

# Economic Impact Scenarios for Scotland's Energy Transition

Overview – May 2024



# How this report has been created and used:

Data feeding into [SG Swot Analysis](#), ESJTP, and GIS refresh



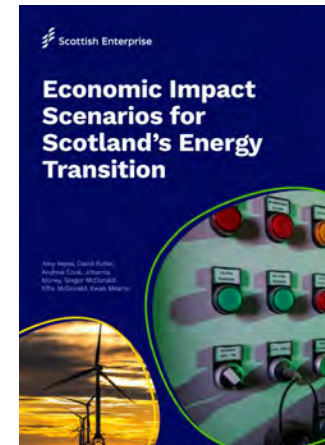
Stakeholder Engagement throughout – sharing data and discussing methodology

**Economic Impact Scenarios Database – Capacity, Employment, Investment, Turnover, and GVA projections for 18 low carbon technologies**



Data compiled working with teams across SE and used for SE targets/ambitions

Thought Leadership



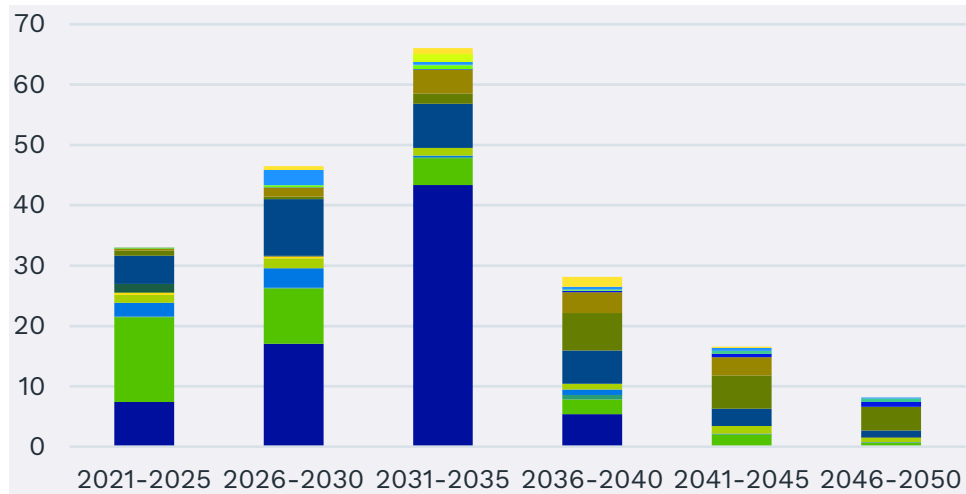
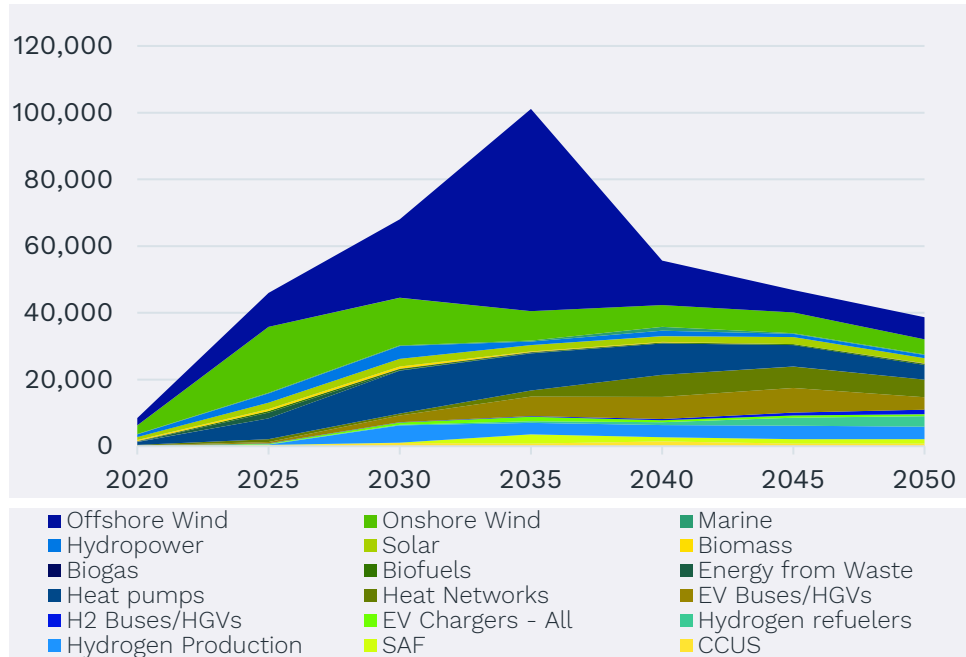
Revised Mission Figures - Based on Foresighting Team's figures				
Strong Ambition - Forecast				
	Baseline - 2020	2030	2035 (estimated)	Net increase 2020 to 2034
Total FT Jobs	8,455	68,000	101,120	94,496
O&M Only Jobs (excluding	2,200	11,500	20,700	18,860
Turnover (£m)	2,800	20,000	26,400	22,320
GVA (£m)	1,160	8,450	12,000	11,290
			<b>Total 2021-2035</b>	
Investment (£m)	33,000	46,500	66,000	145,500.0

