

Renewable energy



Overview of renewable energy in the Highlands and Islands

Rather than forming its own discrete sector, renewable energy covers a wide range of technologies and draws on several sectors of the economy, notably engineering, manufacturing/fabrication, electrical works, construction, transport and research and development.

Employment

Direct employment¹ in renewables in Scotland was estimated at 1,540 in 2004,² around one third of which were located in the Highlands and Islands.³ Allowing for some growth since then, up to 600 direct jobs are supported by the renewables sector in the Highlands and Islands. A wave and tidal cluster in Orkney supports around 60 jobs. Direct jobs in the wind energy sector in the Highlands and Islands are dominated by Vestas Celtic in Campbeltown.

One estimate puts the potential employment impact of marine energy in Scotland at 7,000 FTEs by 2020.⁴ An estimate of potential jobs from biomass activities in Scotland amounts to a further 2,000 FTEs.⁵

Business units

HIE's renewable energy database lists 450 companies in the Highlands and Islands with a potential interest in the renewables sector. The main sub-sectors of interest are biomass (106 companies, including many in the primary industries and transport); wind energy (57 companies, many in the engineering, manufacturing, construction and transport sector); hydro (34), wave (27), tidal (27) and solar thermal (23).

The main function that these companies would perform in renewables is operations and maintenance (mentioned by 101 companies). Consultancy (82) and construction (81) are also important roles. Fewer companies mentioned installation (37) or manufacturing (34). Research and development is concentrated in relatively few organisations (14).

¹ Direct employment does not include jobs elsewhere in the supply chain

² Renewable energy supply chain gap analysis 2004 (Mott MacDonald and the Burton Group for HIE)

³ HIE 2004. Analysis of Highlands and Islands content in major wind energy projects supports this broad ratio

⁴ Harnessing Scotland's marine energy potential, Forum for Renewable Energy Development in Scotland (FREDS), Marine Energy Group (MEG) Report 2004

⁵ Promoting and accelerating the market penetration of biomass technology in Scotland, FREDS, 2005

Product markets and output

- On-shore wind – depending on planning approvals and grid strengthening, around £450 million per annum of capital expenditure, which could bring assembly and installation work to companies.⁶
- Offshore wind – a pilot project by Talisman Energy in the Beatrice oil field could lead to the installation of 200 distant offshore wind turbines with local assembly and installation opportunities. An initial two turbine demonstrator project is currently being installed.
- A forecast suggests that 1300 megawatts (MW) of marine energy capacity (10% of Scotland's electricity production) could be feasible by 2020.⁷
- Community energy – eg small-scale wind generators, solar panels, ground source heat pumps and biomass systems are expected to show a growth in uptake in coming years.
- Biomass (by-products from the forestry sector) – one estimate puts the biomass potential at 450 MW (3.5% of Scotland's forecast electricity production in 2020).⁸
- Other renewable technologies such as fuel cells and hydrogen will continue to attract research and development activity, for example the PURE (Promoting Unst's Renewable Energy) initiative in Shetland expects the community wind/hydrogen power scheme will be replicated elsewhere. Lews Castle College, Stornoway, also researches hydrogen as a clean fuel.

⁶ HIE renewable energy position statement 2006

⁷ MEG 2004 report

⁸ FREDS Biomass report, 2005

SWOT analysis

The following analysis illustrates the main issues facing the development of the renewable energy sector in the Highlands and Islands.

Strengths

- Strong underlying rationale and commitment through Government's Renewables Obligations (RO)⁹
- Superior wind, wave and tidal natural resources
- Leading marine energy expertise (EMEC is the UK's first grid-connected wave and tidal test facility)
- Existing skills base from oil and gas sector
- Business, agency and local authority support

Weaknesses

- Benefits from development and installation of renewable schemes will be time-limited
- Transmission network may hamper commercial scale development¹⁰
- Few local companies of sufficient scale to compete nationally and internationally
- Relatively little central Government support for emerging technologies

Opportunities

- Opportunities to use Nigg and Arnish for manufacturing and as an assembly point for offshore wind or hybrid wind/tidal systems
- ITI Energy and Energy Technology Institute (ETI) funding could match other public funds to assist investment within the sector
- Distribution of benefits to remote locations of the Highlands and Islands and through community ownership scheme
- Demonstration of emerging technologies
- Development of value-added input to marine renewables

Threats

- Lengthy planning process for generation schemes
- Mixed public attitude towards on-shore/near-shore wind schemes and grid upgrading
- Difficulty establishing an economic case for some renewable energy generation schemes
- Competition for skilled labour
- Regulatory environment may not promote equal opportunities for remote regions of the UK

⁹The RO requires electricity suppliers to supply a certain amount of electricity from renewable sources annually, leading to trade in Renewable Obligation Certificates. The Scottish Executive target is 40% of electricity in Scotland to be from renewables by 2020

¹⁰In particular, the grid connections to the islands and the Beaulieu-Denny link

Priorities for action

- Support the upgrading of the electricity grid to support new generating capacity in the Highlands and Islands
- Encourage a diverse and sustainable renewable energy sector drawing on various technologies
- Establish the Highlands and Islands as a leader in commercial and academic renewable energy research
- Develop the local supply chain for the renewables sector
- Seek to maximise community benefit from renewables through involvement and ownership through the Highlands and Islands Community Energy Company (HICEC)
- Develop world-class expertise in small-scale renewable energy systems
- Seek to provide appropriate skills for the sector and encourage entrants to the industry
- Work with national Government, Ofgem and other agencies to ensure a regulatory environment which does not discriminate against remote areas of the UK such as the Highlands and Islands
- Assist in a co-ordinated action to provide renewable skills, including an accredited installers scheme for household and small-scale renewables schemes