

Welsh Assembly Government

SKILLS DEVELOPMENT FUND APPLICATION 2006-2007 PROJECT

To assess the microgeneration requirements of the renewable energy sector in Wales. To determine the skills and training requirements of this evolving sector. Map the current training provision and ascertain those that have the potential to deliver the skills for the sector.

A report produced by

SummitSkills and Energy & Utility Skills

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2 Executive Summary

The Welsh Assembly Government has clearly set its targets in terms of policy for Microgeneration and the use of Environmental Technologies. Our research highlights that employers in Wales do not see the country as a place for inward investment in this market at present, but are clearly setting their sights on established satellite business in England, where they see the market being sufficiently buoyant for potential expansion. Therefore in terms of meeting Wales's Green Energy targets market stimulation through strategic interventions would be necessary, and with some urgency to ensure the market take-up. As a result training provision capacity would need to be a priority to reflect the local demands in the market of a variety of microgeneration technologies.

The number of employers operating purely in the microgeneration sector is extremely low within Wales. Most employers' view micro-generation as an addition to their business offering, in terms of workforce capability developing upon existing skill sets of experienced employees. It is not surprising that the content of current learning products within Wales does not reflect recent changes within Welsh and UK policy in relation to climate change. However our research indicates the sector in Wales is becoming more aware of market opportunities and we anticipate there is likely to be increased demand for 'Made in Wales' expertise, where there is currently a shortfall.

Where these opportunities are understood and in demand, existing Training Providers and Operatives see the workforce development element as an upskilling initiative and the development of bolt on unit(s) to existing level 3 qualifications as a short term response and solution. Evidence suggests a longer solution embraces the role of new technologies into apprenticeship frameworks. Current frameworks therefore require revision. A lack of training opportunity at Level 4 is apparent; partners within Wales would need to work collaboratively to bridge the gap between operative and designers.

The research highlighted basic skills to be a serious concern to employers and therefore support is required to the sector working with the Basic Skills Agency in Wales.

Where awareness is apparent training providers anticipated growth within the microgeneration. However very few have made any movement towards addressing their own organisations capability hence a shortfall in provider capability and a need for developing 'train the trainer' initiative(s). In contrast the private sector has to its credit responded by offering full cost recovery courses to up-skill the experienced workforce.

The Welsh Assembly Government, Sector Skills Councils and Key Partners have a golden opportunity to steer the Welsh Microgeneration Sector and assist it in terms of skills, economic impact and aiding Wales in reaching its green targets. Unless appropriate action is taken Wales may be left behind in the race to gain market share supported by a competent workforce.

3 Introduction

3.1 Project Background

The Energy Route Map 2005 proposes that Wales will obtain 4 Twhr per annum of electricity by 2010 and 7 Twhr by 2020 from renewable sources, the likelihood being that the latter undoubtedly will be obtained from microgeneration technologies. In response to this we, the Sector Skills Councils – Energy & Utility Skills and SummitSkills, have mapped the microgeneration technologies of the renewables sector in Wales to determine its future skills and training needs. This will provide the primary qualitative and quantitative data to the Welsh Assembly Government for their assessment of skills and training documentation. We have conducted 40 interviews across Wales with employers and training providers in the microgeneration section.

Wales has been at the forefront of recognising the need for alternative streams of energy. It has outlined its aspirations and reasoning in its “People, Places, Futures: the Wales Spatial Plan” and subsequent documentation such as “Energy Wales and the Business & Environmental action plan for Wales”.

Wales needs to start delivering on the “Energy Route Map” and “Tan 8”. The Principality must reduce its CO₂ emissions in line with the UK to comply with Kyoto. Tan 8 looks at planning for microgenerated energy and delivering on these proposals requires a long lead time; this has to be enacted upon very quickly if the Energy Route Map 2005 is to be successful. We have five years to the first milestone and fifteen to the second to create a skilled, competent, qualified workforce and teaching infrastructure. Time is of the essence if Wales are to deliver on this agenda. Before we can do this we need to know what is out there, the issues they have, the skills gaps and shortages they may be experiencing and what we as the Sector Skills Councils can do to help their business perform to a higher standard. We need to ensure that skills and training are linked to economic benefits for Wales as outlined in “Wales a Vibrant Economy” and “SEAP 2”.

Linked with this, is the changing and raising of public perception together with demonstrating confidence in microgeneration technologies; This has to occur in the public mind-set for this to become a reality and affordable for all. With the impending decommissioning of Wylfa nuclear power station in Anglesey, scheduled for 2010, there is a real need to establish new sources of power and employment for the Welsh economy in this region alone.

The Welsh Assembly Government has made a commitment to the eradication of fuel poverty by 2010; since that policy was written global influences have impacted on this policy. Price hikes in non-renewable sources of energy have been very apparent during 2005 and 2006 which has raised issues in terms of the delivery of affordable energy for everyone in Wales. It is an economic fact that the greater the price charged for non renewable energies the more people are pushed into fuel poverty. Microgeneration technology is a way of offsetting this cost but Wales needs a competent qualified workforce to do this. It does not have sufficient infrastructure at the moment and the steps to achieve this must be

made now if the Welsh Assembly policies are to be delivered. It is worth noting at this point that the UK is gas negative and we are reliant on others for our energy needs in a precarious world.

Wales has its part to play in the overall picture of the UK in terms of microgeneration and renewables. It was agreed at the G8 Summits in Gleneagles 2005; quoting from the agreement.

“The UK Prime Minister has said climate change is **“probably, long-term the single most important issue we face as a global community”**”.

This is why climate change is a priority during the UK’s G8 Presidency this year.. On these pages there is some background on the issues of climate change as well as an FAQ and details of NGO and government involvement across the globe.

At Gleneagles, the G8 leaders signed a communiqué which included a political statement and an action plan covering climate change, clean energy and sustainable development.

The climate change parts of the communiqué included:

- A political statement on the **importance of climate change** and an agreement to **“act with resolve and urgency now”**. This was the first time that G8 leaders have reached an agreement on the role of human activity in global warming and the need for urgent action.
- Agreement that **greenhouse gas emissions** need to slow, peak and **reverse** and that G8 countries need to make **“substantial cuts”** in emissions.
- **A package of measures to combat climate change**, building on existing work in order to increase the speed with which we reduce Greenhouse Gas emissions. The package includes improvements to energy efficiency in appliances and buildings, cleaner vehicles, aviation, work on developing cleaner fuels, renewable energy and promoting research & development and the financing of future projects. In order to assist with this the G8 has engaged with the International Energy Agency (IEA) and asked them to undertake further work on actions to reduce emissions.

If we are given the go ahead to map the microgeneration technological requirements of the renewables sector, we the Sector Skills Councils will be in a more economically robust position to help develop and increase the productivity that this sector has the potential to deliver for Wales, work with partners to tackle fuel security issues for communities, and procure more environment partnerships throughout Wales.

3.2 Project Aims and Objectives

Aims

The primary aim is to establish the current provision and future requirements of skills and training to support the development of the microgeneration requirements of the microgeneration sector in Wales. It is also to ensure that SummitSkills and Energy & Utility Skills have the qualitative and quantitative primary data to support DELLS information request on the skills and training assessment for the sector support the Welsh Assembly Governments Energy Route Map.

Objectives

- The research will provide us with a current health check on the current Welsh microgeneration requirements of the microgeneration workforce.
- The research will provide SummitSkills and Energy & Utility Skills with key indicators in its bid to work with employers in the microgeneration sector to raise the productivity and sustainability of the Welsh workforce.
- To ascertain the current supply and demand status of the microgeneration sector for the whole of the SummitSkills and Energy & Utility Skills footprints in Wales.
- To ascertain from the microgeneration sector employers within each Welsh region if they have skills gaps; what and where the gaps are within the business.
- The impact these skills gaps have on current business needs and anticipated future business development and procurement.
- Contact training providers to map out the current available provision in Wales and the available capacity required to meet the needs of the sector.

Anticipated Outcomes

- A current position on the Welsh labour market for microgeneration.
- Welsh market analysis and skills foresight.
- A map with identified training providers in Wales linked where possible to the recent OFM conducted by Energy & Utility Skills.
- An assessment of which training providers have the potential to deliver to the sector.

- Identification of barriers to training provision.

3.3 What is Microgeneration?

Emerging environmental technologies in the building services engineering sector;

Solar Water and Heating - Solar water heating systems use heat from the sun to work alongside a conventional water heater. The technology is well developed with a large choice of equipment to suit many applications.

Photovoltaic's for Microgeneration - Solar PV (photovoltaic) uses energy from the sun to create electricity to run appliances and lighting. PV requires only daylight - not direct sunlight - to generate electricity.

Vacuum Tube Collectors – Utilises solar energy to heat hot water for domestic purposes for example. The technology has advanced significantly over the last decade and works very efficiently in extremes of temperatures.

Micro Wind Energy - Modern wind turbines use the wind's lift forces to turn aerodynamic blades that turn a rotor which creates electricity.

Ground Source Heat Pumps - Although we may not know it, heat pumps are very familiar to us - fridges and air conditioners are two examples. Ground source heat pumps (GSHP) transfer heat from the ground into a building to provide space heating and, in some cases, to pre-heat domestic hot water.

Biomass - is organic matter of recent origin. It doesn't include fossil fuels, which have taken millions of years to evolve. The CO₂ released when energy is generated from biomass is balanced by that absorbed during the fuel's production. We call this a carbon neutral process.

Micro hydro electric - is another option for gathering electric power from moving water sources. By using small water turbines fed from a river or stream, individuals can gather consistent power from the water. This technology is over 100 years old and well established within the UK. Therefore it has the potential for further development. No employers were interviewed that represented this sector because they are difficult to find, but this could warrant further investigation in the future.

3.4 Dissemination

The outcomes of the project will be published on the SummitSkills and Energy & Utility Skills websites and newsletters. All partners will promote the success of the project through their in-house magazines, websites, and trade journals. Key audiences and policy makers will also be notified.

3.5 Project's Added Value

Wales has been at the forefront of recognising the need for alternative streams of energy and has outlined its aspirations and reasoning in its "People, Places, Futures: the Wales Spatial Plan" and subsequent documentation.

Tan 8 looks at planning for microgeneration generated energy, delivering on these proposals needs a long lead time; this has to be enacted upon very quickly if the Energy Route Map 2005 is to be successful. We have five years to the first milestone and fifteen to the second to create a skilled, competent, qualified workforce and teaching infrastructure. Time is of the essence if we are to deliver on this agenda.

As microgeneration technologies are an emerging sector in Wales, the numbers of employers at present are perceived to be low. However the sector is seen to have significant value in terms of the "future of energy" and has a determined growth rate set by the microgeneration obligations for electricity generation alone.

This is a pure cross sector activity that requires labour market research to be able to understand the needs of an emerging market.

3.6 Skills Capability Exchange

The Exchange was commissioned as a key part of the Energy Project, funded by the Welsh Assembly Government. The aim is to ensure that Welsh energy companies, their service providers and workforce have the requisite skills and capabilities to respond to market requirements both now and in the future.

Energy & Utility Skills and SummitSkills have forged close working links with the project managers to identify the key challenges for the Welsh microgeneration sector in terms of skills and funding to produce a vibrant sector for the future.

Department for Enterprise and Innovation has 13 sector classifications for environmental technologies;

- Air pollution control
- Cleaner technologies and processes
- Environmental consultancy
- Energy management/efficiency
- Renewable energy
- Land reclamation and regeneration
- Landscape planning creation and management
- Environmental monitoring instrumentation and analysis
- Marine pollution control
- Noise and vibration control

- Recovery and recycling
- Waste management
- Water supply and wastewater treatment

3.7 Low Carbon Buildings Programme (LCBP)

Launched on 1 April 2006, the Low Carbon Buildings Programme will demonstrate how energy efficiency and microgeneration can work together to create low carbon buildings.

The programme has four main aims:

- To support a more holistic approach to reducing carbon emissions from buildings by demonstrating combinations of both energy efficiency measures and microgeneration products in a simple development.
- To see demonstrated on a wider scale emerging microgeneration technologies with a focus on building integrated technologies.
- To measure trends in costs of microgeneration technologies. It is expected that these costs should reduce over the lifetime of the programme against a 2005 baseline.
- To raise awareness by linking projects to a wider programme of activities including developing skills and communicating the potential of microgeneration to change the attitudes and behaviour of consumers. Larger scale projects will seek to engage the construction industry in project replication by demonstrating the business case for developing low carbon buildings.

Part one of the low carbon buildings programme will fund a range of microgeneration technologies including;

- Solar photovoltaic
- Wind turbines
- Small hydro
- Solar thermal hot water
- Ground/water/air source heat pumps
- Bio energy
- Renewable CHP
- Micro CHP
- Fuel Cells

This programme forms part of the Department of Trade and Industry's microgeneration strategy. The objective of this strategy is to create conditions under which microgeneration becomes a realistic alternative or supplementary energy generation source for the householder, the community and small businesses.

4 Methodology

The methodology for this research is structured around a qualitative process using data collected structured interviews with training providers', installers and a manufacturer of microgeneration technology, all within the Devolved Administration of Wales. The interviews were carried out in the four geographical areas of Wales, being North East, North West, South East and South West Wales, to seek to take cognizance of the variety of rural and urban locations that the country contains.

The research interviewed seventeen training providers from across the four sub-regions of Wales, both urban and rural providers. Predominantly these interviews reflect the make up of provision in Wales. The Training providers interviewed all offered industry recognised building services engineering and gas qualifications meaning they had the potential to go on to offer microgeneration courses. The majority of interviews were conducted in the Further Education sector. The research took the views of seventeen providers in total. The provision of private training providers offering microgeneration training were few, hence the low numbers interviewed.

The research also carried out twenty-two interviews with installers. The sample taken was structured towards companies who were engaged in the installation of microgeneration technology, had expressed an interest in the installing of that technology, or were perceived to be installing these technologies. The purpose of this being to see the extent of and type of technologies being installed and to identify where there may be gaps.

From this exercise it is possible to look at how demand and supply are matching up and where they are not, and how the lack of supply may impact on the building services engineering sector's response to the needs of Wales, and particularly the policy perspective of the Welsh Assembly Government.

As with the provider interviews, the installer interviewees came from the four sub-regions of Wales, and covered a range of small, medium and large companies, related to the general spread of companies within the devolved administration. This was not cut as exactly as the Sector Needs Analysis for Wales however, due in part to the lack of large companies in all the sub-regions.

The project targeted companies who had not really considered microgeneration installations as a business option right through to installers but the current population is low. To assess training supply and demand these companies can not be seen as being indicative of the overall capacity within Wales. However this reflects the remit of this project and readers are referred to the Sector Needs Analysis for Wales produced by SummitSkills that includes this information.

We chose to interview the manufacturer under this category and present the interview findings as a case study, they were originally contacted as a private training provider in the SW Wales region. Other Welsh manufactures exist but we were unable to obtain interviews with them.

Data for this research was collected using MP3 players, so that actual quotes from employers could be integrated straight into the research report under the qualitative statistical information. This enables the reader to get a picture of the views of the sector, the strength of these views as well as common themes that come through the research.

5 Wales Policy Perspective ¹

Welsh energy policy has five important strands:

- Securing 4 TwHr per annum of renewable electricity production by 2010 and 7 TwHr by 2020.
- Much greater energy efficiency in all sectors, as described in the Energy Savings Wales energy efficiency action plan published in October 2004.
- More electricity generation from cleaner, higher efficiency fossil-fuel plants.
- Significant energy infrastructure improvements.
- On a holistic basis, achieving measurable carbon dioxide emission reduction targets for 2010. (Energy Wales, 2005, p4).

In terms of large scale renewable energy generation, Energy Route map for Wales identified offshore wind power, biomass from appropriate waste sources, and wave and tidal energy systems, while at the same time instigating coal/carbon capture and storage as the main drivers for the policy (Energy Wales, 2005, p9-10). The Welsh Assembly Government has also produced a microgeneration action plan. The purpose of the action plan is to reduce the amount of carbon emissions associated with heat and electrical power needs of properties, avoid the loss of power along the electricity grid and ease the pressure on the distribution network.

The plan is also intended to have a significant impact on the way that power is generated and used, and reduce the need for new generating stations to meet the predicted energy gap as the old nuclear and coal plants come to the end of their operating life. Finally the action plan is seeking to ensure that Wales has the potential to generate employment via production, installation and maintenance. Also for biomass, the report highlights that there are potential employment opportunities arising from growth processing and distribution of wood and energy crops. The report concludes however that the microgeneration market is not mature enough in the UK to succeed without Government promotion and incentives (Microgeneration Action Plan, 2006, p6).

In relation to training and skills development, the Centre for Alternative Technology in Machynlleth is training people in microgeneration and environmental technologies. This covers installation skills for plumbers and electricians within the SummitSkills footprint of microgeneration technologies, as well as design and architectural courses up to postgraduate level. The report concludes that in relation to skills for new technologies that more departments could be set up in different parts of Wales, through partnership with Department for Education and Lifelong Learning, Sector Skills Councils, Centre for Alternative Technology and Energy Saving Trust. The report states that discussions are

¹ This section of the report is taken from SummitSkills Sector Needs Analysis for Wales as SummitSkills understands that currently there have not been any further policy initiatives in this field since that document was produced in September 2006.

already underway between Department for Enterprise Innovation and Networks and Department Education Lifelong Learning Skills on the requirements for training and skills in the renewable energy sector (Microgeneration Action Plan, 2006, p11).

As indicated above, the role of the construction and building services engineering sectors, with the Welsh Development Agency published a document on creating sustainable places, which recommends that buildings in Wales should be designed to minimise resource and maximise energy efficiency during construction, operation and maintenance, and should contain sustained construction practices, passive energy efficient design including solar gain, shelter, shade, but at the same time avoiding over-heating and the need for air conditioning. In addition, compact building forms, natural ventilation and light, low energy demand and the justification for inclusion of any energy intensive services should be considered by designers according to the document.

Design should involve carbon efficient energy sources and supplies, including microgeneration and CHP and sustainable drainage systems/grey water recycling, minimal length of service runs and extent of road surfaces and the reuse of existing buildings and infrastructure and waste minimisation and incentives for recycling (Microgeneration Action Plan, 2006, p14). Other initiatives in relation to construction design, is the development of a sustainable construction chair by the Building Research Establishment within the School of Architecture at Cardiff University (Microgeneration Action Plan, 2006, p14).

5.1 Policy Drivers and Labour Market Implications

The Occupational and Functional Map of the UK Microgeneration Energy Sector published by Energy & Utility Skills in December 2005 highlighted the fact that the key policy drivers (see project background section), would exert further pressure on the microgeneration labour market within the UK, especially in regard to construction, electrical and plumbing skills. This is due to the inclination toward alternative energy sources and environmental protection; the projected house building programme and housing stock transfer with their potential for renewable energy applications; and the pressures from other sectors of the economy where the demand for similar skills is competitive.

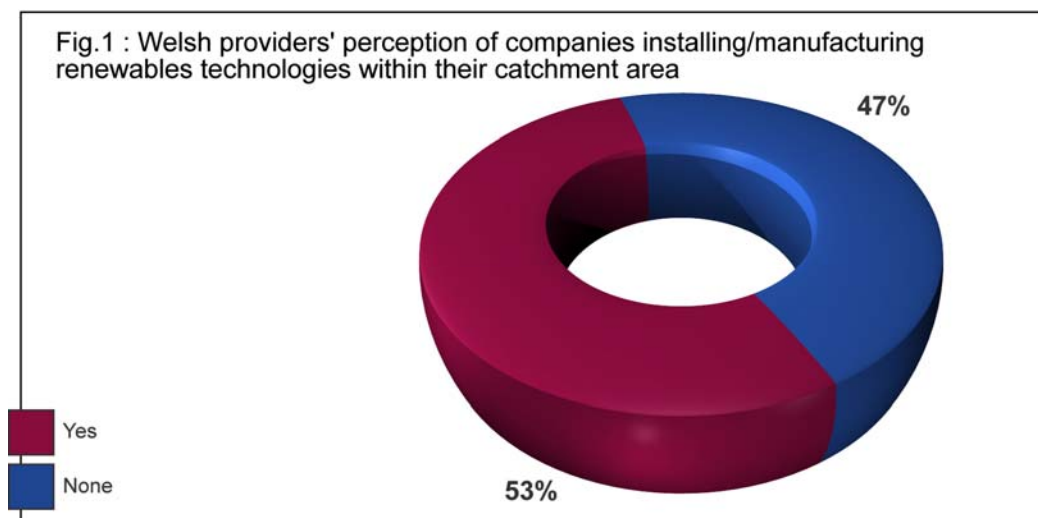
6 Provider Review of Microgeneration Markets

6.1 Introduction

Within this section, the views of the providers are obtained on a number of issues around microgeneration. Percentages from the interviews are shown, and these are underpinned by quotes from the interviewees recorded verbatim as part of the data collection technique.

6.2 Awareness

The first set of questions sought to analyse the awareness of the potential microgeneration market that is developing both in Wales and the United Kingdom generally. Providers were first asked if they were aware of any companies within their traditional catchment area that were installing or manufacturing microgeneration products. Figure 1 below suggests that 53% of providers within the survey were aware of providers within their area fitting these new technologies.



The quotes below are indicative of the views of the providers interviewed:

Not at the present moment they are starting to lean towards sustainability but they're only starting in the local area to look into that type of development now. (NWWP02)

We're fortunate in Mid Wales that with... 18 miles up the road, we've got the Centre of Alternative Technology up there and there are companies specialising in solar and wind generation up in that area. One of the two plumbers is telling me that there's also someone in... that's close to use. But its all a bit low scale... small scale and a bit bitty if you like, and that is the problem... that's one of the problems we find... that you'll find individual

plumbers perhaps making contact with an individual manufacturer for a certain purpose but it needs the conclusion that somebody needs... as far as we're concerned it need to be driven forward on a larger level... larger level. (SWWP03)

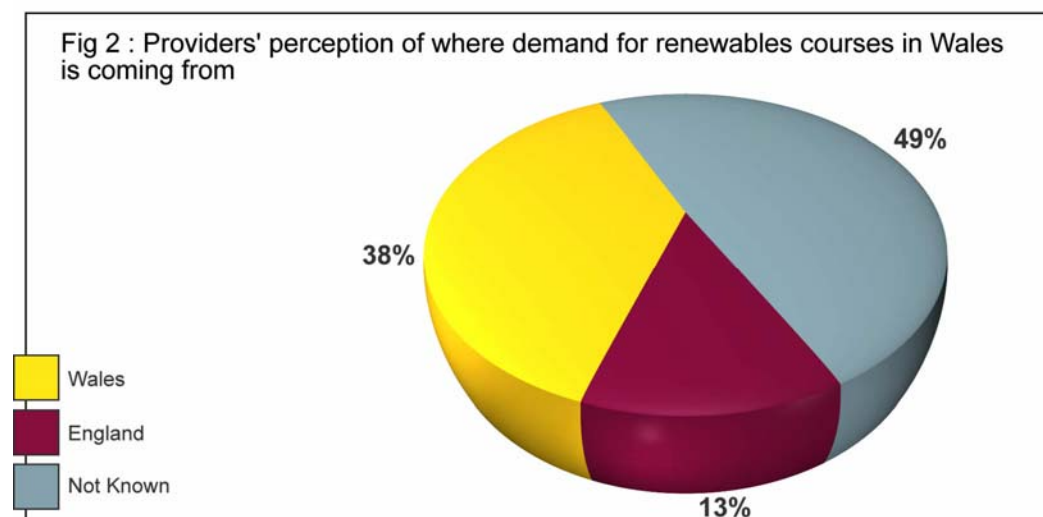
I think there are a couple of companies that have been installing ground source heat pumps. (NEWP02)

I know we've got a couple of small companies, like you said, the main in the van who are actually installing the turbines, the wind turbines from B and Q. we've had an enquiry. There's one guy who's done about two or three. There's an existing company that we've used... he was actually an apprentice who'd come through and he actually had an enquiry, pretty much like you said, is there anything in terms of training? That was linked up to the... wind turbines, yeah... (SEWP02)

Only what I've read in the press... I don't actually deal with these kinds of things. (SEWP06)

Personally I am not... no... not immediately... (SWWP01)

The next question sought to identify where the demand for courses was coming from. One of the providers has a national/international profile in renewable technologies and other providers are on the borders of Wales and therefore theoretically (particularly for full cost courses) could recruit from England. Figure 2 below indicates the location of training demand within Wales.²



The data suggests that although predominantly those who are accessing courses within Wales there is a small percentage of English companies who are coming over the border to take advantage of the Welsh courses. In the main this is taking place in two institutions, this being the SW Wales based Manufacturer and the internationally recognised Centre for Alternative Energy for microgeneration technology within mid-Wales.

