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Skills for renewable energy in Scotland

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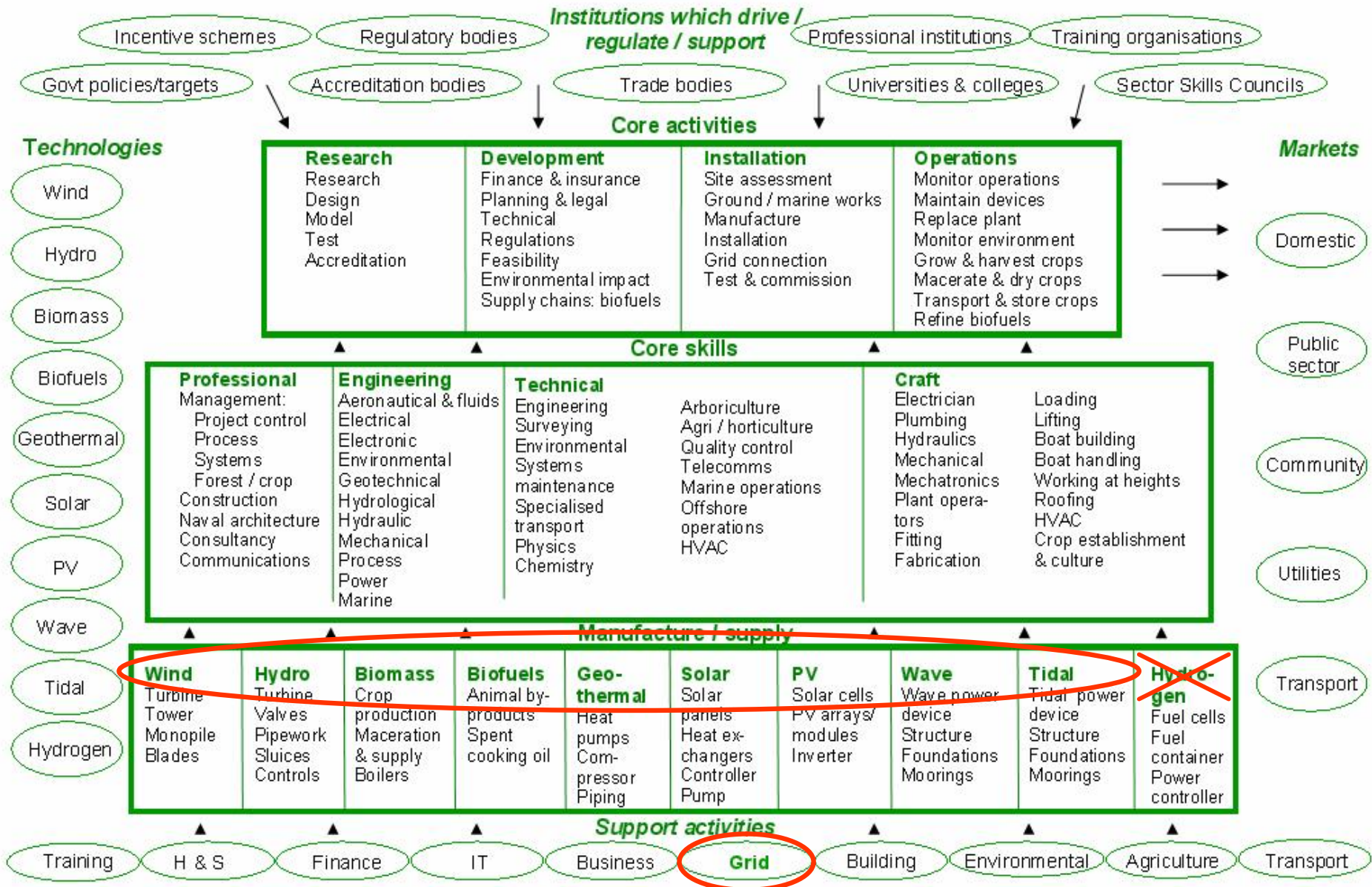
Prepared For Forward Scotland