SEMI Category	Technology	Region	Measure	Units	2020	2025	2030	2035	2040	2045
Offshore Wind	Strong Ambition	Scotland	Capacity	MW	9,350	34,200	58,220	62,270	62,270	62,270
Offshore Wind	Strong Ambition	Scotland	Jobs	FTE	1.8	10.1	16.7	17.9	17.9	17.9
Offshore Wind	Strong Ambition	Scotland	Investment (£ years)	£	3,761,535,540	17,041,516,117	43,341,240,536	5,354,240,000	5,354,240,000	5,354,240,000
Offshore Wind	Strong Ambition	Scotland	Turnover	£	695,120,000	3,710,135,540	6,475,146,117	16,741,740,536	16,741,740,536	16,741,740,536
Offshore Wind	Strong Ambition	Scotland	Jobs	FTE	2,800	20,000	25,500	25,500	25,500	25,500
Offshore Wind	Strong Ambition	Scotland	Investment (£ years)	£	285,270,000	1,320,290,290	2,081,240,000	3,170,240,000	3,170,240,000	3,170,240,000
Offshore Wind	Strong Ambition	Scotland	Jobs	FTE	1.8	10.1	16.7	17.9	17.9	17.9
Offshore Wind	Strong Ambition	Scotland	Investment (£ years)	£	890,500,000	4,562,280,290	7,612,240,000	14,512,270,000	14,512,270,000	14,512,270,000
Offshore Wind	Strong Ambition	Scotland	Turnover	£	890,500,000	3,724,490,290	6,764,490,000	15,012,240,000	15,012,240,000	15,012,240,000
Offshore Wind	Strong Ambition	Scotland	Jobs	FTE	2,800	20,000	25,500	25,500	25,500	25,500
Offshore Wind	Strong Ambition	Scotland	Investment (£ years)	£	285,270,000	1,320,290,290	2,081,240,000	3,170,240,000	3,170,240,000	3,170,240,000
Offshore Wind	Strong Ambition	Scotland	Jobs	FTE	1.8	10.1	16.7	17.9	17.9	17.9
Offshore Wind	Strong Ambition	Scotland	Investment (£ years)	£	890,500,000	4,562,280,290	7,612,240,000	14,512,270,000	14,512,270,000	14,512,270,000
Offshore Wind	Strong Ambition	Scotland	Turnover	£	890,500,000	3,724,490,290	6,764,490,000	15,012,240,000	15,012,240,000	15,012,240,000

The 18 low carbon subsectors covered by this study:					
Offshore Wind	Hydropower	Biogas	Heat Pumps	H <sub>2</sub> Buses/HGVs	Hydrogen Production
Onshore Wind	Solar	Biofuels	Heat Networks	EV Chargers	SAF
Marine	Biomass	Energy from Waste	EV Buses/HGVs	Hydrogen Refuelers	CCUS

SEMI Category	Technology	Region	Measure	Units	2020	2025	2030	2035	2040	2045
Other Renewable Electricity	Marine	Strong Ambition	Jobs	FTE	3,310,000	4,760,817	6,050,000	6,050,000	6,050,000	6,050,000
Other Renewable Electricity	Marine	Strong Ambition	Investment (£ years)	£	5.0	5.0	5.0	5.0	5.0	5.0
Other Renewable Electricity	Marine	Business as Usual	Capacity	MW	27	41	54	59	59	59
Other Renewable Electricity	Marine	Business as Usual	Investment (£ years)	£	0.1	0.1	0.1	0.1	0.1	0.1
Other Renewable Electricity	Marine	Business as Usual	Investment (£ years)	£	4,330,000	115,894,494	61,517,172	71,475,100	0	0
Other Renewable Electricity	Marine	Business as Usual	Turnover	£	4,330,000	52,070,000	9,000,000	4,900,000	4,900,000	4,900,000