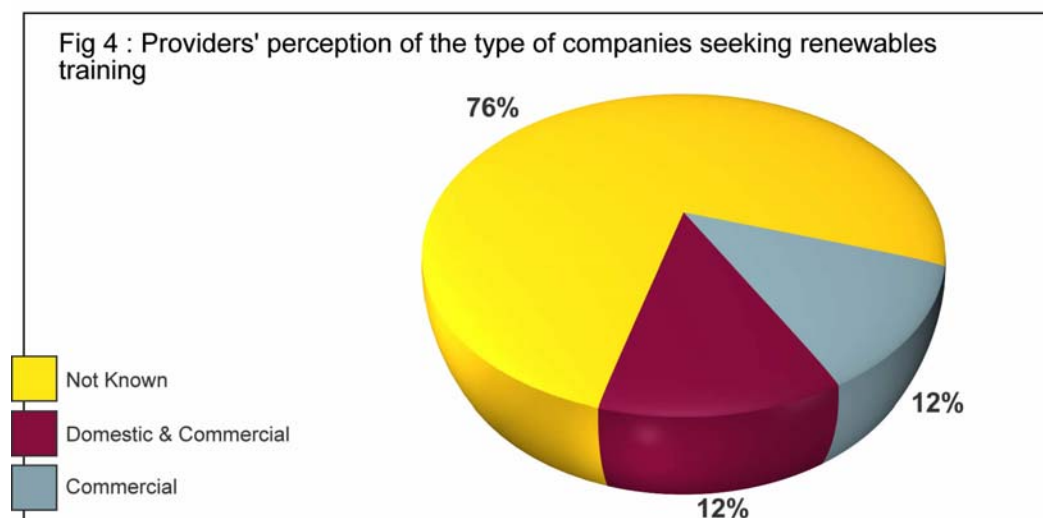
² Those scored as not known are providers who have no concept of the market currently

Providers were then asked about how many firms they were aware of that are involved in microgeneration. The responses shown in figure 3 suggest that providers do not see this as being an urgent issue for curriculum development as the majority of providers saw the market as being restricted in their area to one or two companies.

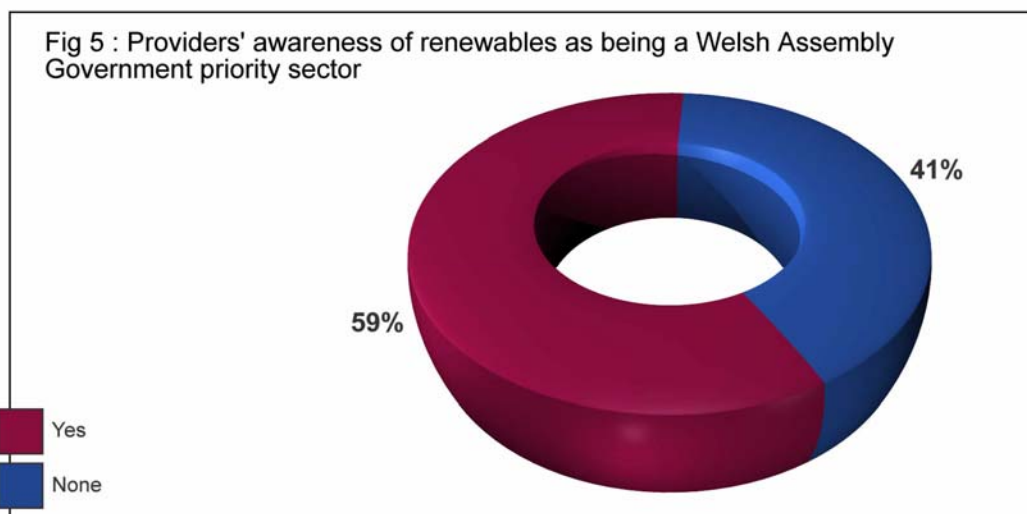


Although SummitSkills Sector Needs Analysis suggests that the percentage of companies is low, what it is argued is that these figures show the providers do not have a clear understanding of how the market is currently situated or how it may develop in actuality in the future.

Figure 4 seems to substantiate this hypothesis, as hardly any of the providers interviewed were able to identify whether the demand for renewable products was coming from companies within the domestic or commercial sector.



That the providers in Wales are not aware of the market appears to be a major issue and this was further clarified by the next question. Figure 5 shows that many providers in Wales were not aware that microgeneration and micro regeneration are considered by the Welsh Assembly Government to be a priority sector.



The quotes below are indicative of the views of the providers interviewed:

I'm not aware of it but it was getting that way. (NWWP02)

Barely yes we would like more information on this. (SWWP03)

Well it is priority obviously because of all this energy that's going on at the moment related to Part L and the building regulations and everything else. We are hoping that perhaps as part of the new building regulations it'll be essential that everybody has to put some sort of extra in related to microgeneration, whether its solar power or... but it need to be up front then with the building regulations to make sure people are putting in double coiled cylinders and things like that. (SWWP05)

Recently obviously through reporting through the papers and now just reading up on tax its known as a priority within the Welsh Assembly... because we do have different roles within the organisation. TSW are aware there's an objective on because we tap into some of the funding from other areas from there so... and one of the things that came through I think at the meeting... that brought a lot of it to light. (SEWP02)

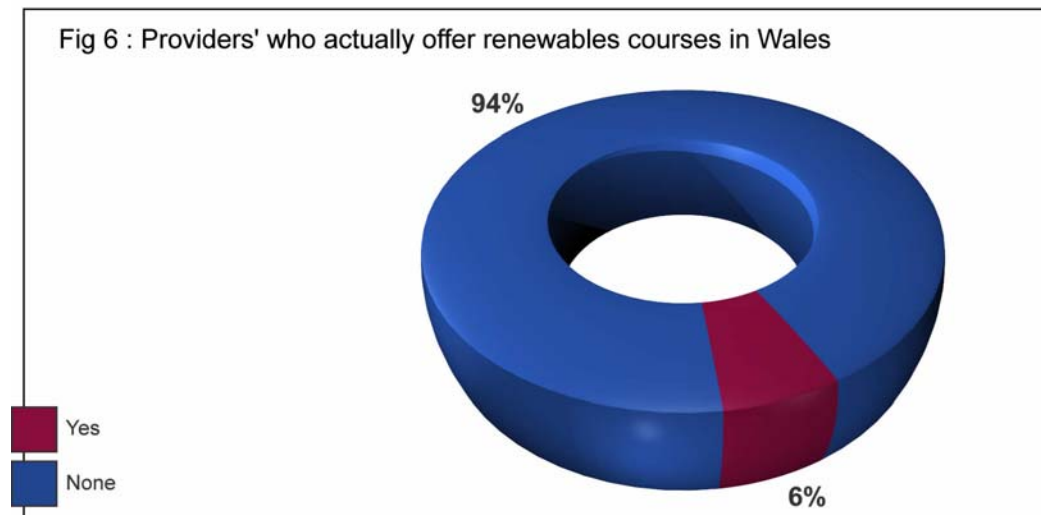
6.3 Conclusions

It seems axiomatic to SummitSkills and Energy & Utility Skills that providers should be seeking to meet Welsh Assembly Government priorities by providing curriculum to help stimulate the market and meet the needs of the sector. 41% of the providers interviewed were not aware that the microgeneration sector was a Welsh Assembly Government priority area, or what types of companies needed training. This suggests that there is much work to be done in raising awareness of the business opportunities that are available. For as will become clear when

this report considers installers in the next section, most training in Wales is manufacturer based and taking place in England. In the next sub-section of this section of the report, the provision offered is considered in more detail.

6.4 Provision

The first question within this sub-section sought to analyse the percentage of providers within the building services engineering and gas sectors who actually are running microgeneration courses. Figure 6 indicates that regardless of the views expressed within the sub section above, only two providers are actually offering courses in microgeneration, and that is the Centre of Alternative Technology referred to above and the manufacturer:



The quotes below are indicative of the views of the providers interviewed:

Yes we do them all accept fuel cells and HV... and the photovoltaic is a City and Guilds course... and the solar thermal biomass and heat pumps are BPEC accredited... (NWWP05)

It was part of the plan to develop this plumbing training centre with objective on money a couple of years ago to develop these courses, at the moment we've had to consider our bread and butter which is the NVQ framework training and we've reached level two at the moment, we're coming to the end of the second year, we're developing level three, so we will need some assistance with that... some incentive basically. I think the demand is probably there, but financially... certainly we've got to concentrate on our NVQ frameworks. (SWWP03)

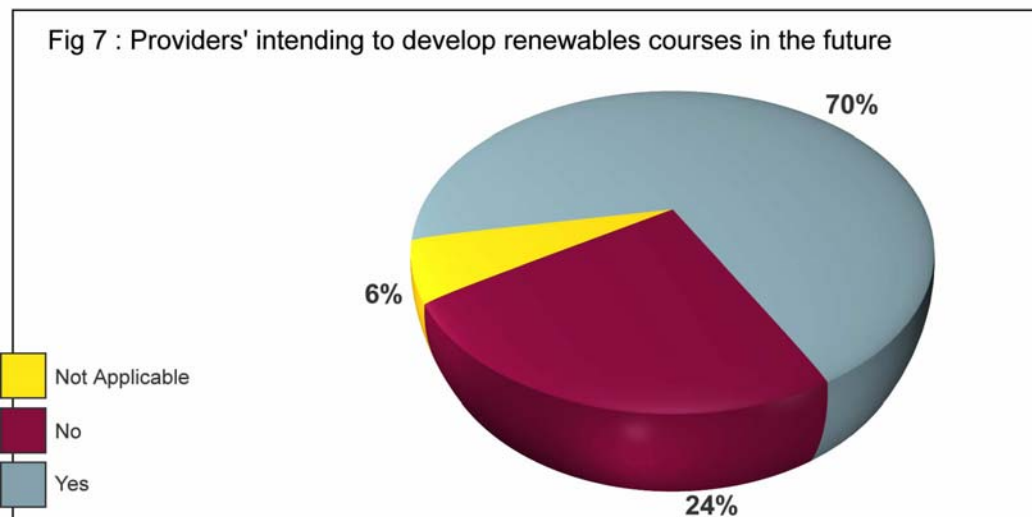
At the moment we are not running them, but we have planned to put on a few different courses in the future. We are setting up a solar power course very shortly hopefully, but it'll take a couple of months to set up. (SWWP05)

Probably because we didn't know about the Welsh Assembly Government strategy, our awareness hasn't been raised to microgeneration projects... certainly marketing within the college hasn't made us aware... (SEWP03)

Currently not no... (SWWP01)

Not at the moment... we're working towards it... we're hoping to offer in the near future the BPEC course on solar installation, solar panel installation which is a BPEC accredited course. (SWWP02)

The centre for alternative technology in mid-Wales has been offering courses for over twenty five years, the manufacturer for around 10 years whilst the rest of the providers in Wales have yet to start. Figure 7 suggests that some awareness of the need to begin to develop curriculum in this area can be seen as when asked whether they were thinking of offering courses in the future, although there is still a minority that do not intend to engage with this agenda.



The quotes below are indicative of the views of the providers interviewed:

I don't see why not... we do the HNC/HND construction, although they are part of the construction, they've relocated to a different area of the college so we don't get a chance to talk to them a lot... the architects don't know what's out there, what the accredited schemes are, they're very much touching base, they need more information and that's what they're asking from. (NWWP02)

One of our internal verify has many years experience with working as a partner with an importer of solar thermal technology in the Midlands and certainly he has the knowledge on that front, the other chap has great interest in heat pumps and photovoltaic technology and generally interested in a large variety, but in setting up the project we did a survey of local plumbers and solar thermal technology was requested highly on that when we asked him about this. (SWWP03)

We are interested in it, yes... (NEWP02)

I think at the moment I think the only one that they'd possible look at would be solar thermal... it's purely from a staffing point of view and obviously space is always a premium within colleges. We're all short of space to run existing courses. (NEWP03)

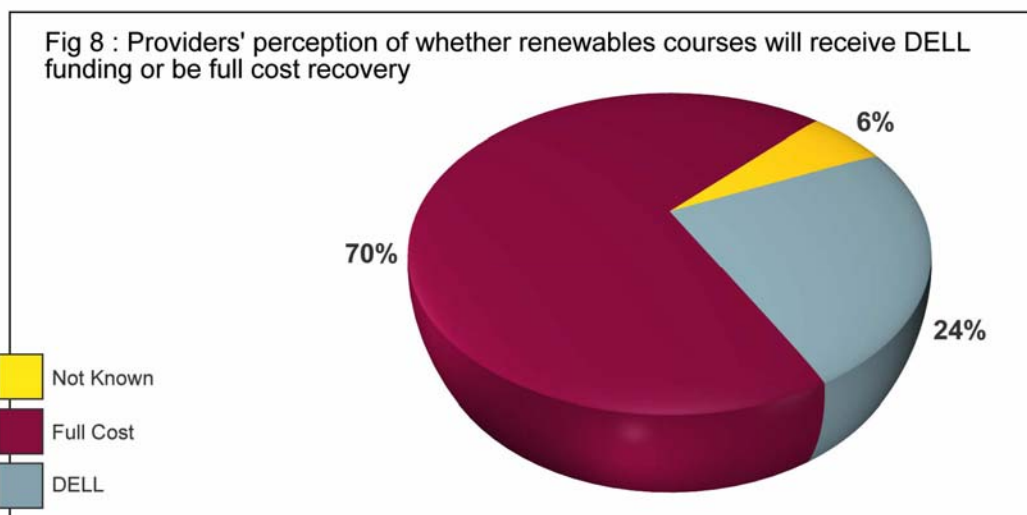
Apart from biomass at the moment we've got a development programme which is sort of nine months old. And as I informed you earlier it's come to fruition now due to the sponsorship with our industrial partner. We're having kit installed as of January. We're having staff developed in the New Year for an extensive range; all of those items, apart from biomass, where we developing staff, having equipment installed and we'll have a centre dedicated. Now whilst it'll be an installation centre for the partner, coming on stream in September 2007 will be a range of courses to cover all of those. (SWWP04)

We're always looking at initial demands and what we need to do now as a training provider is start to gear ourselves up for the anticipated demand from the industry which we do realise is not that far away to be honest with you. (SEWP01)

It would have to be... we'd look at it as full cost recover... no we haven't thought about it because at the moment the construction industry has got a boom and we're having difficulty staffing our current courses. So obviously that is when we're looking for the future. (SEWP05)

Definitely yes... I'll go back on what I said earlier actually. I am not aware of any specific comments that are looking for training in that area but purely and simply because they haven't done the full research on it yet. I know for a fact that it is a high on it yet... if we had the opportunity or if we were delivering the courses then I know we could fill them just from general phone calls we get. We could be filling courses quite easily. (SWWP01)

Having developed the requisite courses, the next question sought to ask whether the providers envisaged that the curriculum would be funded through DELL's or would be based on a full cost recovery. From the primary data sheet the provider actually running the courses (centre of excellence of twenty-five years standing in mid-Wales and the manufacturer) do so on a full cost recovery basis. Figure 8 suggests that the majority of providers see full cost as being the probable way that the development of the market will go, however as can be seen both from Figure 8 and the quotes, some hope that Welsh Assembly Government funding may also be available to stimulate the market.



The quotes below are indicative of the views of the providers interviewed:

I would think that the management at the college at the minute would have to look at it as all full cost recovery, as I say I can't see it coming from anywhere else at this moment in time. (NWWP02)

Hopefully it would come from the Assembly Government, it mustn't distract from our bread and butter NVQ training. (SWWP03)

We're looking for awarding body guidelines to be honest with you for full cost recovery or ELWa. (NEWP01)

Originally we'd start off obviously with this bit of money. We'd pilot the courses through this money. Then we'd look for full cost recovery. Unless there was a pot of money may by... specifically for this microgeneration courses then we'd obviously fund it through them, but we'd like full cost recovery. (SEWP02)

Yeah... market justification, the first thing we think of, new course, heavy demand, maybe full cost recover, this kind of thing... we tend to look at Dells type courses, funding courses to mainstream full time skill down to this kind of thing and hence to the employees, that kind of thing full cost recovery. (SEWP03)

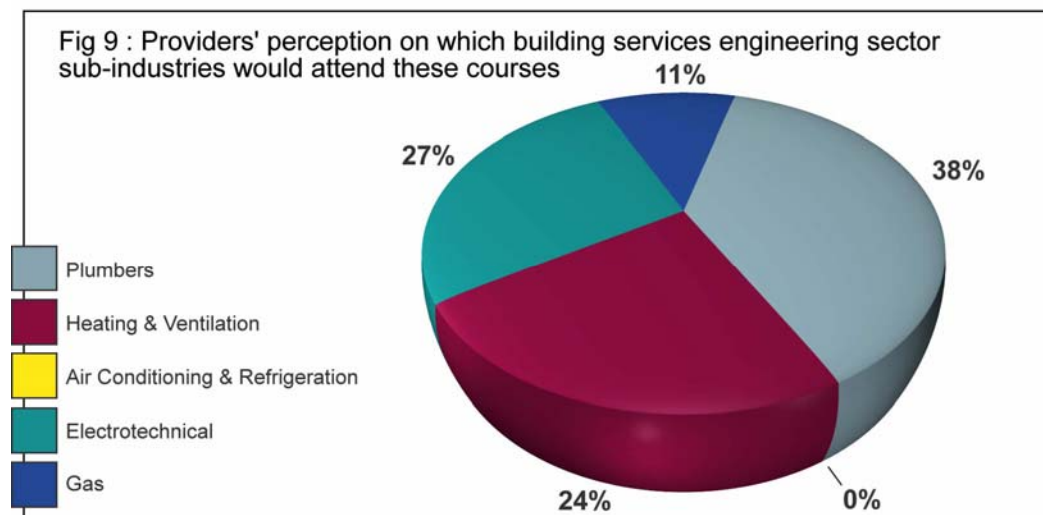
I think it would be a mix and match. I think that from the local authority's point of view and this initiative, I mean, we would be looking at getting people re skilled. I suppose people who may have been in similar industries, who are looking to come into it or return to it, into employment, or those who are unemployed. Obviously people who may have gone out of the industry and work in Tesco's or something wanting to come back in. so there's that social aspect about it and there's also that fact is that we are fully aware that the companies would need assistance as well. (SEWP06)

Full cost recovery, I believe at the moment. (SWWP01)

It'll probably be full cost recovery. I don't know if there would be funding available. If there would be funding available we'd be looking at something like the surplus to help us to acquire funding... (SWWP02)

Ultimately it is for the Welsh Assembly Government to decide, but taking all issues into account, both SSC's would argue that given the lack of training and the reliance by companies in Wales on manufacturer training, that some incentive through Department for Education Lifelong Learning funding might be appropriate, to help stimulate the market. In the next question providers were asked which specific trade areas within the building services engineering electricity, gas, waste management and water sector would be most likely to access the training courses.

Figure 9 suggests that plumbers, heating and ventilation engineers and the electrotechnical sector are the main markets for the training. Some identification of gas as a separate trade area was also made by the providers although this could readily be a plumber or heating and ventilation engineer specialising in gas (as most do through CORGI) however this answer is retained for completeness:



The quotes below are indicative of the views of the providers interviewed:

I think that's a difficult one... the plumbers tend to be the ones with the spanners and the tools or the trade to do more than one thing. Electricians I think enjoy the wiring and they tend to like somebody to do the installation first, personally I think plumbers are pretty flexible. They're unusually quite keen on new things and new ideas. Yes I'd think I'd go for the plumbers on that one. (NWWP02)

We'd have to have some assistance financially. (SWWP03)

Mainly plumbing and heating I would've said, but we have had all sorts. And as we know from the past, its going back to the hippie era, isn't it, the solar power, etc, and I think what's happening now is trying to become a bit more mainstream and they're trying to get actually qualified people they know are

good at pipe work like yourselves in the plumbing and heating industry to actually take part in the mainstream installations. (SWWP05)

I would have said electrical, plumbing and heating. Your heating engineers, you know your gas sort of, the gas sort of area. Those sorts of trades, yes, rather than your plumbing, rather than sorry your carpentry, your bricklaying and so on and so forth. (SEWP01)

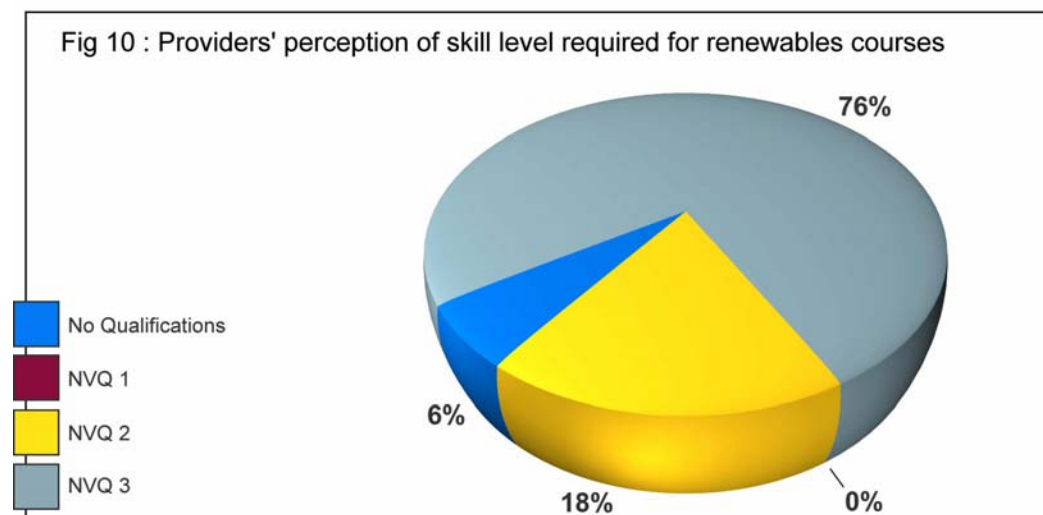
I think on the heating and vent side of it... and you know... we have got quite a broad... I think looking at the list I think we're going to have the M and E you know the people who have done the 6088 the industrial the gas... (SEWP02)

Plumbing and electrical... (SEWP04)

I would imagine plumbing and electrical because lots of the contracts... which I was in a meeting yesterday... lots of the contracts for the regeneration are actually including renewable energy and as you said the microgeneration. So that is actually built into the contract now as in the Welsh Assembly. (SEWP05)

I believe the main trades involved would be plumbers and electricians. (SWWP01)

Providers were also asked what skill level they felt was a pre-requisite for entry to renewable courses. As can be seen from Figure 10, the majority of providers saw Level 3 as being a pre-requisite for the course. This, and the view that courses will be full cost recovery suggests that any courses offered in Wales will be aimed at 'time served' adult learners, rather than as part of apprenticeship training or as part of any sub-craft skill courses:



The quotes below are indicative of the views of the providers interviewed:

That's a difficult one because sometimes someone's enthusiasm can outshine that and sometimes not everybody has a chance for education and also within the building industry I think there's a lot of students that come in

as mature students and don't get the opportunity, so that may not be the best way. (NWWP02)