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Overview of the renewable sector



e.g. Table 10 Biomass: Plant installation

Broad tasks	Broad skill set	Qualifications	Experience	Providers
Installation of plant	Site works Boiler and fuel feed systems siting & assembly	Degree level civil & structural engineering, Construction MA (various)	Experience of biomass / woodfuel projects Standard construction experience	Universities FE college, Private providers Employers Manufacturer's courses
	Boiler installation	Mechanical Services MA Heating, Ventilation, Air Conditioning MA Electrical Installation MA	Experience of biomass / woodfuel boiler installation	FE colleges, Private providers Employers Manufacturer's courses
	Excavation, pipe works, cable jointing	Specific utilities qualifications	Experienced contractors for pipe laying	CITB courses
	Connection to existing systems	Mechanical Services MA Heating, Ventilation, Air Conditioning MA Power engineering (for CPH)	Experienced plumbers and Heating & ventilation engineers	FE Colleges, Private providers Employers
	Boiler testing, combustion, emission control, commissioning	Heating, Ventilation, Air Conditioning MA Mechanical Services MA Power engineering (for CPH)	Experience of biomass / woodfuel boilers	FE colleges, Private providers Employers Manufacturer's courses
	Grid connection (CPH only)	Degree level civil engineering, construction HV	Traffic management, LA planning, roads construction	Universities Power Academy SSE and Scottish Power
Upgrading of local infrastructure	Road and bridge planning & building	Surveying, degree level civil & construction engineering,	Standard civil engineering experience	Universities FE colleges Specific CITB courses
Grid connection	Surveying	Surveying degree level	Civil engineering projects	Universities
	Cable laying	Cable jointing	Experienced operators	SSE, Scottish Power
	Electrical / power installation and connections / telecoms	Degree level engineering HV SYSTEM operations (C&G) Electricity & Distribution MA	Experienced power engineers	Universities, Power Academy SSE, Scottish Power FE Colleges, private providers Employers

Entry Requirements

- Matched entry levels for renewable energy jobs and activities to standard qualification levels.
- Scottish Credit and Qualification Framework used as baseline for consistency.
- Equate to minimum entry levels - actual job requirements usually 1 level above, requiring experience and training.

Renewable Energy jobs / activities	SCQF
Research & Development, commercialisation	11, 12
Overall project conception & design, project management, refinery management	9, 10
Potential post-graduates: Environmental impact assessment and monitoring, planning & regulations, production control, project implementation, power systems, financial and revenue control, forest / woodland planning & management, flow engineering, reservoir engineering, acousticians	8
Potential graduates: Mechanical, electrical, power, aeronautical, renewable, structural, civil, marine, telecoms engineering; materials science, geologists, chemists, physicists, environmental scientists, hydrologists, silviculturalists, agriculturalists, marine science, skippers, surveying, accounting, management of subcontractors	7
Potential technicians: Engineering and electronic technicians, CAD, visualisation, planning and managing installation of PV, solar, heat pumps, domestic wind and hydro, installation of woodfuel boilers, refinery process control, maintenance engineering – appliances, turbines, devices, telecoms technician	6
Potential apprenticeships: Engineering, electrical installation, heating & ventilation, plumbing, construction including roofing, forestry operations, boat handling and associated marine operations, plant operators, working at heights, scaffolding, specialist transport, shuttering joinery, growing biofuel crops, slaughtering and butchery, linesmen, cable jointing, blasting & tunneling	5
Semi-skilled: Manufacturing components, engineering production, biomass operations – chipping, drying, loading; LGV transport, boat handling	4
Basic Skills	4 1, 2, 3

Key Points

- Most jobs experienced craft, technician, graduate or post graduate level, some jobs semi-skilled.
- Main opportunities for 'new', long term jobs at all levels are:
 - establishing manufacturing capability in Scotland to meet demand for devices and associated equipment.
 - ensuring high local content in all aspects of development, construction and operations of new projects including grid upgrades.
- Scottish supply chain = job opportunities = skills demand
- Action needed to transfer skills from other industries, e.g. oil and gas, fishing and aquaculture.
- Few current skills shortages specific to renewable energy sector. Endemic skills and labour shortages will affect the development of renewable energy.
- Encouraging responses to forecast shortages in certain sectors: The Power Academy - electrical power engineers / Scottish Drivers Training Scheme - LGV drivers.
- Skills specific to RE technology - manufacturer's courses and employer training - encouraging companies to invest for long term is vital.
- Clearskies accreditation is not based on training or a qualification. Competence-based Units may offer a better approach.

Socio-Economic Potential ?

Technology	Likely peak deployment period	Additional Scottish jobs to 2020 (Direct + indirect Jobs FTE)	
		Min	Max
Offshore Wind	3 to 10 years	354	2,488
Onshore Wind	0 to 7 years	262	1,495
PV (large scale)	10 to 15 years	54	1,462
Wave	10 to 15 years	265	1,443
Biomass Advanced (Gasification etc)	3 to 10 years	146	1,109
Biomass	0 to 10 years	87	820
Energy from Waste	0 to 5 years	86	767
Tidal	10 to 15 years	143	559
Landfill	0 to 5 years	25	341
Hydro	0 to 5 years	130	273
Solar Thermal (large scale)	10 to 15 years	33	80
Totals		1,585	10,836

A big range and not much guaranteed

Will skills affect deployment total and/or rate?

What about supporting export potential? Goods or services