Offtake Consumers & Demand

- Refining & Petchem
- Chemicals & Spl
- Fertilizers
- Aviation
- Maritime
- Metals

Select a segment



Estimated demand by Industry segment grounds-up based (Factors based on output of industries)

Illustrative off-taker list

US - Refining & Petchem

Geography	Segment	Largest Potential Offtake Consumers & Demand			
USA	Refining & Petchem	#	Company	Potential H2 Demand (Mtpa)	Remarks
Germany	Chemicals & Spl	1	Marathon Petroleum Corp	1.05	App. Of 4 refineries
Netherlands	Fertilizers	2	Exxonmold Corp	0.83	App. Of 3 refineries
Belgium	Aviation	3	Saudi Aramco Americas	0.36	Port Arthur
UK	Maritime	4	Chevron Corp	0.36	App. Of 2 refineries
Singapore	Metals	5	Valero Energy Corp	0.36	App. Of 2 refineries
Japan		6	Koch Industries Inc	0.34	
South Korea		7	Phillips 66 Company	0.30	App. Of 2 plants
		8	Piv America Inc	0.24	
		9	Bp Plc	0.25	
		10	Wip Refining Lp	0.20	
		11	Deer Park Refining Ltd	0.18	
			Total estimated demand	4.48	Mtpa of H2

1. Number shown here are only for illustrative purposes
Source: EY-Parthenon analysis

Key considerations and assumptions: Factors based on output of industries used to arrive at domestic demand requirement

Refinery Hydrogen	
Input Refinery Capacity Here (MTPA)	1
Conversion factor (Hydrogen required for 1 MTPA of refining facility)	0.013
Hydrogen required (MTPA)	0.013

Steel	
Tonnes of DRI Steel (Input here)	1
The hydrogen consumption in the shaft furnace ranges from 47-68 kg of H2/T-DRI. We have assumed an average number of 53 kg of H2/ton-DRI	
Hydrogen required per tons of steel	0.053
Hydrogen (MTPA)	0.000000053

Fertilizers					
	Ammonia % by weight	Ammonia Quantity	Hydrogen % by weight	Hydrogen Quantity (in Tonnes)	Hydrogen Quantity (MTPA)
Ammonium nitrate N34.4	17.20%	0	18%	0	0
Calcium ammonium nitrate N27	13.50%	0	18%	0	0
Nitrogen fertilizers with calcium	13.50%	0	18%	0	0
Nitrogen fertilizers with sulphur	13.50%	0	18%	0	0
Urea N46.5	57%	798075.5902	18%	143653.6062	0.143653606
Urea with potassium humate/Other fertilizer	57%	0	18%	0	0
Liquid nitrogen fertilizers (UAN) N32	8%	0	18%	0	0
Nitric Acid	29%	0	18%	0	0
Ammonia	100%	1097800	18%	197604	0.197604

Shipping - Maritime		
Annual Fuel Consumption (Heavy Fuel Oil)	100,000	Tons
Equivalent Methanol quantity	43478.26087	tons
% of sustainable methanol	10%	
Quantity of Methanol in Tonnes	4347.826087	tons
Around 130 kg hydrogen is required as feedstock per tonne of methanol	130	kgs
Hydrogen Required Quantity (MTPA)	0.000565217	MTPA

Aviation	
Case - I	
Fleet size	280
Airline hours travelled	2000
Expected fuel usage (litres)	8400000000
Fuel Usage in tons	6720000
Expected % of SAF by 2030	5%
Hydrogen requirement in SAF (tonnes)	0.1536

Case - II (When SAF amount is available in SR)	
Please enter the amount of Sustainable Aviation Fuel (SAF) in gallons	1
SAF in tons	0.0032
350 tonnes of synfuel (synthetic kerosene) requires 160 tonnes of Hydrogen for production	
Hydrogen requirement per tonne of synfuel	0.46
Hydrogen requirement per tonne of synfuel	0.001462857
Hydrogen (MTPA)	1.46286E-09