Well we are looking at skilled plumbers really with at least an NVQ Level 2 I suppose, plumbing certificate Level 2, which will prove that they've got the skills for installing and testing systems. They need to have a background and a skill for it and ideally probably we aim more at the Level 3 qualification. (SWWP05)

I'd like to see Level 3 because I do think it is an add on to an existing sort of skill and trade. (SEWP01)

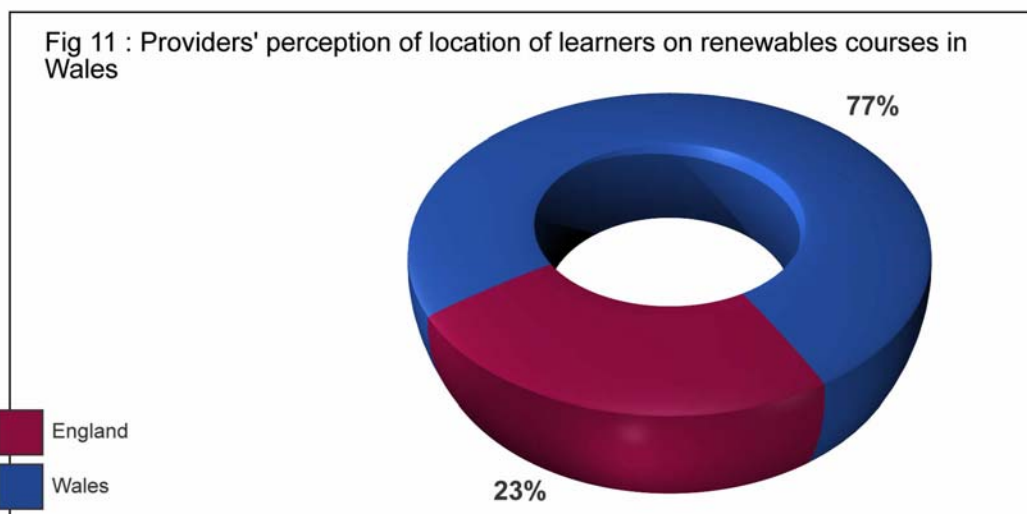
Level 3 NVQ... we don't want these you know "I am a solar panel installer let me come and fiddle with your central heating system." (SEWP03)

An NVQ3 (SEWP04)

It would just depend... so when you are talking about solar panel and electricity they would have to be at least Level 3 but with other things such as the plumbing and recycling that could come in at Level 2. (SEWP05)

Well I think the course is set out they're looking at Level 2 plumbers. That's the course is set out as but we would hope perhaps to tailor that to the needs of whatever people come along and ask for it. If they came along and say well, I haven't got a Level 2 plumbing but I know a bit about plumbing. I can't see why they can't do it as long as they do the course and follow all the safety things that are in the course. I can't see a problem with that. (SWWP02)

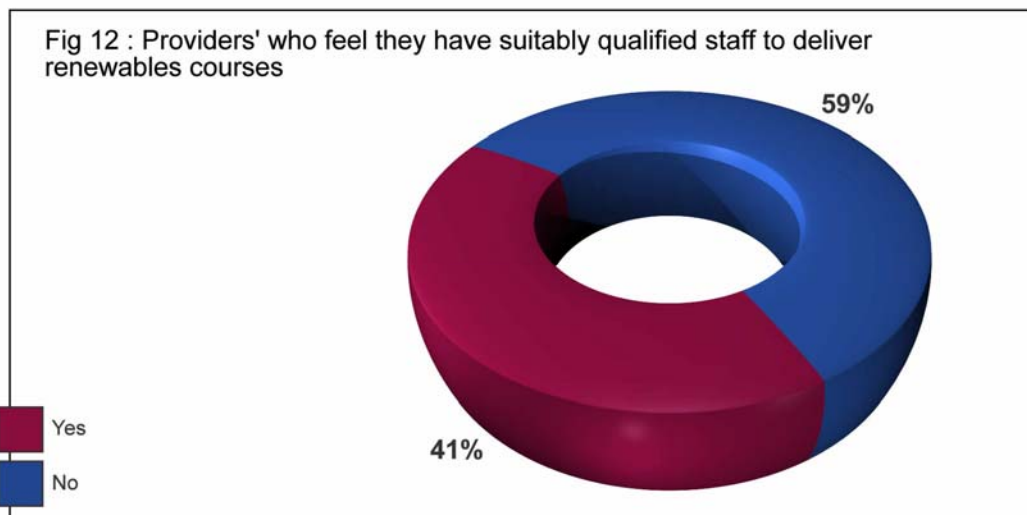
Figure 11 shows that providers invariably think that the majority of learners will come predominantly from Wales, although there is some anticipation of cross fertilisation coming from England. It should be pointed out that the only providers currently offering training in microgeneration in Wales are training English as well as Welsh companies and learners.



The quotes below are indicative of the views of the providers interviewed:

*Yes we take some full cost recover in plumbing from England at the moment, but predominantly Wales. (SEWP05)
I'd expect from Wales but I'd hope we would attract from over the bridge as well... at the moment no but it is getting closer... every year we seem to find someone a little further a field is coming to us because of the lack of providers. (SWWP01)*

A key factor in achieving success in the development and delivery of microgeneration qualifications is having suitably qualified staff to deliver the programmes. There is a certain amount of confidence within the provider interviewees (even though only two of them are actually delivering the programmes) about the ability of staff to deliver the programmes when/if they get started, with Figure 12 indicating whether the provider felt that their staff had the requisite skills to deliver the courses.



The quotes below are indicative of the views of the providers interviewed:

I would say yes and our staffs are usually very keen for upgrade in their qualifications anyway, so I don't see a problem with that at all. (NWWP02)

I think the two that we've got now are at the level two so yes I think the knowledge is certainly there and the interest is there and we'll be looking at that kind of broader perspective from the candidates to help us out at level three as well. Yes I think so. (SWWP03)

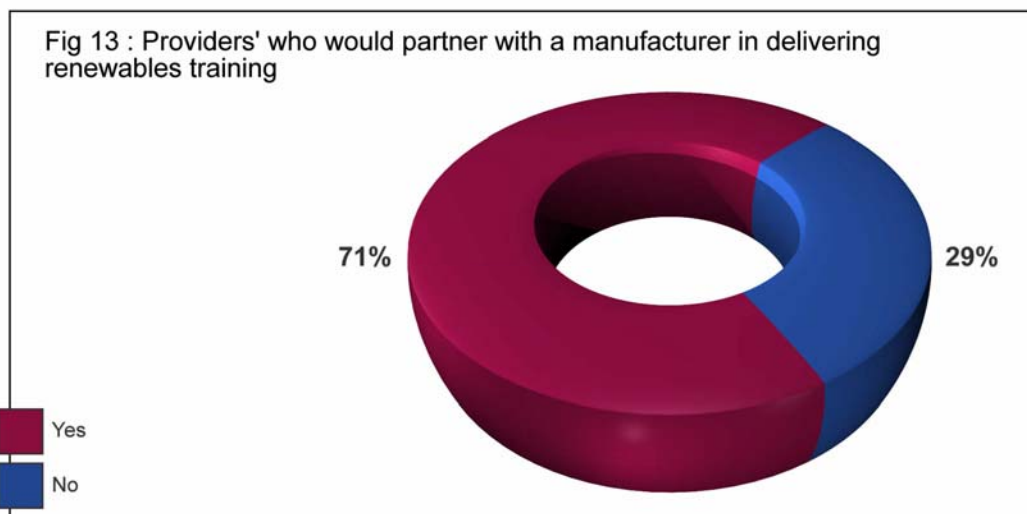
Yes but obviously as new courses com on line we actually go ourselves and take part in the managers' course to know how to run the courses, as well as pick up the expertise, extra, that we need for them. (SWWP05)

Well we've got specialists in four areas at Newport, and within... we cover all the main trades. So what we are going to be doing within a short period of time with all the new contract work, the two billion regeneration, we're going to carry out some market research as to what specialist training they'll need, so then we can provide that in advance. (SEWP05)

At the moment yes but depending on the course expands we'd probably looking to you know actually get more of our staff through with perhaps better qualified to train it but at the moment, yeah, we've got... (SWWP02)

As will be seen from the section of this report which analyses the data from the suppliers, the use by installers of manufacturers to access product specific training is a major way that the sector accesses its training in microgeneration (Wales does not differ from the rest of the UK in this regard). Given the established nature of this training and its familiarity with the companies within the building services engineering electricity, gas, waste management and water sector, it was important for this research to analyse whether the providers saw engagement with manufacturers as being an important part of their strategy within this area.

Figure 13 suggests that while a majority of providers interviewed were prepared to partner with manufacturers, a significant minority indicated that they were not.



The quotes below are indicative of the views of the providers interviewed:

Possible yes any help is very welcome... quite keen... I've worked with manufacturers before so I'm quite keen and they know how they like to work as well. (NWWP02)

Yes funnily enough we are in the process... we struck up an arrangement... we came across a supplier of plumbing goods and equipment who were interested in pushing under floor heating and we invited them here on a couple of days, now that was very interesting and he went in to the principle of thermal technology and heat exchange as well and I sat in myself, as somebody who doesn't know much about it and one of the reps since left but he's come back, he came back to this office a couple of days ago and he works with a boiler manufacture and they're keen to push the boilers in Mid Wales, they're keen to have a training facility in Mid Wales for people who use their boilers, obviously if you can push your boilers in to a training facility you will have an advantage in future, people prefer to fit it. (SWWP03)

Right we have had two boiler manufacturers in this week... we've got partnerships going with those two... (NEWP01)

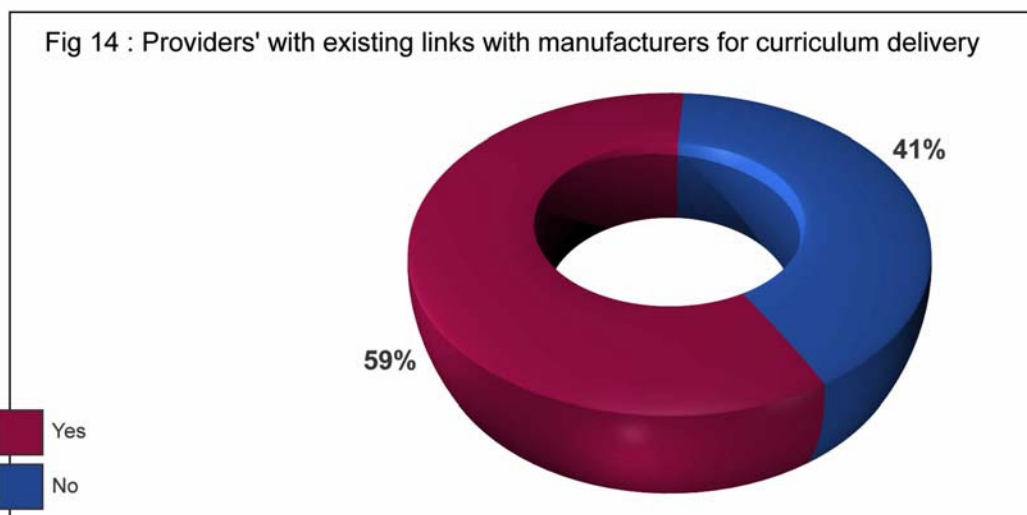
At the moment we are not. We are contacting suppliers and manufacturers to see if they will help us with the installation of the test and training materials and several of them have stressed an interest at supplying us with some of their products. (SWWP05)

Yes certainly... we actually do that across engineering and some construction already. (SEWP05)

We've been talking to ... about solar because they have got a solar package that they deliver, that they sell. We haven't gone too far with it due to the fact that we are not sure whether we can get... funding... courses up and running yet because they offer their own courses. Its just initial early stages but we have discussed them... (SWWP01)

It's coming at the moment its coming from sort of word of mouth or people within our sector and the gas sector. That's where its mostly coming from... we've obviously set up links with... who offer their own training package. Now although it's not an accredited training, they offer their own training package. We will hopefully tap into that. We're also setting up links with colleges and with other people... so it's not just the micro regeneration in the solar, we're looking at the other things as well but probably concentrate on the solar... (SWWP02)

When this is compared with current use of manufacturers, then Figure 14 although 71% of providers interviewed are prepared to partner with manufacturers in microgeneration training, only 59% of those are currently using manufacturer input into their curriculum.



The quotes below are indicative of the views of the providers interviewed:

... We are touching base with them, we're waiting for a visit from them, everything is quite being up here and everything being sort of down in the south it takes them a while to come up at times... (NWWP02)

Only the ones I have spoken to over the telephone initially, you know, speaking... that we are hoping to put these things on in the near future and, you know, would there be a chance of perhaps some assistance in setting up with the manufacturers' products and quite a few of them have said yes. (SWWP05)

Varies it is quite significant. (SWWP01)

6.5 Conclusions

This subsection suggests that providers in Wales are not currently running courses in microgeneration, although many see the development of these courses as being something that they propose to do in the near future. Providers envisage that the funding for these courses will be full cost recovery, suggesting that they will be delivered primarily to employed status adults.

Further support for this view is provided by the fact that the providers see Level 3 as being the skill level required for entry to the course, which is fully qualified craft status.

The providers see that courses will be aimed primarily at plumbers, heating and ventilation engineers, gas and electrotechnical industries.

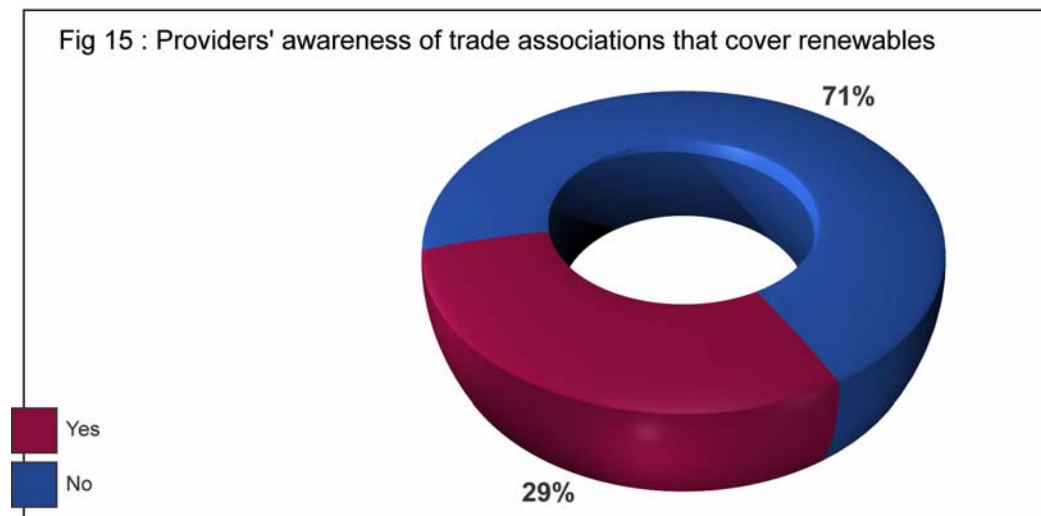
There is an identifiable need to train staff in these technologies to be totally effective within this area if demand was to be stimulated suddenly.

Providers are generally not adverse to working with manufacturers, with a significant number of providers not doing so.

The next sub-section of this report seeks to identify some further underpinning aspects driving providers in relation to supply

6.6 Underpinning Technical Aspects

The next question sought to judge the awareness of the Trade Associations responsible for companies within the microgeneration installation and manufacture areas. As can be seen from Figure 15, a significant percentage of providers are not aware of the various trade associations within the microgeneration sector:

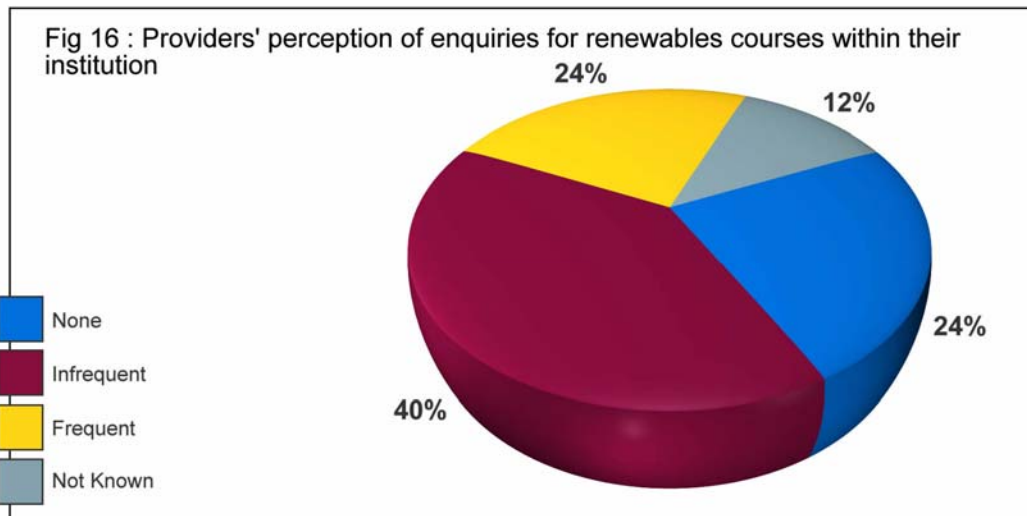


The quotes below are indicative of the views of the providers interviewed:

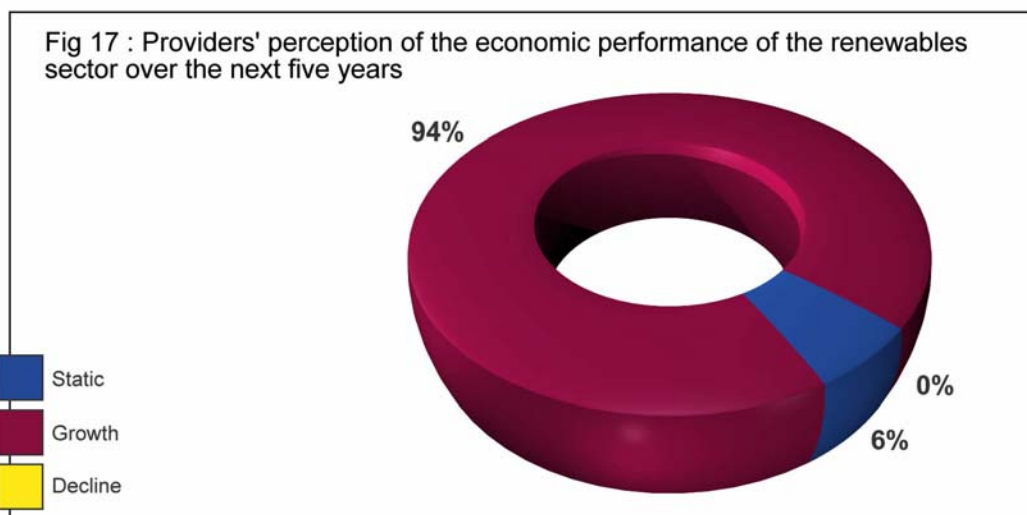
We're aware of a few but I wouldn't know if I'm aware of all of them.
(NWWP02)

Right okay I don't think we have membership of those associations but we do network with them all. (NWWP05)

The next question sought to indicate the number of enquiries that the providers were receiving for microgeneration training and whether these were none, frequent or infrequent. Where providers did not know, this was because enquiries were dealt with through the student services department and any requests were not filtered back to the particular department by the provider. Figure 16 below shows the results from the providers.



The 64% of providers who registered that the enquiries for microgeneration courses was none or infrequent perhaps explains the reticence that some of them have for developing the curriculum in microgeneration. What is interesting though is that as can be seen from Figure 17, when asked what they thought that the economic performance of the microgeneration sector was likely to be in the next five years, only one provider thought that the sector was going to remain static and none thought that it would decline.



The quotes below are indicative of the views of the providers interviewed:

Awareness I think is the big thing, awareness is growing but at the end of the day manufacturers have to have their part in it, but from a personal point of view if the architects and the new build don't think about it then we don't stand much of a chance. I mean... I have spoken about water... collecting rain water... (NWWP02)

Well I think what I've said to you before was that we sometimes find that people who have a trade find it difficult to do written exams. (NWWP05)

I think it's bound to grow because looking at the government initiatives at the moment government are keen for renewable sources to come into part of our everyday life. So I think colleges will have to go with the flow as it were. (NEWP03)

I think it will explode rather than anything else so what we do need is a controlled explosion. (SEWP01)

I think its going to be huge... its going to be... I thin you know the way the government is going towards saving every and the houses and all that and I think it can't be ignored and it's something that we need to develop and are that isn't going to go away... (SEWP02)

Its definitely going to grow because its part of all the contracts... so all at the moment in... there is going to be a boom nobody has really got all the contracts yet and as soon as the contracts have been issues then obviously to fulfil those contracts they're going to need the specialist training. (SEWP05)

I think it's bound to expand... I think it's the issues has been raised in a big way rather than even stand still... I think that I really do... and I mean contractors are becoming more... and are gaining more knowledge of it. (SEWP06)

In terms of growth I can see it growing at quite a significant rate, really quite an alarming rate actually. (SWWP01)

6.7 Conclusions

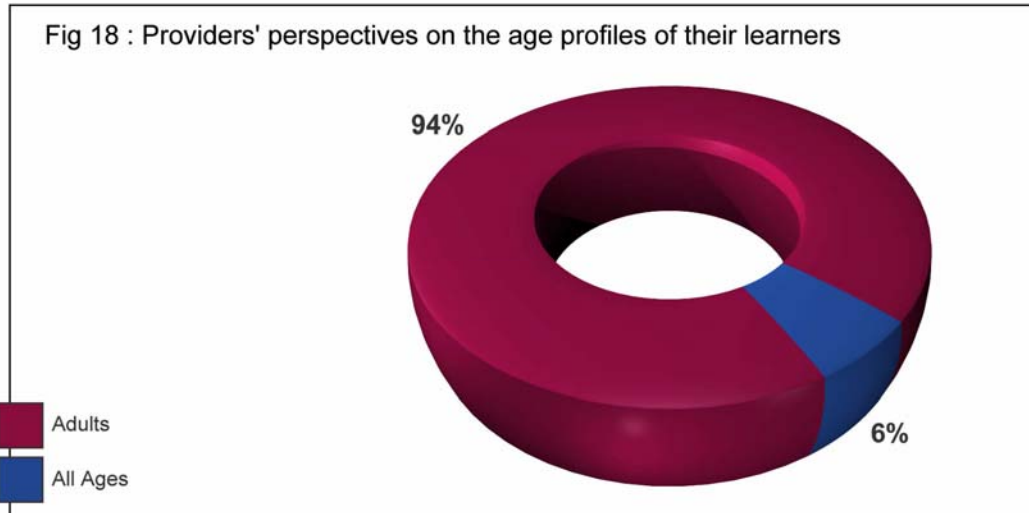
The data from this sub section suggests that providers are not clued up about the trade associations within the sector, who could help them to set up and run appropriate courses. There does not appear to be a significant amount of interest in courses currently, although almost all of the providers expect that the market will develop significantly within the next five years. This suggests that currently within the market there are a number of mixed messages coming through to providers, which may be impacting their response to the issues.

The final section of this report looks at provider specific issues relating to this area of the provision of microgeneration courses.

6.8 Provider Related Issues in Microgeneration Training

The first question within this section sought to determine the profile of learners attracted by providers within the provider network in Wales. As can be seen from Figure 18 the majority of providers cater for all ages. Interestingly however, the exception to this are the two providers in Wales currently offering microgeneration training which caters exclusively for adults. This suggests, as has already been stated throughout this section, that the microgeneration market

is being set up for existing skilled craft operatives rather than as a definable career path in its own right.