# Key Statistics

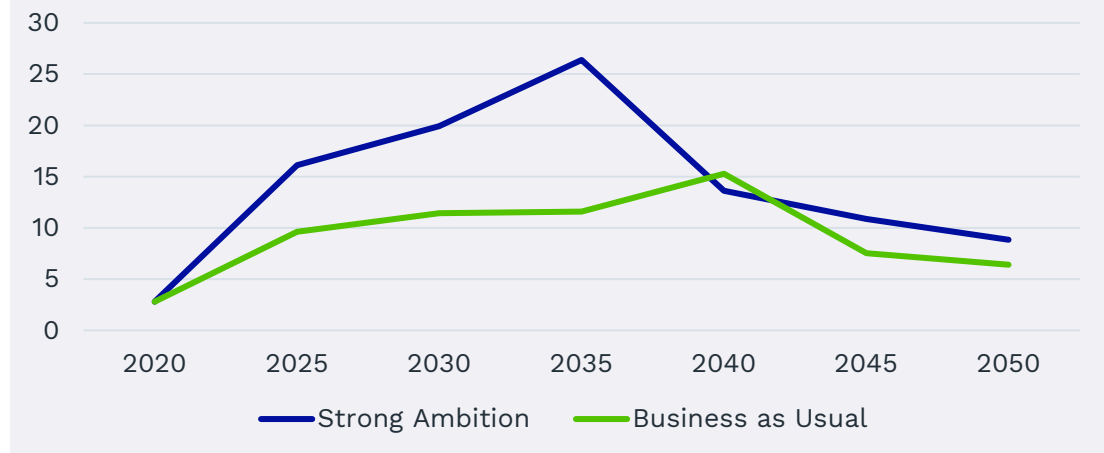


Economic Impact Scenarios for Scotland's Energy Transition – April 2024

## Capacity projections ▶

Technology	Unit	2020	Strong Ambition	Business as Usual
			2050	2050
Offshore Wind	MW	898	41,073	29,305
Onshore Wind	MW	8,356	33,485	25,968
Marine	MW	22	272	187
Hydropower	MW	2,402	6,163	3,699
Solar	MW	392	8,001	2,825
Biomass	MW	2,001	193	2,179
Biogas	MW	355	299	122
Biofuels	TWh	1	3	2
Energy from Waste	MW	80	31	464
Heat Pumps	Number	20,670	2,413,249	1,545,130
Heat Networks	Number	3,887	572,132	62,223
EV Buses/HGVs	Number	40	53,304	49,045
H <sub>2</sub> Buses/HGVs	Number	12	7,432	1,251
EV Chargers – All	Number	6,546	614,246	598,423
Hydrogen Refuelers	Number	2	777	114
Hydrogen Production	MW	0	6,858	311
SAF	MW	0	1,235	0
CCUS	MtCO <sub>2</sub> e/year	0	7	8

## Projected cumulative turnover (£bn) ▶



# Scottish Company Base and Research Strengths

Alongside the projections, the report features analyses of the relative strength of Scotland’s company and research strengths in each of the 18 technologies. Separate annexes include the same assessments of a wider scope of technologies and commentary on the scoring given

Sectors	Supply Chain Capability	Export Capability
Marine	10	8
SAF and Biofuels	9	9
Offshore Wind	7	9
Heat Pumps	8	8
EV Buses & HGVs	7	8
Onshore Wind	6	8
Heat Networks	8	5
CCUS	7	7
Hydrogen	6	7
Hydropower	6	6
Hydrogen Refuelers	6	6
Solar PV	6	3
H2 Buses & HGVs	6	4
Biomass	8	1
Energy from Waste	6	1
EV Chargers – All	5	3
Biogas	6	1

Company base scores are given from a qualitative assessment by an SE sector expert. Research scores are based on research funding awarded and the number of Principal Investigators for each technology, identified through independent research commissioned by SE in Autumn 2023.

Sectors	R&D Capability	Commercial Readiness Index rating
Offshore Wind	9	Widespread development
H <sub>2</sub> Vehicles*	9	Commercial trials, small scale
Hydrogen	9	Commercial trials, small scale
Solar PV	8	Widespread development
SAF**	8	Commercial trials, small scale
CCUS	8	Commercial trials, small scale
Marine	8	Commercial trials, small scale
Biogas	6	Commercial scale up
Biomass	5	Widespread development
Onshore Wind	4	Widespread development
Heat Pumps	4	Commercial scale up
Electric Vehicles*	4	Commercial scale up
Heat Networks	3	Commercial scale up
EV Chargers – All	3	Commercial scale up
Hydropower	3	Widespread development
Energy from Waste	no data	Commercial scale up
Hydrogen Refuelers	no data	Commercial trials, small scale

\*Includes light vehicles

\*\*Includes biofuels

# Key Conclusions

- Scotland's R&D and commercial capabilities are well positioned to address emerging energy transition economic opportunities
- Attracting external investment is a critical enabler of success
- Total employment is projected to grow significantly and to exceed current employment in the oil and gas industry
- Capturing supply chain opportunities is key to anchoring increased investment and employment across Scotland
- A 'portfolio' of opportunities across energy transition sectors will help to support a just transition to net zero and build a more resilient Scottish economy
- Further research will help to strengthen out evidence base relating to anticipated energy transition economic opportunities

