

Quantifying the green hydrogen demand across key sectors in Aotearoa New Zealand: Implications for electricity generation Supplementary Material

Sector data tables – steel

Crude Steel Production and Hydrogen Demand in New Zealand	
Year	Tonnes
2000	702,000.00
2001	826,000.00
2002	765,000.00
2003	853,000.00
2004	885,000.00
2005	889,000.00
2006	810,000.00
2007	845,000.00
2008	799,000.00
2009	765,000.00
2010	853,000.00
2011	844,000.00
2012	912,000.00
2013	900,000.00
2014	859,000.00
2015	793,000.00
2016	577,000.00
2017	657,000.00
2018	652,000.00
2019	667,000.00
2020	586,000.00
2021	646,000.00
2022	570,000.00
2023	555,000.00
2024	566,000.00



Historical transport data

Year	Tonne-km (million)	Average load (tonnes)	VKT Km (Millions)	VKT
2001	17750	8.0	2219	2,218,750,000.00
2002	17942	7.6	2361	2,360,789,473.68
2003	18410	7.6	2422	2,422,368,421.05
2004	20472	7.9	2591	2,591,392,405.06
2005	20296	7.7	2636	2,635,844,155.84
2006	20200	7.6	2658	2,657,894,736.84
2007	20828	7.6	2741	2,740,526,315.79
2008	22207	8.1	2742	2,741,604,938.27
2009	18807	7.3	2576	2,576,301,369.86
2010	21265	8.0	2658	2,658,125,000.00
2011	21568	8.1	2663	2,662,716,049.38
2012	21754	7.9	2754	2,753,670,886.08
2013	21773	8.2	2655	2,655,243,902.44
2014	23746	8.4	2827	2,826,904,761.90
2015	23078	8.3	2780	2,780,481,927.71
2016	23349	8.3	2813	2,813,132,530.12
2017	24994	8.4	2975	2,975,476,190.48
2018	25432	8.3	3064	3,064,096,385.54
2019	25491	8.3	3071	3,071,204,819.28
2020	25641	8.8	2914	2,913,750,000.00
2021	27332	9.0	3037	3,036,888,888.89
2022	27597	8.6	3209	3,208,953,488.37
2023	25939	8.4	3088	3,087,976,190.48



Historical methanol data

Year	Production in Million Tonnes
2021	1.30
2022	1.20
2023	1.40

Historical fertilizer data

Year	Urea use Tonnes	Ammonium Sulphate use Tonnes	Diammonium Phosphate use Tonnes
2002	144,602.80	8,709.20	68,792.21
2007	199,332.30	8,117.80	68,700.46
2012	230,599.40	8,632.20	40,358.71
2017	274,846.10	17,330.34	71,703.73
2019	279,197.50	18,757.00	80,229.68



Sensitivity analysis – Transport

Year	Projected VKT	Hydrogen Demand at 5kg/100 km (tonnes)	Hydrogen Demand at 7.7 kg/100 km (tonnes)	Hydrogen Demand at 10kg/100 km (tonnes)
		<i>If its high efficiency</i>	<i>Baseline and used rate</i>	<i>if low efficiency</i>
2024	2,024,000,000.00	101,200,000.00	155,848,000.00	202,400,000.00
2025	2,025,000,000.00	101,250,000.00	155,925,000.00	202,500,000.00
2026	2,026,000,000.00	101,300,000.00	156,002,000.00	202,600,000.00
2027	2,027,000,000.00	101,350,000.00	156,079,000.00	202,700,000.00
2028	2,028,000,000.00	101,400,000.00	156,156,000.00	202,800,000.00
2029	2,029,000,000.00	101,450,000.00	156,233,000.00	202,900,000.00
2030	2,030,000,000.00	101,500,000.00	156,310,000.00	203,000,000.00
2031	2,031,000,000.00	101,550,000.00	156,387,000.00	203,100,000.00
2032	2,032,000,000.00	101,600,000.00	156,464,000.00	203,200,000.00
2033	2,033,000,000.00	101,650,000.00	156,541,000.00	203,300,000.00
2034	2,034,000,000.00	101,700,000.00	156,618,000.00	203,400,000.00
2035	2,035,000,000.00	101,750,000.00	156,695,000.00	203,500,000.00
2036	2,036,000,000.00	101,800,000.00	156,772,000.00	203,600,000.00
2037	2,037,000,000.00	101,850,000.00	156,849,000.00	203,700,000.00
2038	2,038,000,000.00	101,900,000.00	156,926,000.00	203,800,000.00
2039	2,039,000,000.00	101,950,000.00	157,003,000.00	203,900,000.00
2040	2,040,000,000.00	102,000,000.00	157,080,000.00	204,000,000.00
2041	2,041,000,000.00	102,050,000.00	157,157,000.00	204,100,000.00
2042	2,042,000,000.00	102,100,000.00	157,234,000.00	204,200,000.00
2043	2,043,000,000.00	102,150,000.00	157,311,000.00	204,300,000.00
2044	2,044,000,000.00	102,200,000.00	157,388,000.00	204,400,000.00
2045	2,045,000,000.00	102,250,000.00	157,465,000.00	204,500,000.00
2046	2,046,000,000.00	102,300,000.00	157,542,000.00	204,600,000.00
2047	2,047,000,000.00	102,350,000.00	157,619,000.00	204,700,000.00
2048	2,048,000,000.00	102,400,000.00	157,696,000.00	204,800,000.00
2049	2,049,000,000.00	102,450,000.00	157,773,000.00	204,900,000.00
2050	2,050,000,000.00	102,500,000.00	157,850,000.00	205,000,000.00