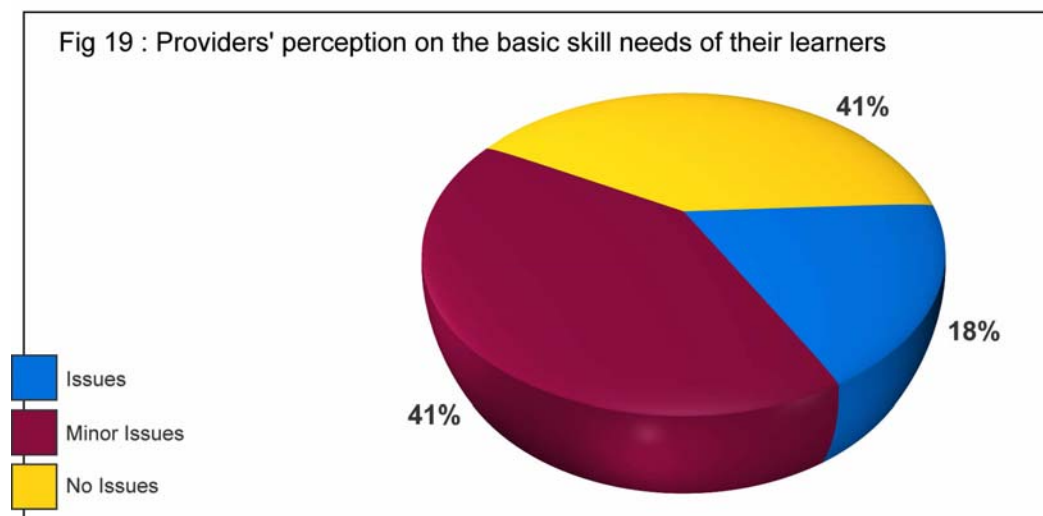
The quotes below are indicative of the views of the providers interviewed:

White male 35-55... (NWWP05)

The ages go from 17-30's but we cater for any age... (NEWP01)

I think you'll have a few 20's but the majority will be 30's, 40's... (SEWP01)

Microgeneration skills are perceived to be high skill needs and therefore providers were asked about the basic skills ability of their learners, as this might impact on the ability for some to successfully complete courses. Figure 19 suggests that there are some concerns on the part of providers about the quality of basic skills of learners.



The quotes below are indicative of the views of the providers interviewed:

We had to test them, we bring them on what we call Summer School Skill Build Programme, we test their abilities and we advise them whether they're suitable or not. We do weed them out, we do have to... we take on about 50 or 60 every year. (SWWP03)

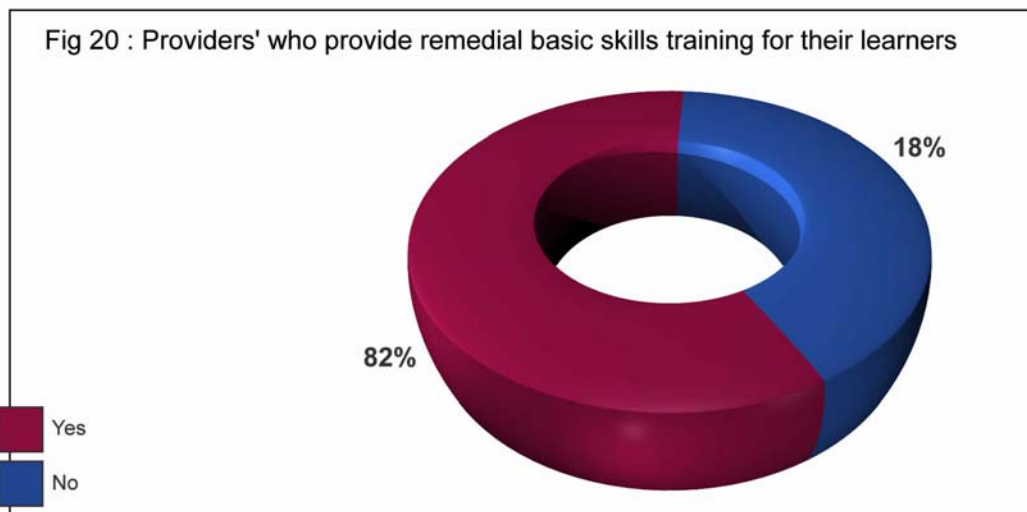
Well what we do here is what we call ... test on every student that comes in the place... so they are graded and from then on its taken from there but everyone that comes in here... so the profile of candidates actually is satisfactory at the minute... (NEWP01)

Not all... we have found that students coming direct from schools have a low standard of literacy and numeracy and certainly the apprentices now we require the minimum of Level 2 key skills or GCSE grade C. (NEWP03)

Acceptable... I think it's acceptable... the majority of people that come here are mature students and or employed. It quite funny that it's the older generation seems to have more difficulties with IT rather than the younger ones who fly through it. I don't see... because of the way we recruit people literacy and numeracy is not a great issue... (SEWP01)

I would say looking at you know the structure and the standard we get are the good standards you say? If they have problems they have problems most student have problems with simple calculations. (SWWP02)

As Figure 20 shows however, the majority of providers offer remedial basic skills training for their students.

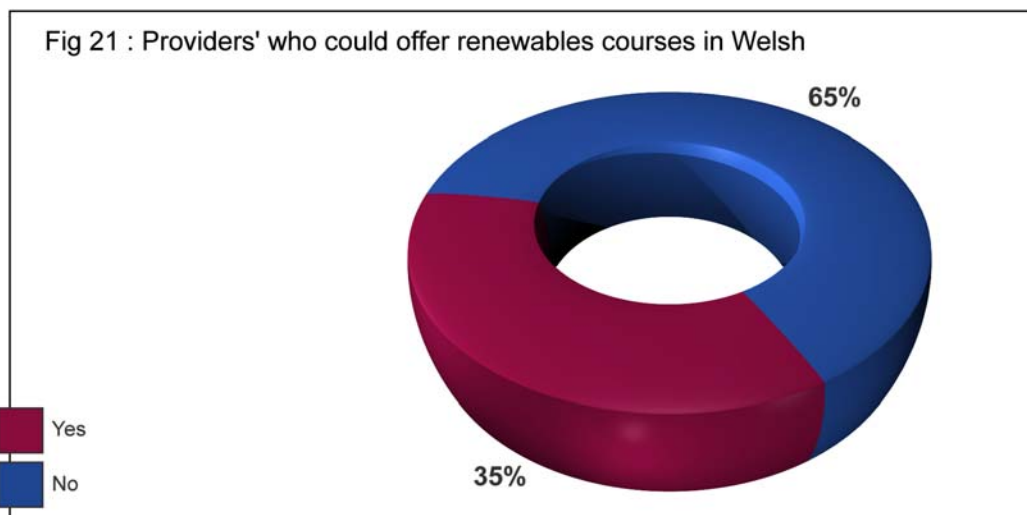


The quotes below are indicative of the views of the providers interviewed:

No we've got to make sure we've got the right procedures from the beginning. We did that mistake in the beginning of the modern apprenticeships... level three training many years ago, we took on people that weren't up to it and we suffered. (SWWP03)

Well there's a support skills unit in the college that we can get extra help. Anybody coming through this college can do computer courses. We can get one to one tuition if there's anything they have a problem with. As far as most of the short course that we deliver the assessment if they do it on a computer is very simple and they're actually shown exactly how to use things and it's usually on or two buttons they have to press which is usually straightforward. So they can get some tuition as to anything that they're lacking, whether its numeracy, literacy use of a computer, or they're anything dyslexic or anything like that. We've got a few dyslexic students come though and them gone through with flying colours in the end, but they've had to seek that support as they're going through the colleges. (SWWP05)

The promotion of the Welsh language is a major priority for the Welsh Assembly Government and the provision of courses in Welsh might be seen to be an issue of equal opportunities. Generally though providers are not looking to provide courses in microgeneration through the medium of the Welsh language, and this is shown clearly within Figure 21 below.



The quotes below are indicative of the views of the providers interviewed:

We would endeavour to do so, definitely. I mean, it's our policy here in the college that we do that... we try always try to recruit staffs that are bilingual. (NWWP01)

Probably not unless we recruited staff who were Welsh speaking. At the moment there is only one member of staff on the team who is fluent in Welsh. (NEWP02)

Not unless we took on more staff with those skills. (NEWP03)

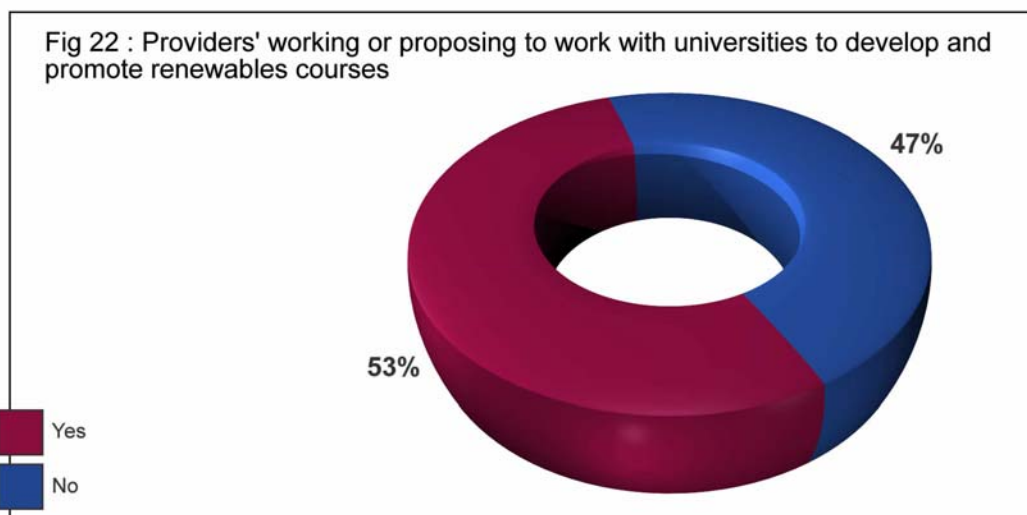
We can support bi lingual delivery. And particularly in terms of assessment and mentoring and support there is no immediate plan for total Welsh delivery. But we've done some extensive developing on bi lingual delivery. And this is supported now, if you saw the facility for instance there's a dictionary of terms, there are signs, there are sheets related to skill areas which are bi lingual delivery. (SWWP04)

At the moment the answer is no... but saying that we have a few partial speaking Welsh instructors, lecturers. In the past we've had fluent Welsh speakers as well. At the moment we haven't got fluent Welsh speakers in the college but that doesn't mean to say we won't have by next year. (SWWP05)

Well we have Welsh speakers in the college. As it stands not like on the City and Guilds we can tap into support from awarding bodies. Certainly we'd have to make sure there are provisions in place... (SEWP02)

We would if the demand was there... if demand was there... I think we have to realise that... (SEWP06)

Microgeneration courses rely heavily on some complex scientific and engineering concepts To facilitate this providers were asked if they were considering working with Universities to develop and promote courses. Figure 22 below suggests that the response to this question was fairly even, with 53% using or proposing to use Universities in the development and promotion of microgeneration courses.



The quotes below are indicative of the views of the providers interviewed:

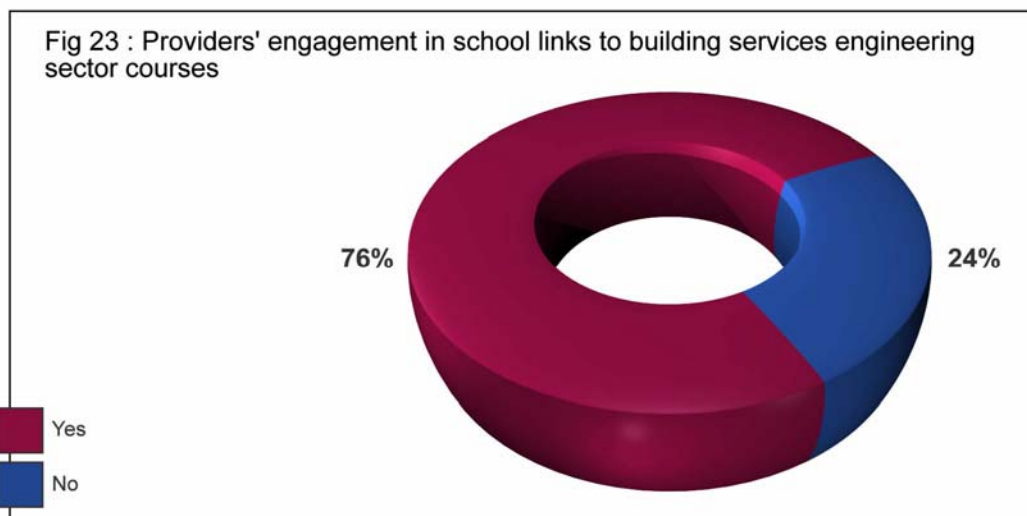
Yes we have strong links with Bangor University... we have strong links within engineering we have strong links with a college in Dublin as part of an interactive project. So yes... (NWWP01)

Yes the higher education department work in conjunction with the University of Glamorgan developing their courses and they are speaking to people like the Chartered Institute of Building and Engineering, architects and things like that... (SWWP05)

We have got links with University College Newport... (SEWP04)

Not at the moment but we are looking to raise an awareness. We've got some product coming out, we're looking to raise some sort of awareness and link it with Swansea University. (SWWP02)

Although microgeneration courses are currently being targeted at qualified craft operatives, there is a possibility that new entrants to the sector might be impressed by the environmental friendly nature of the sector with the advent of microgeneration courses. Providers were then asked if they had school link opportunities. Given the emphasis on 14-19 provision and the need for providers to recruit from schools it is not surprising that the majority of providers had such links, although the number who claimed they did not was higher than what might have been imagined.



The quotes below are indicative of the views of the providers interviewed:

We do a lot... we have just had what we call Engineering Wales, week before last, where bring in students from various schools across Swansea and they do taster sessions for the day at an early stage. I am not sure what year it- I think it is year 11 I believe. I am not sure the way the school years are structured but it gives them an opportunity then that next year they can come in to a full taster session. (SWWP01)

Same thing again... we're working very closely with schools but not with the microgeneration. (SEWP06)

We don't have links but we would be interesting in working... yeah... (SEWP03)

We do the 14 to 19 so we've got good links there. We actually running through ... the college itself as not so much feeder schools but we do service the local community. Yeah we have some very strong links with schools around here because you know the marketing as well as... (SEWP02)

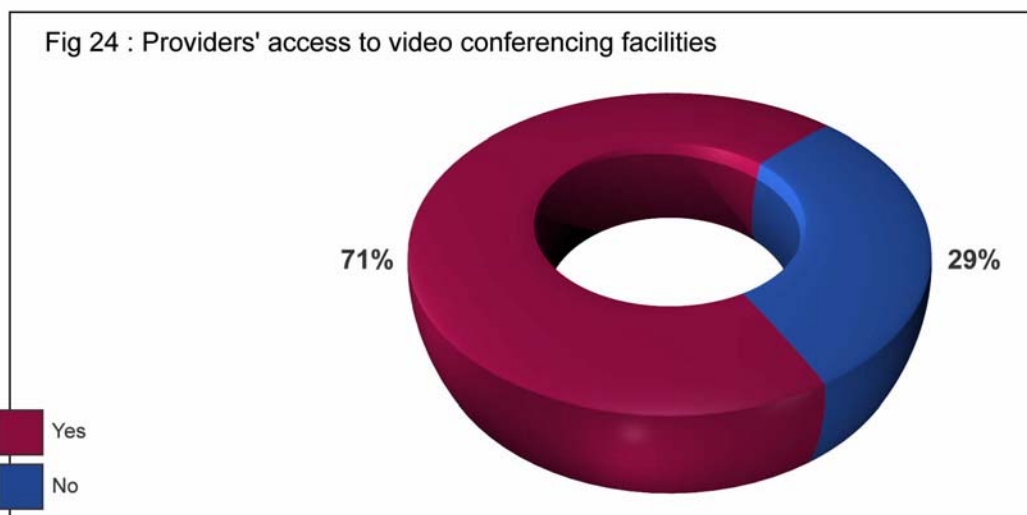
Yes we do, we were approached by ... and asked us to go onto the schools careers days where we'll given them overall views of gas, plumbing, just trying to give them a taste of the industry. Of course, as the microgeneration businesses develop and start to come to more and more to the surface then we'll obviously build that in but it's a bit of trying to titillate them to come and have a look see what the industry does. (SEWP01)

The faculty has somebody who goes to schools to speak about vocational courses but not specific to plumbing and not specific to microgeneration. (NEWP02)

Yes schools both in North Wales and in England. We have them calling in here two or three days a week. (NEWP01)

The relationships between ourselves and the local schools has improved. We go to careers evenings in all the local schools. We have 14 to 16 groups coming in half a day a week to study different programmes in college, one of them being engineering, performing manufacturing operations programme, when they're involved in some skills that plumbers require. (NWWP01)

Given the rural location of much of Wales, the final question within this subsection sought to identify the readiness of the providers within the Principality to deliver distance learning training through the medium of video conferencing. There does appear to be a significant minority of providers within Wales who indicate that they do not have video conferencing facilities.



The quotes below are indicative of the views of the providers interviewed:

I feel that we could and I think the college might be behind us on it. If the demand was there, obviously. Yes part of my own training. I did a unit on it and it was quite impressive... but the college is certainly open for that sort of distance learning. (SWWP01)

Yes video conferencing yes... not really any we could but we don't... (SEWP05)

We get several a week but it's largely to do with postgraduate masters courses we run because we don't offer it any other way. No the only thing we've got is web cam facility for the distance learning element of the masters' courses. (NWWP05)

We do have two video conferencing suites here in the college but it's not used extensively for distance learning. (NWWP01)

6.9 Conclusions

The data within this subsection suggests that the majority of providers, with the exception of the Centre for Alternative Technology for microgeneration in Mid-Wales (who only recruit adults), recruit all ages to their courses. This suggests microgeneration courses are currently aimed at adults as this centre is the only provider currently delivering courses in microgeneration in Wales.

Providers in Wales in the building services engineering electricity, gas, waste management and water sector area are experiencing some issues with basic skill needs among learners. However the vast majority of these providers also have remedial basic skills support for learners in place.

If microgeneration courses are developed within Welsh providers, the majority of these will be through the medium of English.

A small majority of providers who propose to develop or already deliver microgeneration courses will be partnering with Universities to develop and promote these courses.

The majority of providers within the departments offering building services engineering sector courses have school links to promote the sector to schools.

A significant percentage of providers have video conferencing facilities, which may provide a medium for effective distance learning provision.

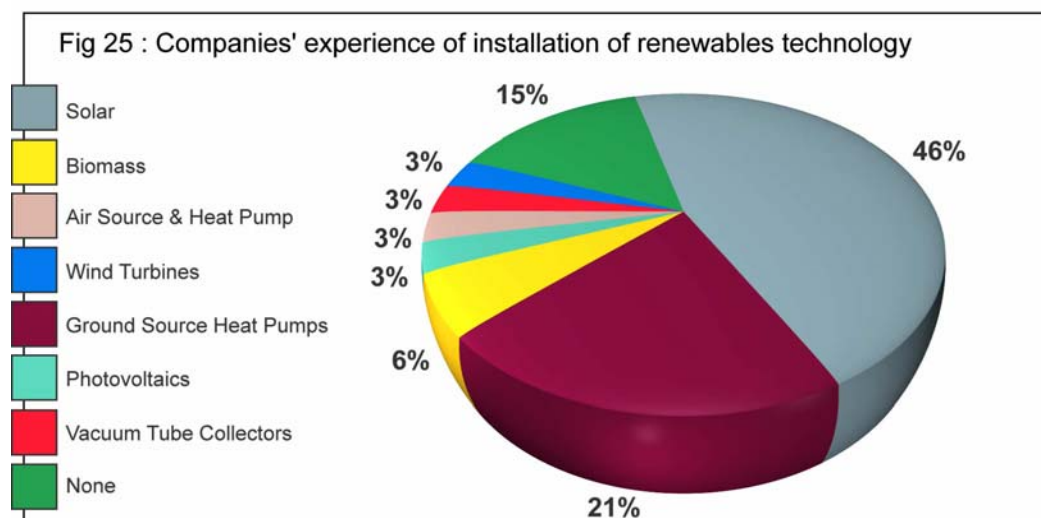
7 Installers of Microgeneration and Environmental Technologies

7.1 Introduction

In this section of the report, the views of the installers are considered in relation to the exposure that they are having to microgeneration technologies. These companies as stated in the methodology are companies who are involved to a greater or lesser extent in microgeneration technology. Therefore they are not to be taken as typical of the Welsh building services engineering and the electricity, gas, waste management and water sector generally in Wales.

7.2 Company Profiles

The companies within the research indicated that they were engaged in the following microgeneration technologies outlined in Figure 25.



The quotes below are indicative of the views of the companies interviewed identified above:

*Solar panelling, ground source pumps... at the moment that's...
(NWWRP04)*

*Well we install solar panels, photovoltaic cells, and ground source heating...
(SEWRP03)*

Solar hot water systems ground source heat pumps and well the generation side and CHP (combines heating power units.) (SEWRP07)

At the present we're just doing the solar panels for hot water systems which will align with the heating systems of a property. We're looking at the ...

systems and we've actually install a couple of... sorry not... the... versions. We've done about four I think. (SEWRP02)

Defiantly yes... because I've been involved in a couple of projects where people have been brought in from elsewhere to install them on behalf of builders and what not. (SWWRP01)

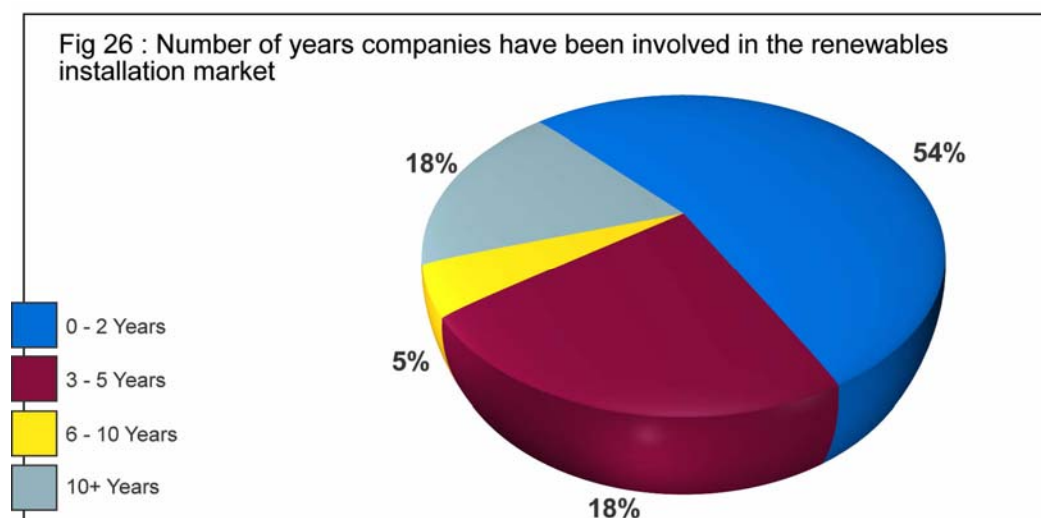
We install solar... hot water solar... solar thermals... and ground source heat pumps... (SWWRP06)

The only microgeneration stuff that I've have any involvement with is solar with regards replacing boilers which aid solar properties and also re fixing solar panels on roofs... well I specialise in under floor heating so... I mean the way forward is using under floor and that's linked to whether its solar, ground source heat pumps; its low temperature... so I specialise in under floor heating... I've been trained by a company called... and basically technical and very, very... you know it's in the thing. (SWWRP07)

No we don't actually, we have done some work but we haven't done... well we don't do much with it to be honest with you. (SWWRP08)

Figure 25 suggests that there is a significant amount of experience of solar panel installation and some experience of ground source heat pumps installation, but that the other technologies have yet to gain the same exposure. The low numbers of installations discovered in photovoltaic panelling is interesting as along with solar panelling, it is possibly one of the more common technologies which one would expect to see featured more strongly.

The next question sought to elicit from the interviewee companies the number of years that they had been in business installing microgeneration technologies. As can be seen from Figure 26 there is a significant amount of evidence to suggest that the microgeneration market is beginning to expand in Wales, as many companies indicated that they had begun to move into the area within the last twelve months to two years.



The quotes below are indicative of the views of the companies interviewed identified above:

It's only since the last 12 months really, we got involved with it. (NWWRP04)

Yeah, solar panels were very, very popular in the 60s and the early 70s, but then there was a recess. (NEWRP05)

Personally for... in the region of five years... as a company ... have been established for two and a half years. (SEWRP07)

We only came across it first last years 2006 so only since early 2006... (SEWRP08)

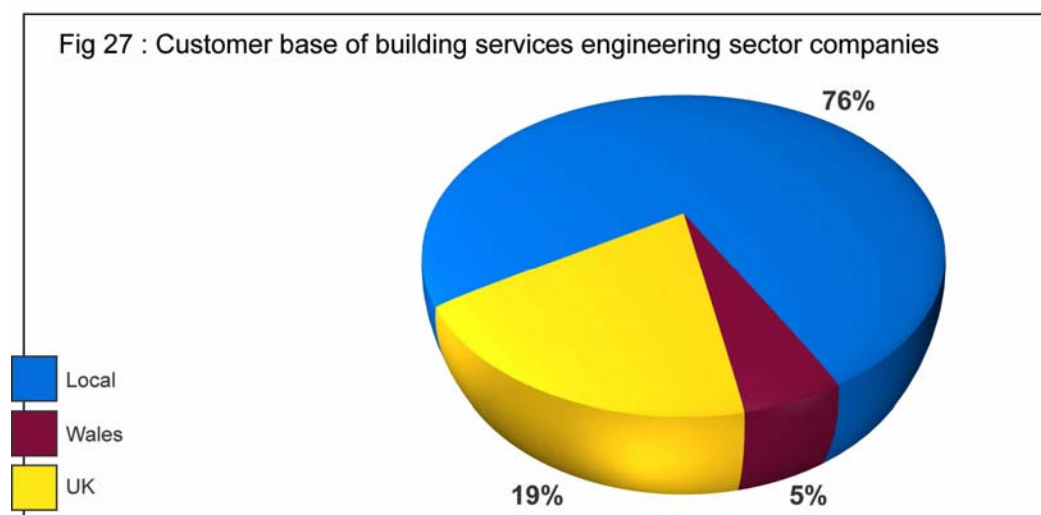
That's when they started... came up with it first... we've been looking at it because it's obviously going to be the next step and with the change of this company, yeah that's obviously going to be the next move. (SEWRP02)

We experienced this in 2005... (SWWRP03)

For the last four to five months... (SWWRP05)

Ground source heat pumps about just over a year... and solar about... well I think the first one we did probably about six or seven years ago. (SWWRP06)

The customer base for the companies interviewed interestingly remains predominantly local, as can be seen from Figure 27.



The quotes below are indicative of the views of the companies interviewed identified above:

At this moment in time no. it's usually about a 30 mile radius from where I live in... that's basically the area I work in. (NWWRP02)

Yes local to North West Wales... (NWWRP04)

Our predominant client our in North Wales... we very rarely go into ... or those areas. We work predominantly for the local authorities, hospital boards, private customer, factories... (NEWRP05)

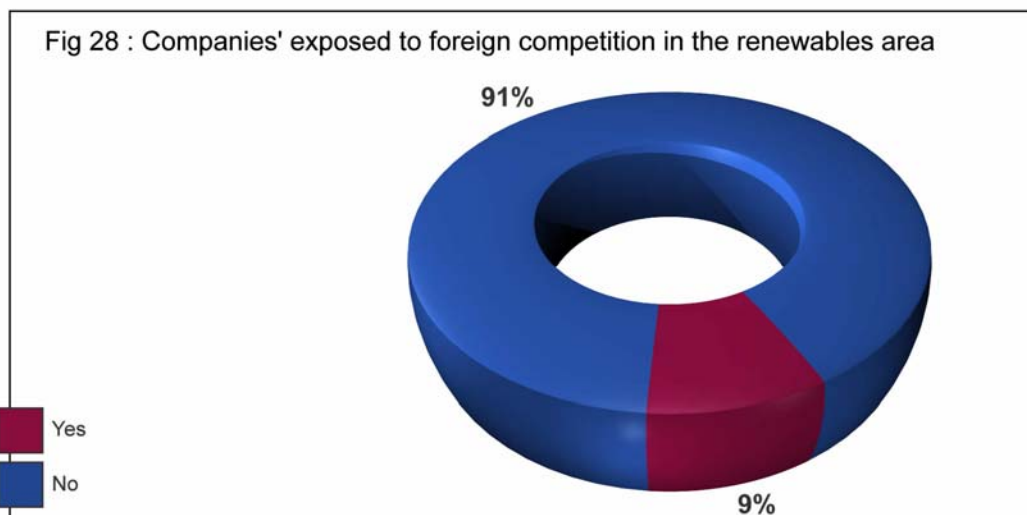
Well we normally just operate within South East Wales. I mean... down towards the Vale of Glamorgan... (SEWRP04)

Yeah predominantly in Wales, but we are carrying out work in London, the southwest and Birmingham... so pretty much we are trying to expand to everywhere. (SEWRP07)

The way... got it set up you're in an area and you get work for your area. What we've done at present, we've done a job in... and a couple in... so it's West Wales a bit of East and West Wales. (SEWRP02)

Its just this area at the moment... the company I am working in conjunction with have got me on their database so basically it could be anywhere in West South Wales. (SWWRP05)

In relation to foreign competition coming into the market then the localised nature of the sector interviewed appears to have led to little exposure to foreign competition thus far in the microgeneration area (or indeed generally as confirmed in SummitSkills Sector Needs Analysis part of the Sector Skills Agreement). The amount of exposure can be seen in Fig 28 below.



The quotes below are indicative of the views of the companies interviewed identified above:

Not from companies overseas no. Obviously there's a lot of Polish people living down here at the moment that are obviously... most of the work they do it labourers, and there's lot of plastered, bricklayers or what have you. But obviously for us it's not competition for ourselves at the moment anyway. (NWWRP02)

No, not really... any in the spectre we're in. The spectrum we are in is too small for overseas competition... the constant people coming from overseas to do the installation is too high in comparison to the local engineers. In fact the cost now is too high even for us to go to Scotland or places like that. They tend to be localised because of the number of contractors that are about. Although we did have a trainee from Germany who was with us for 12 months... it was very eye opening on how they did it he came over here to be trained by us... that was through a training company... and he was with this company for 12 months... and of course the training company paid his wages and all we did we made sure that he got a good education on the British way of doing things. (NEWRP05)

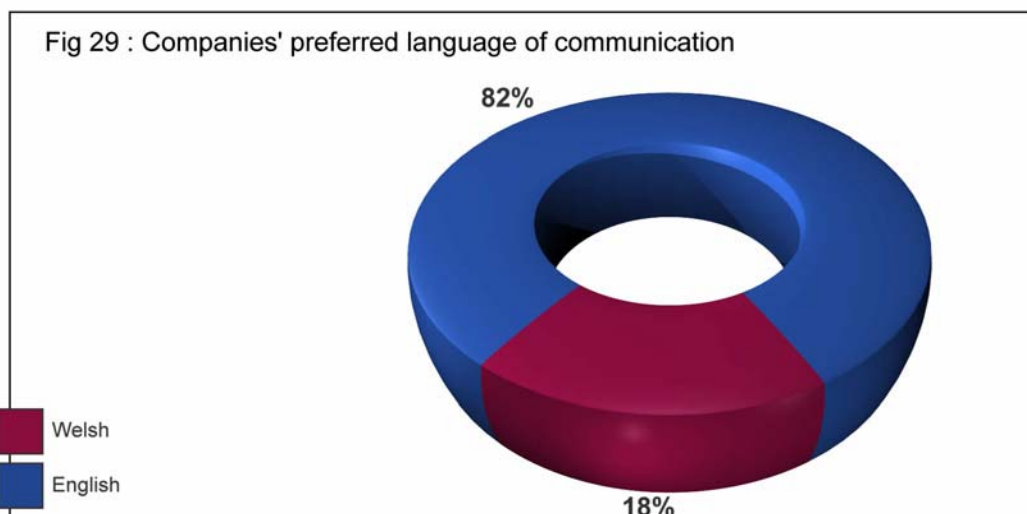
Not yet but I think that's going to be the next thing... (SEWRP04)

Not as far as we're concerned... (SEWRP08)

Well I haven't come across that yet. I know some of the younger lads in fact, going back many years, I used to do a part time lecturing in colleges in at that time but then they want to... and some of the lads now were in their 30s and 40s and I noticed they're really keen on the solar... but I wouldn't say there was competition there at this point. (SWWRP03)

Oh you've got to have competition yeah... you know I was out in Germany 15 years ago and there was a technology out there then was, you know, I mean, there then and in this country its only not its arriving here. (SWWRP08)

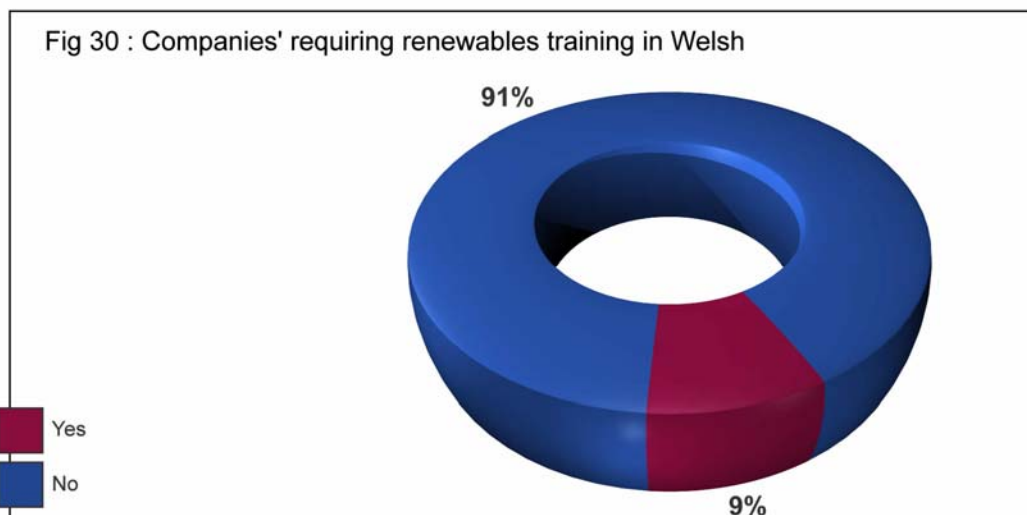
In the previous section it was shown that the majority of microgeneration courses (when and if they ever get developed and delivered) would only be offered through the medium of English. In this the providers are meeting the actual requirements of the sector even in areas of Wales where the Welsh language is more prevalent as can be seen from Figures 29 & 30, which suggest that the preferred language of business communication for companies within the sector is English and the language they require training in is also predominantly English.



The quotes below are indicative of the views of the companies interviewed identified above:

My preferred language of communication is what the circumstances demand. As the owner or proprietor of this business I speak English, which is my day to day language. I also speak Welsh fluently. So I'm able to converse with the client in either English or Welsh and by demand. Unfortunately the use of the Welsh language is on the decline, especially in the immediate area of North Wales that we work in. when we get deeper into Wales then the percentage of Welsh speaking people is much higher... (NEWRP05)

English is my first language, welsh is my second after about nine pints... (SWWRP05)



The quotes below are indicative of the views of the companies interviewed identified above:

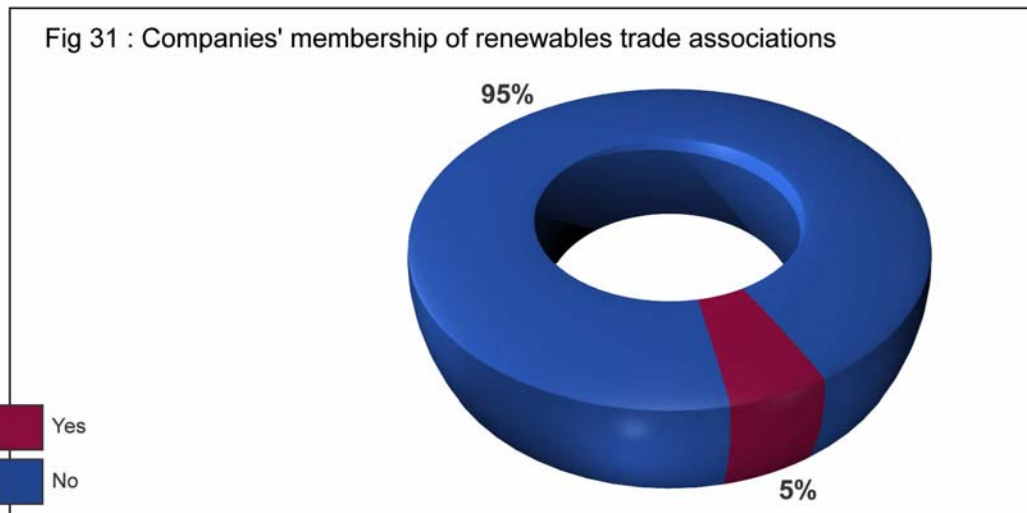
No we do have Welsh speakers here, but the amount that is spoken is... so small... and those Welsh speakers choose not to speak Welsh as a choice, even though they're Welsh born and bred, they hate the Welsh believe it or not, and they are Welsh. (NWWRP06)

Possibly in the future, like I said. You know I'm sure we will have some Welsh speaking guys who would rather learn Welsh. They'd be quite happy to... (SEWRP02)

Oh I don't mind if its in Welsh or English, you know... (SWWRP08)

As already stated in the methodology section of this research, this piece of work only identified one manufacturer in Wales of microgeneration technology, and therefore installers tended to purchase products from England, Europe and around the World. Both SSC's are aware of other manufactures of microgeneration technologies in Wales but they did not participate in this project.

In the previous section it was discovered that the providers were not engaged with the Trade Associations for renewable energies and this is replicated by the installers, with hardly any membership of renewable trade associations being identified as can be seen from Figure 31.



The quotes below are indicative of the views of the companies interviewed identified above:

No... let me explain to you... to be members of these associations right and to be registered with these associations you've got to put in 5 installations within a 12 month period, and although we have put several installations in we have never had the volume of work or this type of installation to get this membership. (NEWRP05)

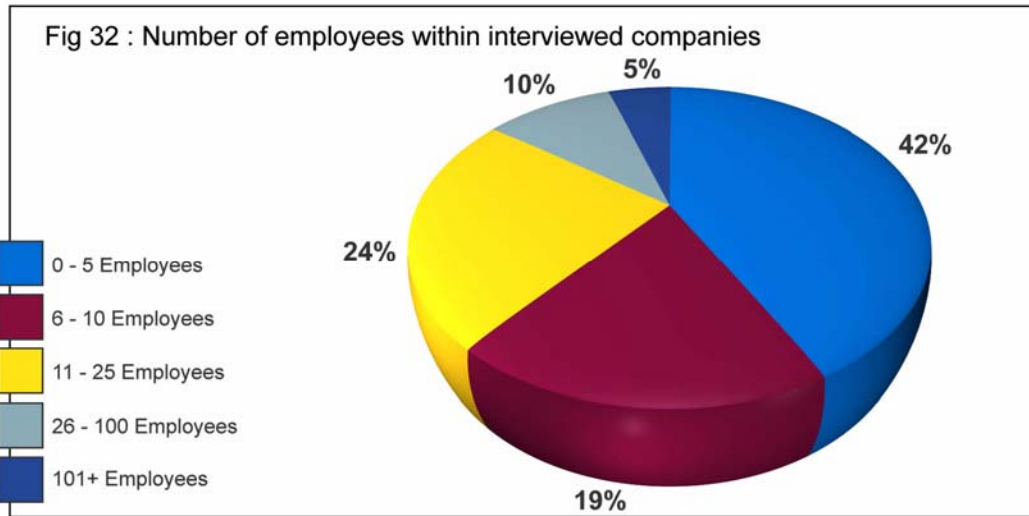
No... we wouldn't get involved with being members of association because all we do we just specify any equipment. So I wouldn't come into it. (SEWRP01)

Yes I spoke to ITEC energy about that and there isn't really a strong affiliated body as such, theres on or two smaller things from what I can gather but once something comes up more... (SWWRP05)

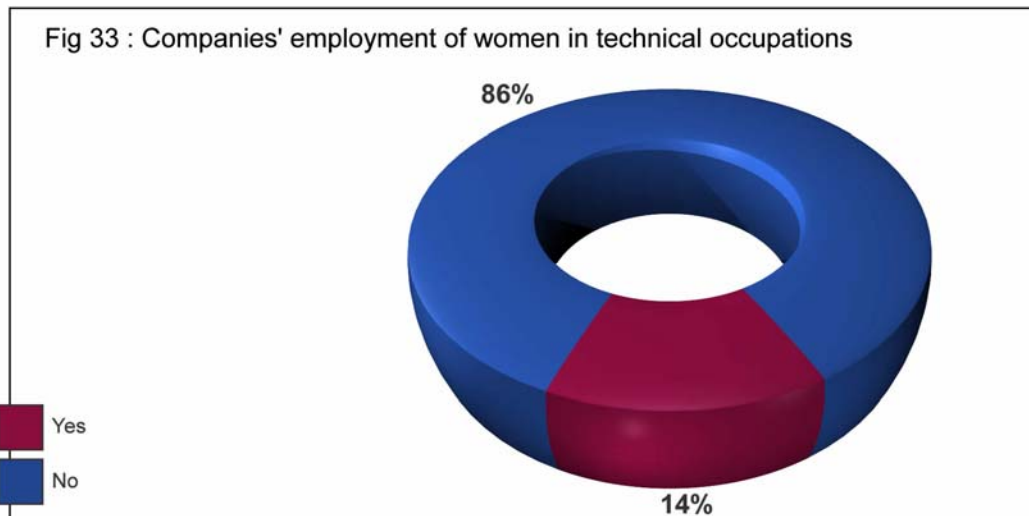
Figure 31 suggests that the trade associations within the microgeneration sector need to raise their profiles significantly if they are to influence the development of this key market.

The microgeneration market in Wales would appear to be developing among companies of all sizes from the one man band plumbers/gas fitters/ electricians all the way up to the national major companies with over 100 staff³ and this can be seen from an analysis of Figure 32.

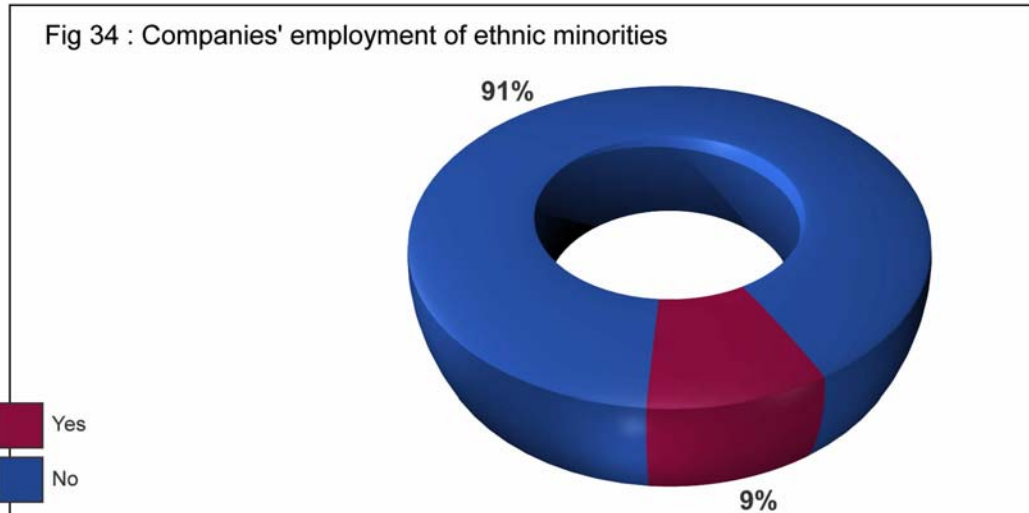
³ As can be seen from the Sector Needs Analysis of the Sector Skills Agreement for Wales and for the UK, a company in the Building Services Engineering Sector with over 100 staff would be considered to be a very large enterprise.



In the "SummitSkills Sector Needs Analysis for Wales", the evidence from the research for that report suggested that women had not broken into the building services engineering sector in Wales to any great extent in technical occupations (craft, technical or professional). This remains the case as can be seen in Figure 33 in relation to companies operating within the microgeneration market.



It remains a similar story in relation to people from ethnic minority groups.

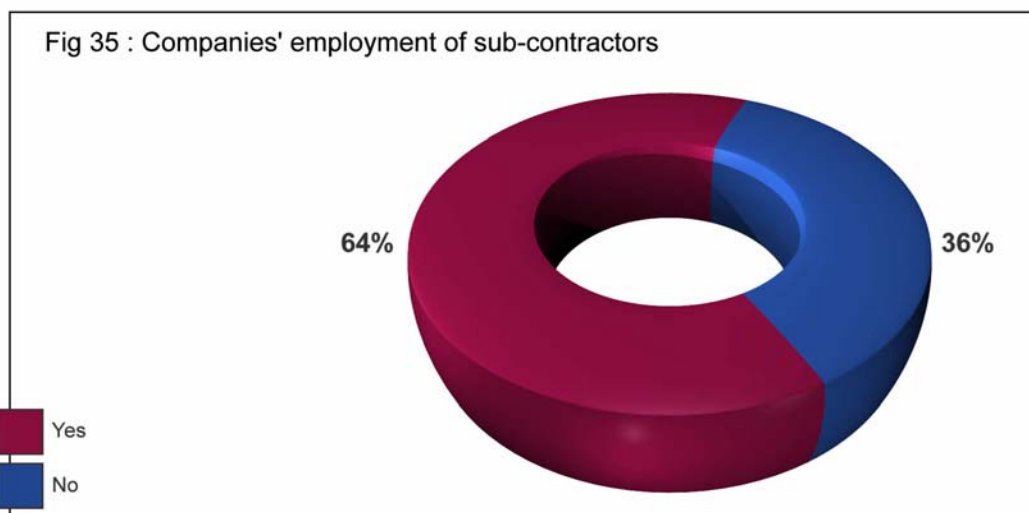


The quotes below are indicative of the views of the companies interviewed identified above:

One of them is classed as a Caribbean... yeah I think one of them... the others are white Welsh, yeah... (SEWRP02)

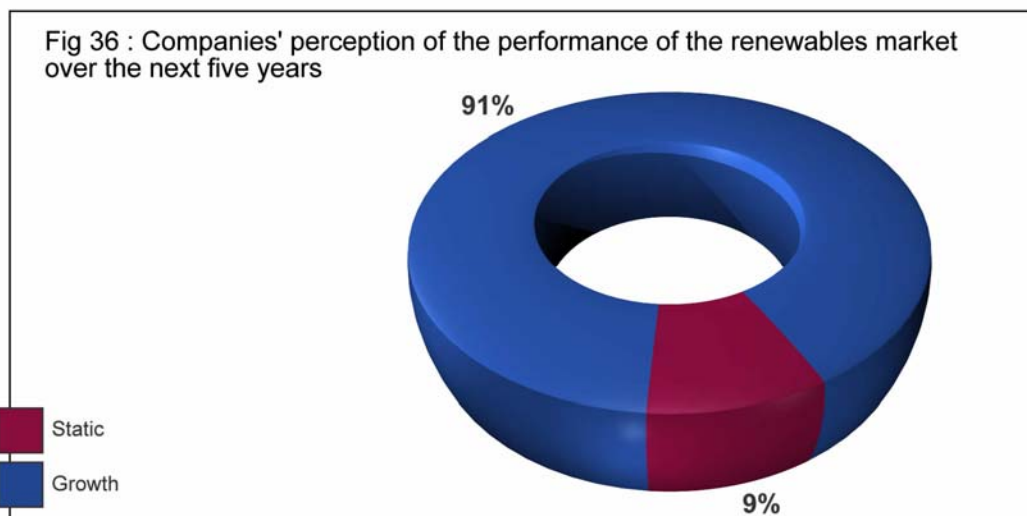
Currently none of the companies interviewed employed disabled workers within their organisations.

There is however a significant use currently being made by companies working in the microgeneration market who is seeking to employ sub-contractors as can be seen from Figure 35.



To what extent the use of sub-contractors is circulating skills in microgeneration around the sector in Wales it is difficult to say, although the quotes from the companies would indicate that the renewable work is predominantly kept in house currently.

As with the providers and the manufacturer, the installers expect the microgeneration market in Wales to grow significantly over the next five years as illustrated in Figure 36.



The quotes below are indicative of the views of the companies interviewed identified above:

It's definitely going to grow and expand and I think as our sort of... as part of our trade, we about 65% of our business is with local authorities and housing associations so it will lead by then. If they ask us and if they're prepared to pay us to install microgeneration then we will and we will... and we have been asked previously to look at it but generally speaking it seems to be a cost issue within the you know, they're not prepared to pay for it. (SEWPR06)

Round here, on my experience, we won a job to put solar in, the take back period of 20 years, and the client was turned down for planning permission, so we haven't actually put anything in. (NWWRP06)

The general feeling here is that it will expand... (NWWRP07)

I think people are starting to realise that we've got climate change and I think that's the way we have to move. And advertising on television people saying problems with climate change and things, that's what's pushing us forward. (SEWRP06)

This will totally depend on the faculty we know as design engineers, whether they have they have the knowledge of whether they have the patience, or whatever it takes, to design these and whether the money is forthcoming from the local authorities are doing. Now if the local authorities and hospital boards and everybody else go into this, right, then the private sector will

follow. But I am quite certain when I say that the private sector will not buy into it. (NEWRP05)

It's difficult to say it depends on what Governments going to do... (SEWRP04)

I think it is yeah. More and more projects have got some form of microgeneration. (SEWRP03)

Well the way that modern buildings are being constructed in compliance with the local... with current building regulations and the future changes to building regulations and carbon emissions theres only one way that its going to go and its going to go... its going to rocket basically... (SEWRP07)

I think it will expand greatly... (SEWRP08)

I think it will be very, very well... I think its starting to snowball... and from what I can gather off the people who supply our business boilers they're inundated with work. We've got a few projects in the pipeline now where we're going to be putting in these renewable technologies again so yeah I can see it snowballing... (SEWRP01)

I think it will double in the next year... if we fitted 10,000 this year I reckon it'll be 2000 in 2007 easily. At this point the cost of it is coming down, the availability is getting better there is more choice... (SEWRP02)

I think it's going to grow bigger... I definitely do, yeah. (SWWRP01)

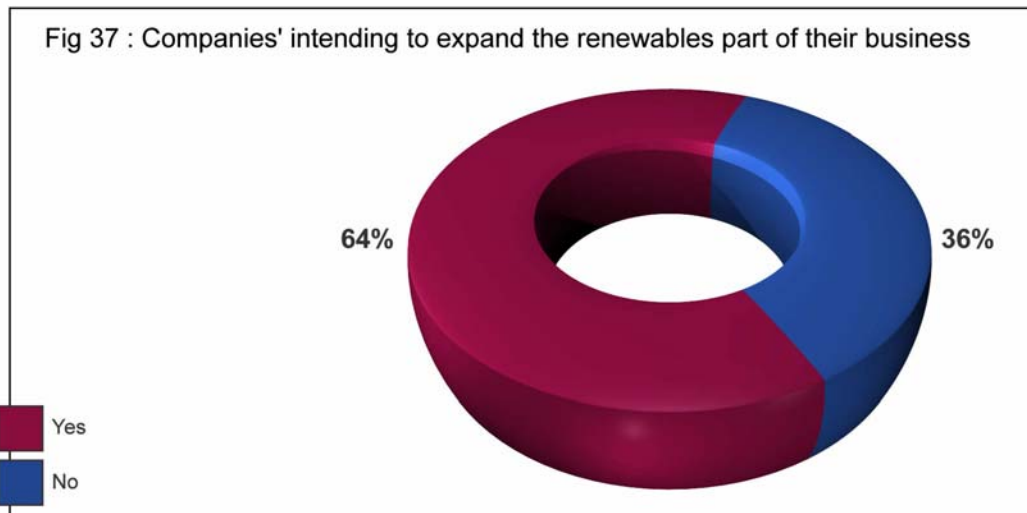
Well I think solar panel has proved itself anyway. I was quite amazed you know... after working on this one project unfortunately theres nothing else in the pipeline, it was quite a good... you know, really astounded me... the results of it... it was a high grade solar panel... I haven't gone in anything with heat banks or anything like that; only read about it, interested in it but it needs a bit more hand on or a bit more meeting the manufacturer. I do keep up with it all you know... just to keep up to date like we've got to anyway with a young force. (SWWRP03)

Grow and expand... (SWWRP04)

Fuel prices rises will be the main one... what the government say, people don't take a lot of notice of basically because half the time they are talking through their ... they don't know what they are talking about, they should stick to politics and not interfere with stuff like this. Over the next five years, yes, it will take off a lot better but public awareness needs to be brought to the forefront. The only advertising you've got for these types of things now is us, the installers, and word of mouth. Theres nothing publicly, whether it be on the telly, newspapers or anything, drumming this home to Joe public. Until that happens it's never ever going to take off. (SWWRP05)

Well its something that's got to expand? Well I think its you know everything we learn about low energy and save this and save that and people are going to look to new ideas and new you know door openings and if they can save it they'll do anything to save. (SWWRP08)

There is therefore, not surprisingly a desire from the installers to take advantage of this trend, expand their business in this area and possibly engage further staff as can be seen from Figure 37.



The quotes below are indicative of the views of the companies interviewed identified above:

It depends with the alternative energy. We need to re skill and if the work is there... the main priority is re skill and they maybe expand from that... (NWWRP04)

Yes it will virtually right across the board from laborers right through to site managers you know surveyors estimators right the way across the board. (SEWRP05)

Yes solar... (SEWRP06)

Well it is up to the authority. The cost of this particular installation we're talking about is high. Now normally you think people in the commercial world tend to be guided, in my experience, by what the local authorities are doing. Now if the local authorities and hospital boards and everybody else go into this, right then the private sector will follow. But I am quite certain when I say that the private sector will not buy into it. (NEWRP05)

Yes I do think... and we've got a business plan which over the next two years we anticipate employing up to 20 25 people in addition... (SEWRP07)

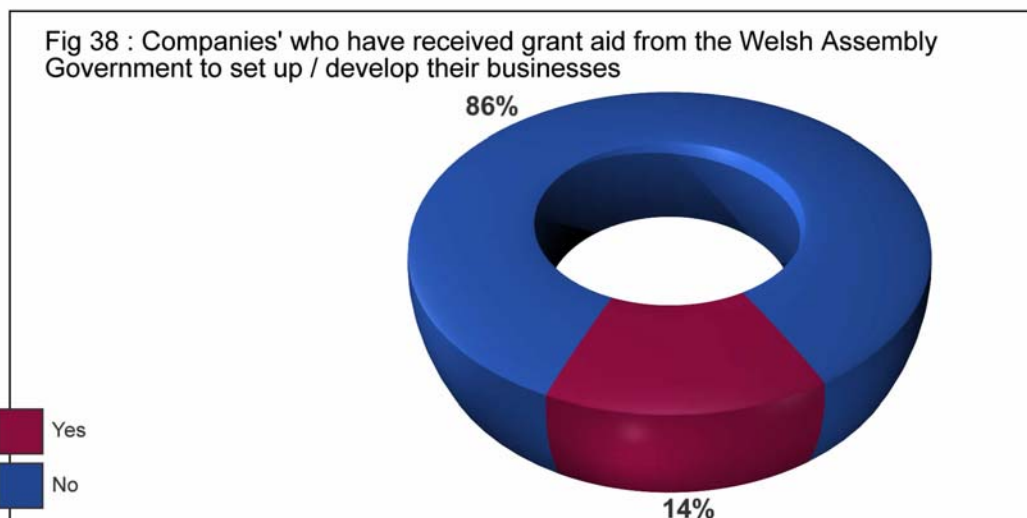
Probably not to expand but we're looking to diversify a little bit in microgeneration. (SEWRP08)

Well we are looking into the microgeneration market... we're not throwing everything into it yet because its still a new commodity and everybody's on a learning curve. Until it gets to the right place unless it gets to the right availability then it isn't going to be that busy. As I said earlier, I can see it doubling this year. I know of companies that's gone straight into it and that's all they do is microgeneration work because there is a quick turnaround in

money there. It's a simple installation at the end of the day. So yeah I can see that. I will take people on and we will train them, and we put them on the training courses purely for that reason but to me... so they'll be a plumber based guy to do it because it is pipes and fitting at the end of the day... (SEWRP02)

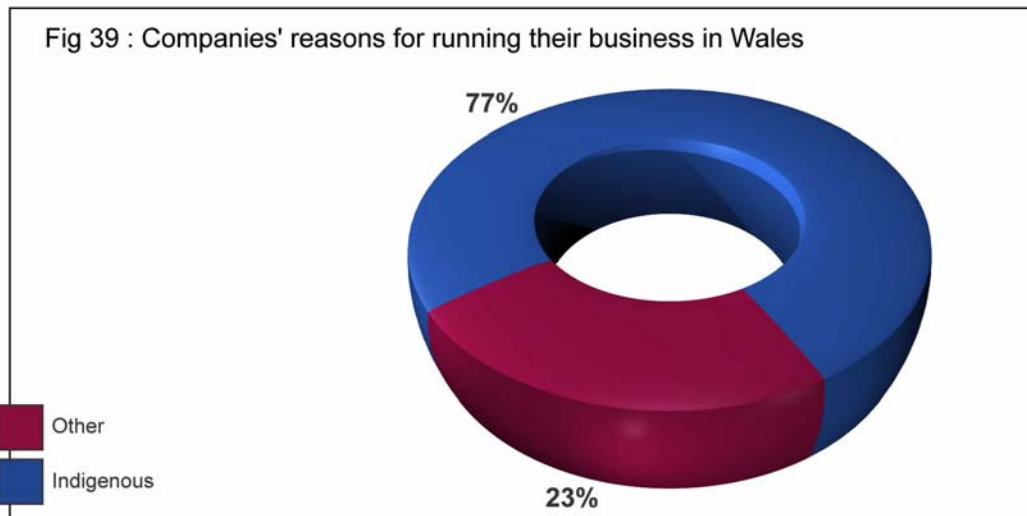
Well probably yes... well again in the probably on the electrical side... whatever... what you find is that electrical is becoming more and more demanding and more and more variations and so we need to keep up with it otherwise we get you know, left behind. (SWWRP08)

As can be seen from Figure 38 however, only a small percentage of the companies interviewed in this work had received any grant aid through the Welsh Assembly Government.



Given that microgeneration is a priority sector for the Welsh Assembly Government, it is surprising that more companies interviewed had not accessed funding and this is probably due to ignorance on behalf of the sector in relation to support available.

This lack of WAG funding may explain the data in Figure 39, which suggests that Wales is seen predominantly as a business opportunity by only indigenous population in this field, and may not be attracting the levels of inward investment and entrepreneurial business start up that might be expected in what is a rising market.



The quotes below are indicative of the views of the companies interviewed identified above:

I have always lived in this area... (NWWRP02)

My parents divorced when I was young, my sister was already living here I came to live with my sister... (NWWRP03)

Born and bred here... (NWWRP04)

Cor blimey that's going back a while. I think because of the market that we're in with social housing society. They're obviously... in South East Wales and South West Wales, you know there's obviously a large number of housing associations and local authorities and it was a natural place for us to do business. (SEWPR05)

Oh yes yeah... I've only been here 30 years... (NWWRP06)

Purely because I live here... having said that I did have a business in London... I live here and I like it here... I can't stand traffic... I like it around here... (SEWRP06)

Yeah, yeah, primarily yeah... well I actually used to work in England so I came back the company. Yeah... (SEWPR04)

Yes I do... I think... and we've got a business plan which over the next two years we anticipate employing up to 20, 25 people... (SEWRP07)

Well... started the business... started off in... although he lives in... it was a good base and hasn't seen the need to go in with us. There is plenty of work, there's good trades around... there's a lot of people who give the work. It's pretty good area, South Wales... (SEWRP02)

Domestic reasons... (SWWRP04)

It's where I live... (SWWRP05)

Well I've been in business here for many years and im from this area originally... (SWWRP06)

No it's not a choice thing because I was living here all ready... so its not a... you know my family's here and everything else. So it wasn't a choice thing. If I was starting up in Cardiff, you know would I open up a business in ... or would I... because you're traveling... West Wales is a different game... (SWWRP07)

Well that's where we were born and you work in an area that you basically know. (SWWRP08)

7.3 Conclusions

Solar panels and ground source heat pumps are currently the most installed microgeneration technologies by the sector, it is worrying to note how few photovoltaic panels were being fitted by the sector in Wales.

The market in microgeneration seems to be growing, as many companies interviewed in this research have moved into the microgeneration market in the last two years.

Currently the firms interviewed are carrying out their microgeneration work within the locality (sub-region of Wales where located) with little expansion into the rest of the UK or Wales.

The companies interviewed have not experienced foreign competition, although one provider expresses the view that were such competition to come this would prove problematic for the sector in Wales as foreign competition is more efficient and higher skilled (see comments).

There is no real demand for training through the medium of the Welsh language. All of companies interviewed conducted their business through the medium of English. A minority of companies interviewed did communicate with customers in Welsh but it is on a needs only basis.

Penetration of Trade Associations dedicated to microgeneration technology is weak among the installers interviewed for this research. This cuts off the sector in Wales from the latest thinking and technological breakthroughs and requires urgent action from the trade associations themselves, partners and stakeholders to keep the sector up to date.

Participation by women, ethnic minorities and disabled people replicates the building services engineering sector generally, as the majority of the companies have yet to engage fully with the sector.

A significant minority of companies within the survey use sub-contractors, although it is believed that the microgeneration work remains in-house.

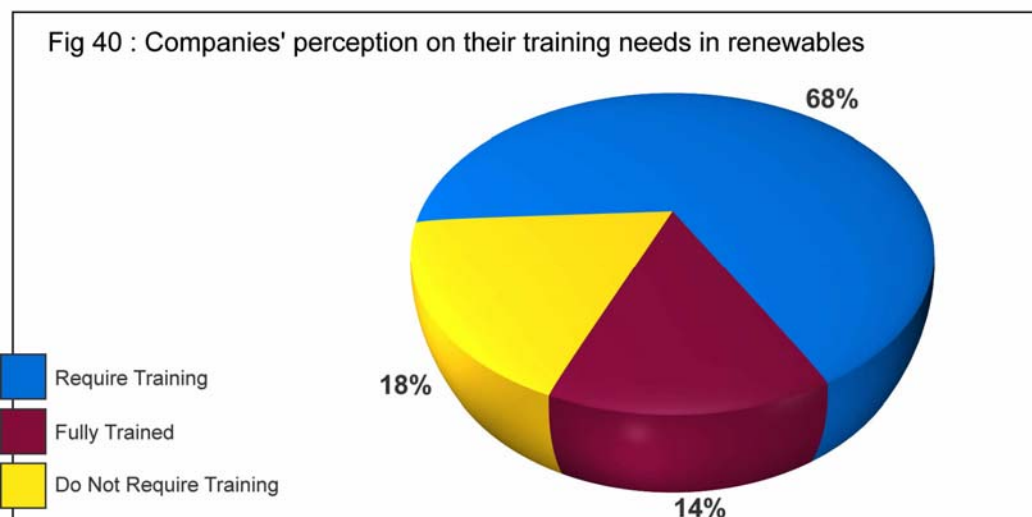
A significant (91%) of companies surveyed envisage that the market for microgeneration will grow significantly in the next five years, and the companies interviewed do expect to grow their businesses in response to this perceived trend.

A significant percentage of companies (86%) have not received any form of grant aid from the Welsh Assembly Government for their businesses with the majority of companies interviewed being resident in Wales because their owners were indigenous to the area.

The next section looks at the role of the training for the companies concerned.

7.4 Company Training in Microgeneration

The first question within this sub-section sought to analyse current training needs for microgeneration technologies:



The quotes below are indicative of the views of the companies interviewed identified above:

Training for ground source pumps and solar heating, solar panelling... (NWWRP04)

We haven't actually got any at the moment... we've trained one of our members of staff, one of our technical department, as an... and that at the moment is really... again, because its going to be client led, at the moment we don't need to do anything else. (SEWPR05)

That's difficult to answer, although we have found on the last solar job that we did, we did come across problems with employees that didn't sort of you know... they were struggerling a little bit. There is a training need there. We have identified that is a training need of some sorts, but as yet we don't quire not how that will go. (NWWRP07)

We take out own guys and go and get them trained ourselves. So it's like the solar we get the trained with... and as I say ground source we're going to take them ourselves to Sweden to get them trained. (SEWRP06)

It's like because we do a lot for example we do a lot of work in hospitals. I would like to get better trained with the RADA equipment, the water control equipment. Because there's so many different courses now on water things and regulations and I prefer them to be sort of more product based so we can sort of concentrate on that really. (SEWRP04)

Yes I mean, with the massive growth that we anticipate in this sector of works we don't want it to go the same way as its gone with traditional plumbing and building services and mechanical services engineering... are desperately trying to source trained, time served heating engineers. With the new generation of engineers that are coming through there's a desperate need for the inclusion of renewable energies and solar and ground source and photovoltaic sort of information and training to become part of their current training. (SEWRP07)

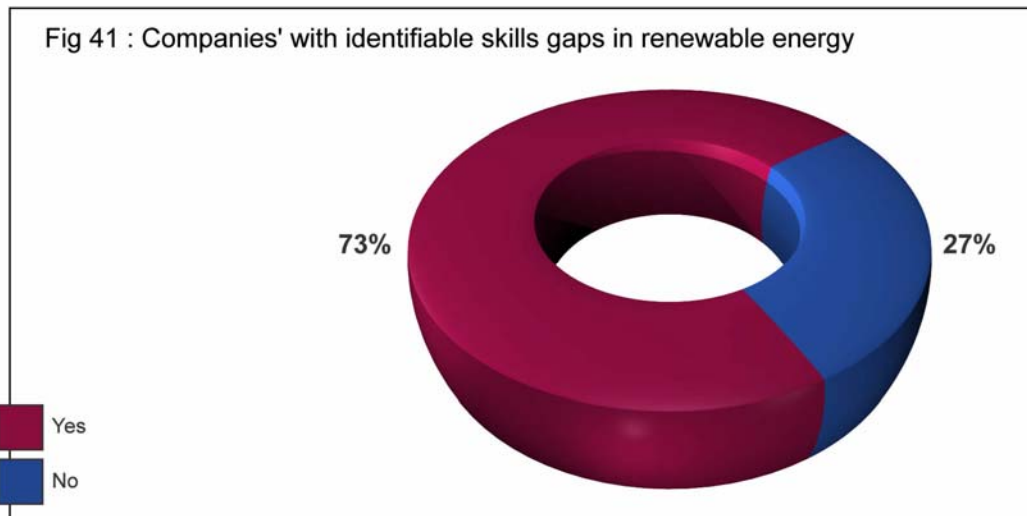
Just about all of it really. We have done some solar courses so we can install... products but... products only, so we could like the full training. (SEWRP08)

Well we are aware there's a ... qualification to work in the areas correctly... the only one we know of at this moment in time is via... boilers and they've got a course, but its in Slough. It's a four day course, rather expensive. The course fees are reasonable, although we have to pay the engineers that are going on the course and lodgings for the night because you're not going to travel to Slough every day just to go to a course. (SEWRP02)

We tend to do our own training. I suppose the short answer is no because we've attended manufacturers courses, I think our own technical knowledge is reasonably good... so currently no... (SWWRP06)

Well we'd definitely need to be upgraded and informed... (SWWRP08)

Figure 41 indicates the percentage of companies interviewed who have identifiable skills gaps within the microgeneration area.



The quotes below are indicative of the views of the companies interviewed identified above:

On the solar... I would look to have another couple of us done maybe yes. If the ground source kicks off I might have to get another one of the lads on a course for that as well. (NWWRP02)

Yes damn... near impossible... (NWWRP03)

No, not really because it's something... I've been... well I've been teaching for the last ten years and at last its started to kick in. so I think its great. But I mean, seeing the quality of the students who are coming on to the courses on the design side of things there is a skill gap there definitely. You sort of pick up things on site from the subcontractors and they sort of tell you that they need more training, particularly on things like the ground source heat pumps. But I think it'll get there. I think more and more people are taking it on board now. So I don't think there'll be too much of a problem... (SEWRP01)

Yes we would need some managers. We will need some training on it. They're going to have to be able to talk the talk so they're going to have to know what they're talking about and be reasonable so they are aware. Different roof structures for instance we've got to be very careful. Need to know where the sun rises and falls because people say it's always south here but when we go and have a look it isn't a classic example, where I live it's no good me having solar power. I've got a full panel, I've got a tool on the outside of my roof because of the way the sun hits me. And so it's really not going to be beneficial to me unless somebody comes up with something else. We looked at ground source, but I couldn't go for the bore hole type and it ain't going to be worth it, it's going to be too expensive. (SEWRP02)

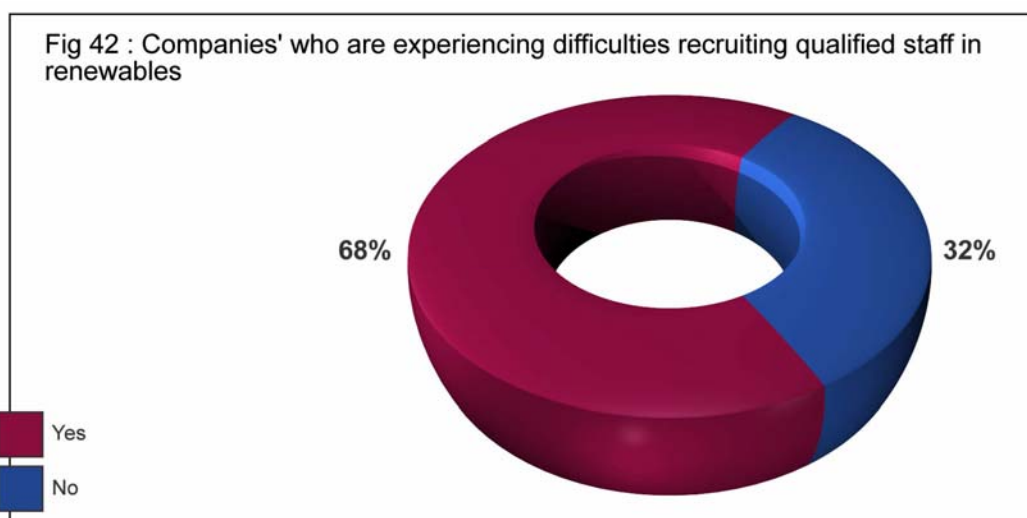
At the moment there is a major shortage of qualified staff... electricians yeah... well the qualified electricians, approved electricians- it is difficult to get good labour at the moment. (SWWRP01)

I would take the training on myself, mainly because I will ask more detailed questions than they would ask and then I can pass the training on to them,

*basically through the work that you do this is why we do it, blah blah.
(SWWRP05)*

No, not in the microgeneration, no... (SWWRP08)

From this, Figure 42 suggests that the sector continues to experience difficulties in recruiting qualified staff in microgeneration specifically and across the craft areas within the building services engineering sector generally. This, it should be stated however, is for fully qualified and experienced staff, not part qualified staff.



The quotes below are indicative of the views of the companies interviewed identified above:

*In this area I don't think I could find anybody to do it. But I don't think... I'm not aware of anybody else who is in this area who is competent to do it.
(NWWRP02)*

*At the moment yes... there's very little knowledge around the area...
(NWWRP04)*

Well it hasn't popped up yet. I'm sure it will, I mean, when it does come to it... I'm sure we will. (SEWPR05)

No, it's the skills... because its such a highly skilled trade if you like, when we advertise, even though we advertised thinking we were advertising purely building services, people are still confusing the engineering side with every other engineering job. So we got about 50% of our advert was from people that had no connection whatsoever with the heating side. So made us realise that maybe next time we need to be a lot clearer. Even though is said mechanical engineering, heating and ventilating, people still don't associate... (NWWRP07)

*No probably couldn't no... I've got to train them myself really haven't I...?
(SEWRP06)*

We haven't actually tried to recruit much because of our link with... as... (SEWRP07)

We haven't actually tried yet because we've... the limited amount we've done we've done the courses and had the help of the... (SEWRP08)

No, simple as that no... It doesn't apply just too microgeneration... it applied across the board on mechanical services and electrical. They're just not there... (SEWRP01)

Well, yes. Plumbers generally don't exist in this part of the world... the guys that we have, have all started as apprentices and stayed. (SWWRP06)

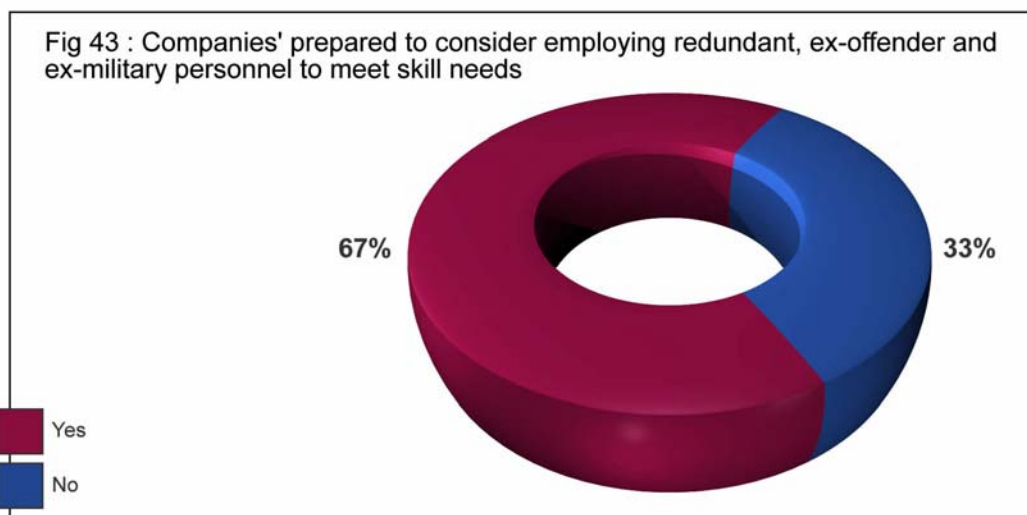
The recruitment methods adopted by the interviewed companies to obtain staff with microgeneration skills does not in general differ from normal recruitment methods as might be expected.

Where there is an interesting correlation between the views of the providers and the installers is the need for people undertaking microgeneration training to be qualified craft operatives, working and qualified to Level 3 skill level.

This suggests that the building services engineering electricity, gas, waste management and water sector in Wales see microgeneration training as being part of the skills of a craft operative rather than as a separate skill set. Consequently the companies interviewed in Wales will be using microgeneration training to up skill existing Level 3 qualified staff rather than to develop a separate microgeneration operative. This will reduce significantly any perceived separate 16-19 career path, as given this research it is suggested that the sector will not be geared to understand or accept such an operative.

None of the companies interviewed for this research had had any applications from people with microgeneration qualifications for any post that they had advertised.

To meet the skill needs of the sector, the interviewed companies were asked if they would consider employing unemployed, ex-offenders and ex-military etc to work in the microgeneration sector given what has been stated above. Figure 43 suggests that generally the sectors are not wholly adverse to recruiting people from these backgrounds.



The quotes below are indicative of the views of the companies interviewed identified above:

If they were suitably qualified... yes... (NWWRP02)

I'd have to think hard about it... (NWWRP03)

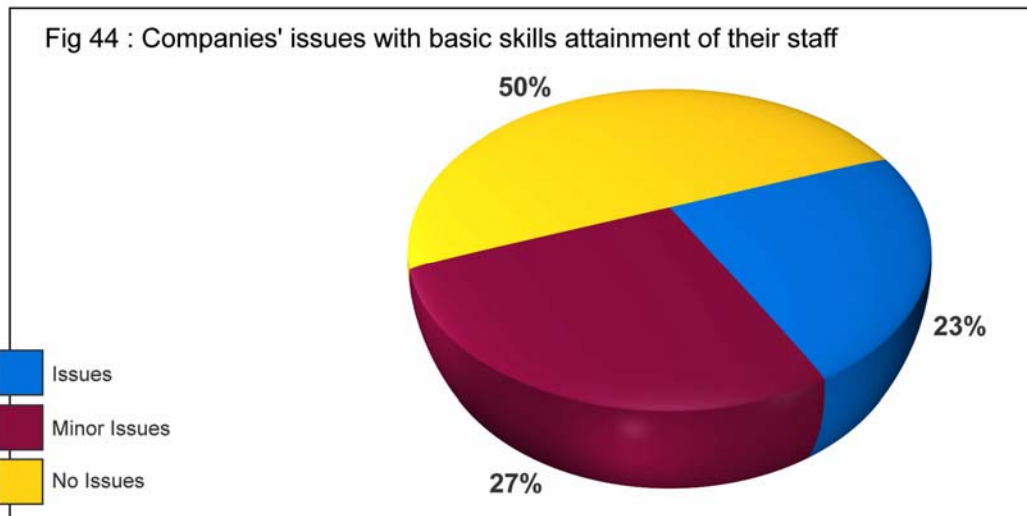
Yeah, we do it now with our normal apprentices so it wouldn't be any different. (SEWPR05)

Well no, I think it's just got to be a case by case basis... and you know for each person or whatever... well yeah, you could... I know somebody who's taken on long term unemployed like though and a government scheme and they seem to have got on all right. (SEWRP04)

Although is they had done a certain amount of training, yes, but they need more than going to a college. You need that practical element of working at source of work for somebody, somewhere down the line. But if you take somebody on like an apprentice, it costs me a lot more... I wouldn't say I am wasting my time but by the time I've explained to him, I would have done it myself. To get back to the... I got no problem in employing anybody. The offenders one is a bit iffy because we are in a lot of people's houses. (SWWRP05)

No. Well, nothing against military personnel but I wouldn't employ ex offenders. The people that we have employed we've done it by having some knowledge of their background, their family etcetera. We work in our normal plumbing and heating business in peoples houses all the time, people give us their keys when they go on holiday, so there can be no question at all about peoples trust working with us. (SWWRP06)

The next question sought to analyse the performance of the sector in relation to the basic skills of literacy, numeracy and information technology. Generally the sector has not got significant issues although those who do often have significant problems. Figure 44 shows the results from the interviews.



The quotes below are indicative of the views of the companies interviewed identified above:

Yes the technology is... IT skills is always one step ahead of you anyway isn't it? The more you learn the more you've got to find out... (NWWRP02)

I think the plumbing courses that are run by our technical colleges are a total waste of money. I think they're purely... this is me on my soap box... I think they're purely to create employment for the college. The people they churn out are normal plumbers, then they go in the front office... I'm sorry... there are 30 lads at our local college at the moment and if I ask the teacher who could I take on and who would be a good plumber in the future I'd be surprised if he said one. The kids go there just to pass the time. (NWWRP03)

If we're talking about apprentices, No. Not especially... (SWEPR05)

No... some of them do, some of them are dyslexic, they're filling in the timesheets and the job sheets, and some of them it's totally alien. They can put pipes in, without any difficulty at all... (NWWRP06)

It is because I don't think it's 100% critical... because I've got one lad here who probably can't write a sentence without punctuating his English is awful, his Maths is awful, yet he can use a calculator and get cracking. Very skilled boy, very skilled... (SEWRP06)

Yeah, not... Maths I think is a big problem... (SEWRP04)

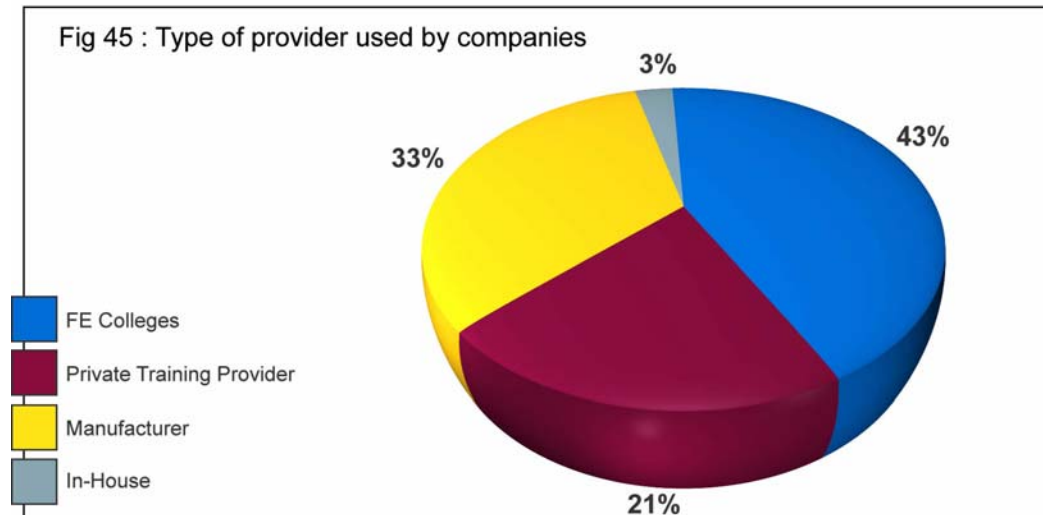
I don't think it's so much... I think it's they're not aware and they haven't... they're aware so much of what the industry is and they haven't been trained into that industry. And we've got five apprentices at the moment as far as ... is concerned and their grades are quite good, they're quite acceptable. I mean, in fact we've got... one of the young guys on site at the moment I think he's got ES levels in all sorts of Maths and science and things like that, but he particularly wanted to be a building services engineer because he knew somebody. So you I know generally I don't think it's a case of low skills because I think it's just a case of the number of people going into the industry years ago and it's not coming through. (SEWRP07)

Because I'm asking for qualified people at the moment the standard is pretty good, except plumbers do scrawl when they fill in day sheets, but all plumbers do but they can write... (SEWRP02)

Maths I find they struggled with... yeah an arithmetic and kind of simple Maths, whether its areas of a circle you know they were unaware, you know? They all had the key skills, which they'd done in school, but simple stuff, you know? (SWWRP07)

The next questions look generally at the provision of training for microgeneration and the sector generally. As the majority of the sectors have dealings with FE Colleges (who do not conduct microgeneration training, see section 3) the data here relates both to microgeneration and general training. In Wales the majority microgeneration training is provided by manufacturers which based in England apart from the one identified in this report. It is within this environment where the majority of training in microgeneration for Wales is taking place excluding the Centre of Alternative Technology in Mid Wales, which is returning the compliment to English manufacturers by training significant numbers of English firms.

Figure 45 shows the type of providers utilised by the sector within Wales that were interviewed for this research.



Some companies interviewed use more than one type of provider to get the curriculum that they need. As can be seen from Figure 46 there is some concern about the quality of training that has been received through particularly Further Education Colleges.



The quotes below are indicative of the views of the companies interviewed identified above:

I suppose so yeah... I don't understand what it's about, but this is me launching into politics. I really do think all the colleges... and it much cost hundred of millions... let me turn it on its head... what's your opinion? Do we as a country get value for money? I don't think we do... (NWWRP03)

No, not at the moment... we need this alternative energy training... (NwWRP04)

Yeah generally speaking, yes... yeah... and private ones, you see, I mean, what I tend to do with the private ones is tell them what I want and then they'll come back to me and say, right, we can do this, that and that so... (SEWPR05)

Yes we are not getting exactly what we want there, so we need some work on that really... (SEWRP06)

Well what we do... the local providers would be the technical colleges. They supply the basic training, the purely basic i.e. pipe work installation, radiator installation, boiler installation. (NeWRP05)

It's a bit... well the one thing that happened when one of our guys went to do gas conversion to commercial... he... they actually cancelled the course on the actual morning when he got up there and he was working nights as well. So he had to cancel two nights work and he turned up and said they will nobody else has turned up so we're no having the... I was a bit miffed at that. (SEWRP04)

Yeah I think it's up to the individual, you know... I think I deal a low with the apprentices... it seems to have come to me a little bit and its up to the individual, the training is there and the colleges I've been to have been very good, the teachers are good. It's just that the individuals got to take it on and grasp it and go for it, you know. (SEWRP03)

When you say satisfied, satisfied in the level of training that we're getting but I mean it's so expensive, that's the problem... (SEWRP08)

I don't think so because I think personally you need that amount of expertise which the companies that give basically because a lot of them have their own engineers teaching you on these courses and they have got that background experience where the college lecturers haven't. Now if by some means these manufacturers could put their engineers or lecturers into the college to give the courses, then I think that would be an excellent way to go... (SWWRP05)

We also had a training for a short while from... college who are also doing plumbing and that just didn't work out because there was no communication with the college, nobody knew what was happening as far as the paperwork side of it. I'm sure you would go and do the courses. But you know there was no feedback; they didn't check on insurance, there was no health and safety. We just felt we were quite vulnerable in... (SWWRP06)

No... they do it down in... which is a 60 mile drive and it's an hour and a half in the mornings for the trainees to organise the trips down themselves. They've got to pay for fuel and it's just so wrong you know? For a place as big as ... not to have the infrastructure to do the NVQ3, okay, we haven't got... really I mean, some of the trainers there aren't what they should be... and I've seen the professional side of things, whether its Cardiff or Shrewsbury, I've seen... and I'm quite disappointed with how its done in Wales. (SWWRP07)

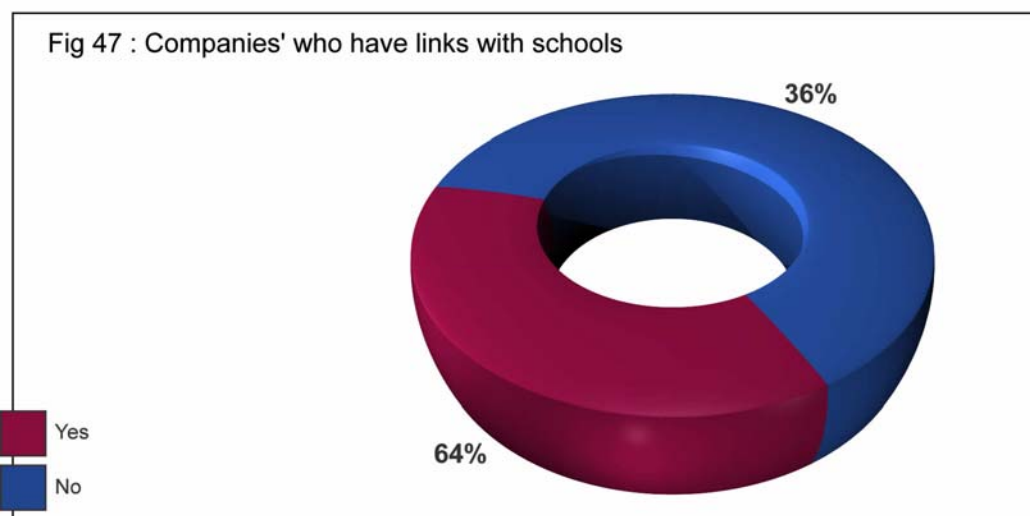
Well they don't do they really... (SWWRP08)

The lack of training provision as well as its quality influenced the views of the companies interviewed. There was not however any concern about the quality of training received from manufacturers.

Despite the complex nature of many microgeneration technologies, many of the companies interviewed do not have any links with Universities either within Wales or elsewhere. This is in keeping with the findings of the sector needs analysis, where links between Universities and the building services engineering, electricity, gas, waste management and water sector remain severely under developed and practically non-existent.

There is however some engagement between the companies interviewed and the schools within their surrounding area, through which the link between microgeneration the environment and the building services engineering electricity, gas, waste management and water sector can be made as a marketing tool to encourage more young people to consider a career within the sector.

Fig 47 shows the percentage of companies interviewed who are engaged with schools.



The quotes below are indicative of the views of the companies interviewed identified above:

Yes we do... there's two schools, local schools, that send boys of work experience and if they're any good we keep them on and we offer them a job when they leave school... and our two apprentices at the moment both started like that. They came here as 15 year olds, they came for a week, they were asked... both of them asked could we stay a further week... which they did... both of them came back in the school holidays, which they did and we paid them. We don't abuse them and get them to come for nothing. We actually pay them. And when both of them left school we gave them an apprenticeship. (NWWRP03)

Yeah, we've got what we call a mentoring scheme where we take sixth formers from two schools for an academic year and there's six says they come to us and we go through all aspects of site and how it first of all identified, right the way through to actually building and handing over the first houses so they look at all aspects and obviously environmental issues feature in it as well. (SEWPR05)

Yes we do have work... for two weeks, a couple of young boys from school come for two weeks experience, work experience, yes, we do that every year. (SEWRP03)

No we don't... I think that's part of the development stage of... is having this place where people can... you can bring... perhaps the school kids can have a look at a solar panel and show an energy display unit and show how it works. (SEWRP07)

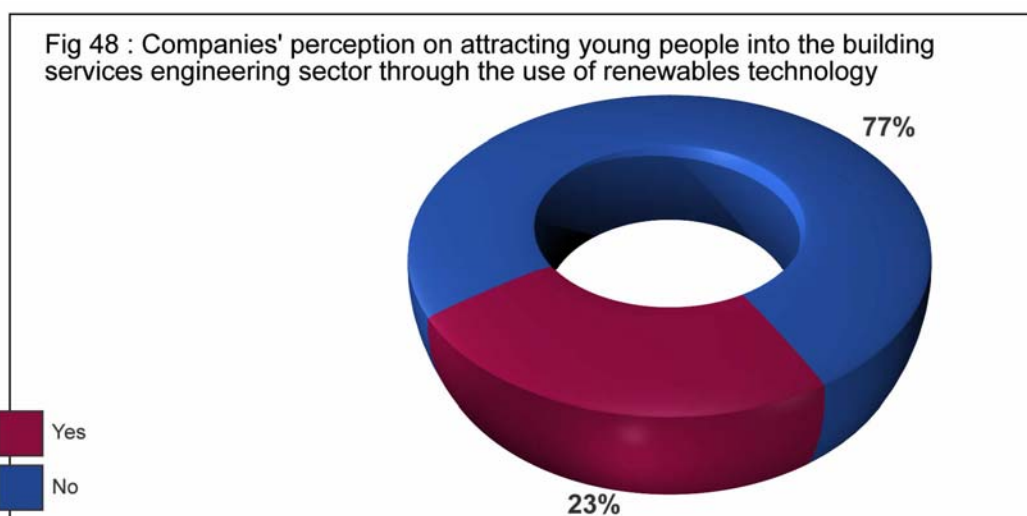
Yes we take some placements... (SEWRP08)

No, that's all we cover with the education sector... so all we do is look at schools. I've had several headmasters come along to me and say would I be prepared to go and give a talk and I've said yes and nothing's come back again. (SEWRP01)

In the past I've worked with schools but a lot of them are still council runs so... (SWWRP01)

Nothing formal but we have had a person on a weeks experience... (SWWRP06)

From this question the companies interviewed were asked if they felt that using microgeneration as a marketing tool effectively, the building services engineering sector would have any difficulty in getting young people into the sector. As can be seen from Figure 48 the majority of companies felt there would be no difficulty in attracting people to the sector through the promotion of the environmentally friendly renewable technologies.



The quotes below are indicative of the views of the companies interviewed identified above:

I don't think there'd be a problem if theres more training for them to realise there is another product there. (NWWRP04)

No, I think they do... yeah I think the interested ones do... I mean they you know, they see all the windfalls flying around the place so I think they are certainly as a generation more interested than... (SEWPR05)

Not fully no... I think it puts a lot of people off because it seems so technical and when they find out what they're going o be earning theres other things out there like IT where you can just fiddle with computers and get a lot of money for doing that, and I think that's the biggest problem... (SEWRP01)

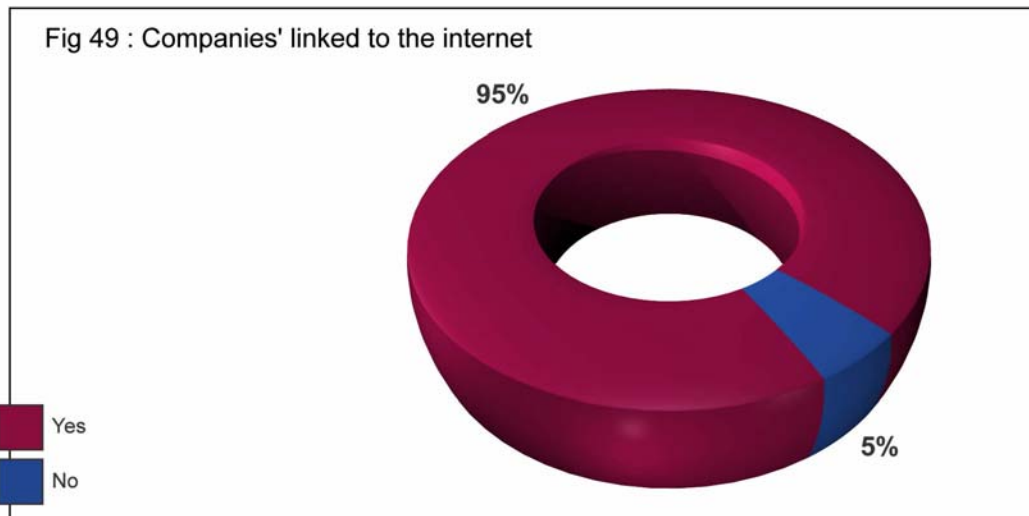
Might not be so bad when we start doing it properly... microgeneration because I think its got that technical whiz about it and the youngsters seem to like that... (SEWRP02)

It's a difficult one really. There are two aspects really. One is there's been an awful lot of publicity over the last few years about the hundred and thousands of pounds that plumbers are earning and that has caused quite a large influx of people into the industry I think. Unfortunately a lot of them are disillusioned. And unfortunately a lot of them have been led up the garden path because they've gone on to training courses which are of no value to them because they can't get the placements out in industry in order to complete their course and become properly qualified. And as a result of that we've got a lot of people in the industries that are half trained. (SWWRP06)

No it's not easy to attract them, but you get the wrong ones because they're looking at the money again. You know, they do a year or two and they think... some of the people you know and they think they're plumbers and they try charging X amount and they just haven't... they're clueless, you know? (SWWRP07)

The final series of questions put to the installers sought to elicit their ability to undertake distance learning for microgeneration courses. As pointed out by the manufacturer though within this research, any distance learning training would be only theoretical, and there might be a practical element of training on complex equipment ⁴ still required. As can be seen from Figure 49 the majority of companies interviewed were connected to the internet.

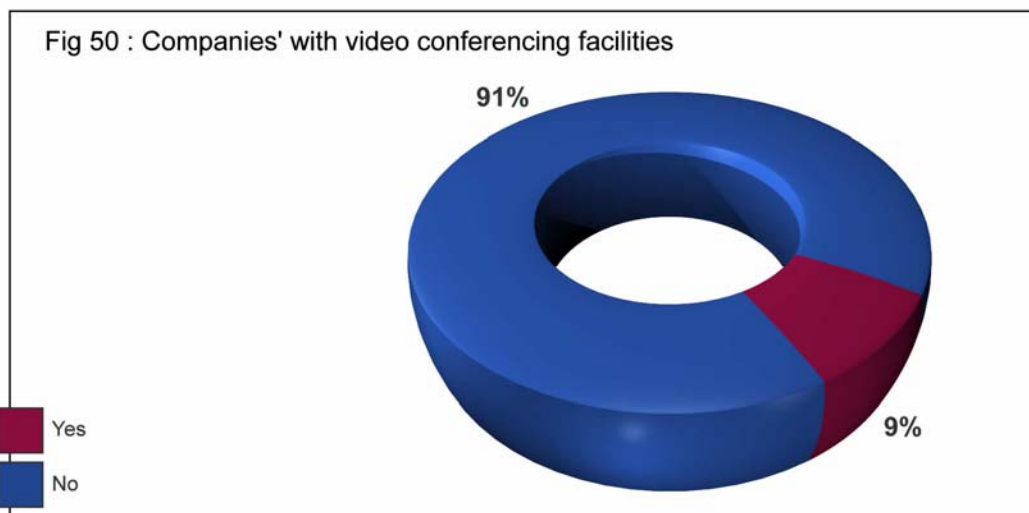
⁴ Although whether training on more simplistic equipment could be carried out through distance learning modes on the internet could be the subject of further research, although the use of such methodologies for teaching cookery and other practical tasks for example is well established.



The quotes below are indicative of the views of the companies interviewed identified above:

Yes but don't ask me any information, we've got a complete cock up here at the moment... we can't get anything to work properly... (SWWRP08)

Therefore there is clearly scope for the delivery of distance learning materials through the internet. As with providers however the number of companies that have video conferencing facilities reduces in relation to simple internet access. This can be seen in Figure 50, and would suggest that the ability for providers currently to develop virtual learning classrooms for building services engineering electricity, gas, waste management and water sector companies in microgeneration training is significantly reduced. Video conferencing would also enable companies who are often based in rural locations to communicate with other parts of Wales and the UK more easily.

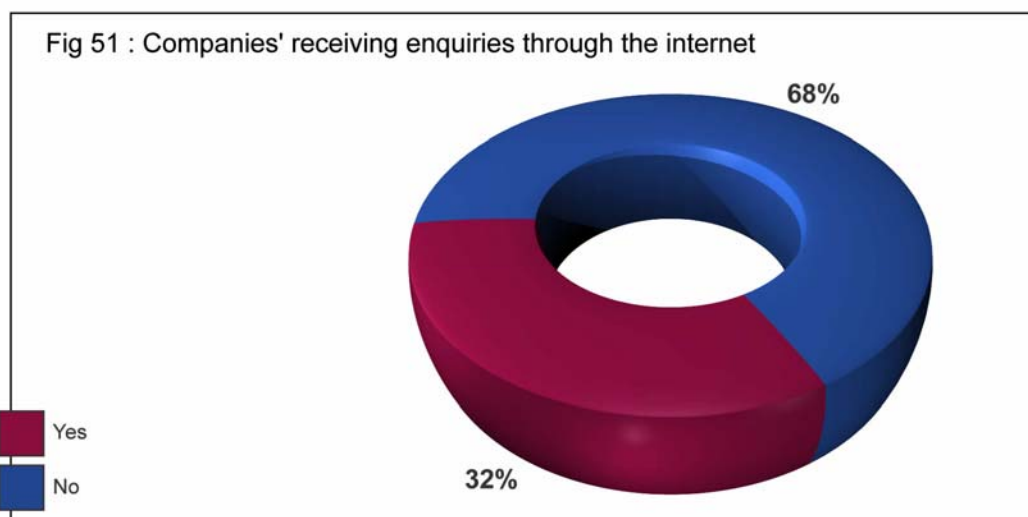


The quotes below are indicative of the views of the companies interviewed identified above:

No but I... funny enough I have asked our customers do they have this and they didn't know what I was talking about. Because I used to... my previous industry I used to work in the car industry and naturally I used it all the time so I was quite familiar with it. But I was quite surprised people don't do it more often. (SEWRP04)

We are looking at the moment but we haven't set it up. We have had some demonstrations and we're quite happy with it. (SEWRP02)

A related point discovered from the research was the lack of utilisation generally that the sector was obtaining from its internet use in relation to business generation for both microgeneration and general work enquiries. This may of course be due to the nature of the work, but even so suggests that there is the potential for more work to be done to increase sales revenue for companies in the sector through this medium, see Figure 51.



The quotes below are indicative of the views of the companies interviewed identified above:

Theres only about one or two a week... (NWWRP02)

In our case none... (SEWPR05)

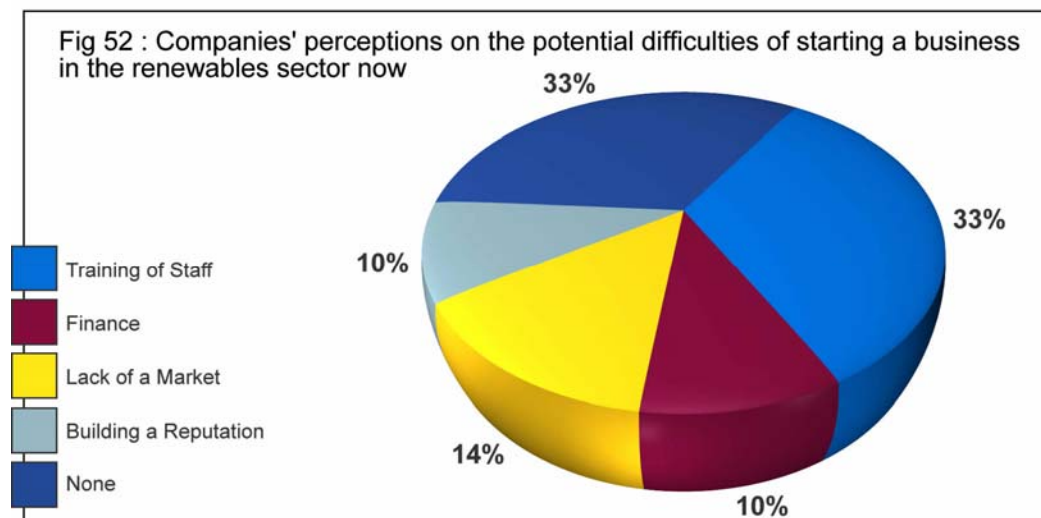
No because all our customers are all council based and hospital based... (SEWRP04)

Yes I'm in the middle of sorting out a web page out properly. I have got a web page but I'm in the middle of taking photographs to set it up properly so people can see what we actually do. On average, probably one interest every three or four days. (SWWRP05)

Im on the Wales website and also the WDA contract shop I believe so I see them... if I want to o for them I can so it's quite good actually. (SWWRP07)

Over the last six months, nil, because we've been trying to sort a major problem out with BT so yeah... (SWWRP08)

The final question sought to elicit from the installers what factors they would encounter if they were to try to start up in the microgeneration business now. Figure 52 shows the result of this question and suggests that the training of staff is the main issue facing companies seeking to enter the microgeneration market:



The quotes below are indicative of the views of the companies interviewed identified above:

If these German companies or whatever you know European companies come in they're going to just knock us sideways because we just do not know what we're doing. (SWWRP08)

Starting definitely on the craft side of things... yeah and probably technical as well, you know... if you needed somebody in the office that would be a problem, picking up somebody with the knowledge there. (SEWRP01)

Yeah source... because it's quite a tight knit industry at the moment. I was saying before when you go to price a job, with maybe heat pumps or solar water heating, the consultants like to use on... a certain company for doing it... and the problem it then they like to try and encroach on other areas. And when you price a job you've thinking you know, am I going to miss something on it or when I've given the order or when it gets to sister if theres a problem they're just going to say, that's nothing to do with us. Because when we do refurbishments on standard jobs, you know, we like to control everything and just to make sure we're doing it right and the quality is there. So that's one of the biggest worries with taking on jobs. (SEWRP04)

I would say so because it's very limited the amount of work that's coming through so you probably wouldn't find anybody in this area that's probably installed it recently. (NWWRP07)

Lack of experience, I would have to go on a training course myself, because I expect to know how to do the job before I ask anybody else to do it, so I would then also have to send the men on the training course, so that they could learn to install it. We know the principle of it and theories, but that's all well and good. (NWWRP06)

I don't know in this area... it's very hard to get good workers. You can get workers but it's very, very hard to get really good workers. (NWWRP02)

It is interesting to note that only 14% of companies felt that the lack of a market would be a significant issue for them, suggesting that while the market is not yet mature in Wales for microgeneration products, it is beginning to grow in perception.

7.5 Conclusions

The majority of the companies surveyed (68%) needed training in microgeneration.

73% of companies surveyed identified a skills gap in microgeneration installation, and 68% of companies said they found it difficult to recruit staff with the relevant skills in microgeneration.

Companies within the building services engineering electricity, gas, waste management and water sector see microgeneration courses as being suitable for Level 3 qualified craft operatives and upskilling of the existing workforce (a view shared by providers). Therefore we are unlikely to see the development of a separate skill set or occupation for microgeneration installers.

Companies interviewed from the building services engineering electricity, gas, waste management and water sector are not generally adverse to recruiting from ex-military personnel, unemployed and ex-offenders.

Some (50%) of the companies interviewed have minor issues or issues with the basic skills abilities of their staff.

The predominant supplier of training in the principality remains the Further Education College (43%) although these providers do not currently offer microgeneration training in Wales. Only 57% of companies interviewed are satisfied with the quality of the provision they receive (which includes Private Training Providers as well as Further Education Colleges) however 100% of the companies were satisfied with the microgeneration training they had received from manufacturers, the majority of which (if not the totality) would have taken place in England.

No company interviewed had any links with Universities, despite the complex nature of some microgeneration training. 36% of companies interviewed were involved in some form of school links scheme and 77% of companies interviewed

felt that microgeneration and the environmental link was a good tool for marketing the sector for young people.

95% of the companies surveyed were linked to the internet and could therefore be receptive to the delivery of learning materials on microgeneration through this medium. Only 9% of the companies interviewed had video conferencing facilities, limiting the potential development of virtual classroom delivery modes currently.

There is still scope to develop and improve the business effectiveness of internet use, as only 32% of the companies interviewed claimed to obtain business through their website or other internet resources.

The biggest single issue that would face a company wishing to move into the microgeneration market is the lack of trained staff (33%).

8 Case Study of a South Wales Microgeneration Technology Manufacturer

8.1 Introduction

As already stated within the methodology this research was only able to interview one microgeneration manufacturer within Wales in connection within the research. Although the data therefore was collected in the same way as the data from the installer interviews, it is presented in the form of a case study to give emphasis to the different nature of this particular interviewee. Because anonymity was guaranteed by the interviewer this anonymity is maintained throughout this section of the report.

8.2 Case Study of a South Wales Renewable Technology Manufacturer

This microgeneration company was established over twenty-five years ago in 1981, and is engaged in the manufacture of Thermal and PV solar panels for hot water and PV electrical (photovoltaic). Although based in Wales its business is UK wide, including Northern Ireland.

The main language of the company is English and it is a member of the Solar Trade Association.

It is a micro-company in that currently there is eleven staff whose ages range from mid-twenties to sixties and are of English and Welsh ethnic origin, with no disabled workers currently. The company uses sub-contractors for installation purposes.

The company envisages expansion in the next five years and currently has 50% expansion room within their current facilities, with provisional plans already prepared for further expansion should demand determine it, with plans for further recruitment of staff.

Expansion is however likely to occur outside Wales in other parts of the UK, including Scotland.

The choice of Wales as a base for the business was due to historical reasons related to previous business dealings:

“Yeah international... they were developing stainless steels to improve their market range, part of that was they found on particular colour was suitable for solar, they weren't manufacturers and as an engineering company products, if you like, we joined up with them and we manufactured the absorbers for them and then they sold on their product manufacturing if you like, because they are not geared for that and we carried on manufacturing the solar panels, alongside shops as well, like, you know.”

The training that the company developed to facilitate the installation of its funding is described below:

“Yeah again... originally was developed by... to make plumbers aware of the needs of solar and get people more comfortable with it. We’ve run that scheme for two years all over the country in conjunction with various councils and they got their local plumber on board with it. After that the... asset was basically taken over by... and the course with... at the moment is somewhere in the region 90/95% of the course which the management accepts. So as the years went by, different projects came up, one of them being solar city and we’re in conjunction with another company promoting solar in the Welsh area, objective one/two day course just to get them familiar with it, again based on the... product if you like.”

The company has received grant aid from a European/ British grant (not specified) although this did not come through auspices of the Welsh Assembly Government. The company anticipates that if it increases exposure to delivering manufacturing training of the type described above then it will require further funding.

The company shares the view of both providers and installers generally that the skill level required to install their products would be Level 3.

“Well again ... course covers the solar side of it... I wouldn’t have thought theres anything further. Everything outside that... the solar’s a bit of a niche market, if you like, there are only a certain amount of design needs on the domestic front, obviously if you go further into the commercial side and you’re talking about a different design interior.”

The company has not received any requests for training through the medium of the Welsh language.

The company does not perceive that there is much in the way of developing an official training qualification.

“Part of the training scheme is a physical side as well as sort of verbal if you like and we got training regulations, we’ve got to keep look at it, they look at the product, see what goes on the roof...”

The company has provided training as a manufacturer for both consultants and craft operatives.

The company is now receiving enquiries for training about three or four times per week through the medium of the internet and this appears to have grown significantly in recent years. Enquiries for training are coming from an international base through the internet. From Wales the company receives ten to fourteen enquiries for courses every month. The company has now compressed their training course into one day.

The company feels that if their training had a qualification then it would be a good thing and for that reason the company is prepared to work with providers (and

presumably awarding bodies) to develop qualifications from their training packages.

Currently the company does not have video conferencing facilities, which it concedes if it had, it could use for training purposes however part of the problem with this approach is the practical element of their training:

“What we are finding is the bigger companies are sort of marketing themselves quite heavily. We had an incidence with one internationally known company, these people went on a course with them, did their course, they came across a particular survey etc. they wanted advice and they just couldn’t get it, they just weren’t coming back to them similar with you know... well you need people like we have here, although we’re small, if somebody phones and he’s stuck on site, oh, what happens here, then we can more or less tell them while doing it...”

The company is facing competition from abroad for the market for solar and photovoltaic panels, which the company is seeking to respond to the threat of foreign competition using customer service:

“What you tend to find with bigger competition, they’re sort of sales people, not trained on site twp people and they haven’t got a clue what you’re talking about and its similar with, you know, the big warehouse people now selling solar and if you went in there, apart from reading the paperwork which the salespeople have done, they haven’t actually got a clue.”

The company has had some issues with the basic skills of some of the people coming on their training programmes. The company appears to provide support to companies installing their products, which they perceive will create brand loyalty:

“Well, we’ve had situations where we get enthusiastic people and starting off on the plumbing side and again, not really what the requirements are. Fortunately... they’ve passed on to this particular couple of people and they had sense enough when they came across a sort of semi commercial project they phoned us for help and we’ll guide them and advise them and even do the course for them of a system designed for them...”

As already stated, this case study is of one company, but shows that through innovative solutions it has been able to create and sustain a niche in the microgeneration market where there are larger companies established in the UK.

9 Current and Future Developments

SummitSkills and Energy & Utility Skills, in conjunction with the Skills for Business Network, continue to support sustainable technology/construction and is linked to the Department for Trade and Industry People Agenda.

In addition to the input in the report provided, SummitSkills links and supports a range of businesses, within scope of the skill for business network, where the business also carries out work related to the building services engineering footprint, for example the National Construction Academy North West hub (scope of which extends into and supports parts of North Wales).

Northern Ireland has established a research programme borne out of the Sector Research Microgeneration Group. This is chaired by Energy & Utility skills and closely supported by the key stake holders ConstructionSkills, SummitSkills, Action Renewables and the College Further Education Installer Academies. Their purpose has been to develop a two tier qualification system for microgeneration.

SummitSkills and EU Skills are actively working with a range of SSC's to ensure sustainability of the future skills requirements for the emerging technologies including a significant range of renewable technologies. (See appendix A.)

SummitSkills and EU Skills are jointly working with the Department of Communities and Local Government Solar Heating Steering Group in development of Minimum Technical Competencies to establishing a competent person's scheme. This scheme is aimed at complementing current mainstream competent person's scheme already in operation.

SummitSkills and EU Skills are members of the Partnership for Homes, facilitated by Energy Savings Trust (Defra funded) Heating Strategy Group, and has input regularly to the updates provided for the Energy Leads from the Nations and Regions.

SummitSkills has met with the Health and Safety Executive to ensure that development of future qualifications integrate H&S skills which will include those required and relevant within the microgeneration processes.

In Scotland SummitSkills is working closely with HSE in updating electrical training requirements for plumbers (the majority of which from this survey will be involved in installation of microgeneration systems) and this will include updating Train the Trainer provision for those delivering training. It is proposed that once complete this process will become UK wide.

Energy & Utility Skills and SummitSkills is also working with BRE (DTI funded) Microgeneration Steering Group in development of installation standards.

Energy & Utility Skills with employers, stakeholders and SSC partners have revisited the Occupational and Functional Map to address and update the 2005

version, based on the recommendations of 2005 report; this will be available from April 2007.

Energy & Utility Skills, and its SSC partners, continued to raise the agenda for Skills within Renewable Energy, including Microgeneration. This has been an on going process and is now seeking further dialogue/support of key Stakeholders to address a Cross Sector Skills approach across Wales and the rest of the UK.

All the previous activity is linked into the developing Sector Skills Agreement process. The activity of the Skills for Business Network demonstrates the “cross sectoral “nature of the technology but also contributes significantly to developments required to support delivery of a competent workforce for Wales and the rest of the UK.

9.1 SummitSkills Manufacturers and Sustainability Group

The role of manufacturers will be significant both in the development and evolution of “technologies” and the creation of a sustainable workforce in Wales and throughout the United Kingdom. The SummitSkills Manufacturers Sustainability Group (MIME) are key to the future direction of the sector and will provide the platform and support for ensuring we, the sector only support recognised training and qualifications.

Key to the success will be the 15 point plan outlined below which mirrors the processes implemented for the Energy Efficiency programme. The evaluation presented to the Energy Savings Trust facilitated by the Heating Strategy Group indicated that this was a successful process (50,000 up-skilled to date using the process) and should be used as best practice for the future.

Recognition of appropriate competence through training and assessment Skills for Business Network, as standard setting bodies for the building services engineering sector National Occupational Standards, would expect any identification of competence to match the points below.

1. Mapped into the building services engineering careers framework and qualifications.
2. Training linked to work place development of competence.
3. Assessment of appropriate knowledge and competence within a workplace process.
4. Any certificate would identify competence level against the appropriate Scottish/National Vocational Qualifications levels (3, 4 etc.)
5. Any certification would be issued by an awarding or certification body, appropriately accredited for that certificate, by a sector recognised third party organisation such as QCA, SQA, UCAS with appropriate and recognised quality assurance systems in place.

6. Any awarding or certification body should indicate appropriate entry requirements, S/NVQ Level 3 or alternatives if applicable.
7. Any awarding or certification body should provide mapping of existing eligible prior learning certification applicable.
8. Any awarding or certification body should indicate EU recognised qualifications that could be used as an alternative entry requirement.
9. Guidance on training and certification should identify the full range of skills required to carry out the installation, and from the following functions indicate those competences that are provided within the certification process.
 - Design
 - Installation
 - Commissioning
 - Servicing
 - Maintenance
10. Each area of competence should fully incorporate appropriate health and safety competencies.
11. Each certificate would clearly identify the functions within the competence indicated by the parameters of the certificate.
12. Training for the above elements will use common training material, appropriate to the country where it is delivered and assessed.
13. Trainers will have undertaken an appropriate “Train the Trainer” programme including guidance on the use of the common training material and administration processes to be associated with the certification process. The trainer will also have gained competence in the certificate in which they are training.
14. Training will identify the need for appropriate continuous personal development, to meet changes in building regulations or technology.
15. Where “Competent Persons Schemes” are in place to meet building regulation requirements, the identification of competence would be linked to the approved certification process.

It is recommended that the Welsh Assembly Government endorses these requirements in the development of training provision for the microgeneration requirements in Wales.

10 Conclusions

The report indicates that the micro regeneration sector in Wales has a significant number of issues and challenges that it needs to address if it is to meet the policy objectives of the Welsh Assembly Government.

- This report provides an analysis of the current microgeneration market in Wales and the potential 'readiness' of the market to respond to existing and increasing demand. Currently there is a potential for a significant mismatch between demand and supply, with the sector relying overly on manufacturer training to meet need.
- The overall finding of this research therefore is that there needs to be more work undertaken by the Welsh Assembly Government partners and stakeholders. Both SSC's seek to bring supply and demand together as the Welsh Assembly Government is unlikely to achieve its policy objectives without a more structured and systematic approach to the microgeneration issues identified within this paper.

Welsh energy policy has five important strands:

- Securing 4TWhr per annum of renewable electricity production by 2010 and 7TWhr by 2020.
- Much greater energy efficiency in all sectors, as is described in the Energy Savings Wales energy efficiency action plan published in October 2004.
- More electricity generation from cleaner, higher efficiency fossil-fuel plants.
- Significant energy infrastructure improvements.
- On a holistic basis, achieving measurable carbon dioxide emission reduction targets for 2010. (Energy Wales, 2005, p4).
- In relation to large scale renewable energy generation, the route map for Wales identified offshore wind power, biomass from appropriate waste sources, and wave and tidal energy systems, while at the same time instigating coal/carbon capture and storage as being the main drivers of the policy (Energy Wales, 2005, p9-10).
- The Welsh Assembly Government has also produced a microgeneration action plan. The purpose of the action plan is to reduce the amount of carbon emissions associated with heat and electrical power needs of properties, avoid the loss of power along the electricity grid and ease the pressure on the distribution network. This policy has the potential to generate significant work for the building services engineering electricity, gas, waste management and water sector.
- That 41% of the providers interviewed were not aware that the microgeneration sector was a Welsh Assembly Government priority area, or

what types of companies were needing training suggests that there is much work to be done in raising awareness of the business opportunities that are available for most training in Wales is manufacturer based and is taking place in England.

- Further Education College providers in Wales are not running courses in microgeneration, although many see the development of these courses as being something they propose to do in the near future.
- Providers envisage that the funding for these courses will be full cost recovery, suggesting that they will be delivered to employed status adults primarily.
- Further support for this view is provided by the fact that the providers see Level 3 as being the skill level required for entry to the course, which is fully qualified craft status.
- The providers see that courses will be aimed primarily at plumbers, heating and ventilation engineers and the electrotechnical industry.
- There is an identifiable need to train provider staff in these technologies to be totally effective within this area if demand was to be stimulated suddenly.
- Providers are generally not adverse to working with manufacturers, although a significant number of providers do not do so.
- The data from this sub-section suggests that providers are unaware about the trade associations within the sector, who could help them to set up and run appropriate courses.
- There does not appear to be a significant amount of interest in courses currently, although almost all of the providers expect that the market will develop significantly within the next five years. This suggests that currently within the market there are a number of mixed messages coming through to providers, which may be impacting on their response to the issues.
- The data suggests that the training provider's courses currently available in microgeneration are currently aimed at adult wishing to up-skill.
- Providers in Wales in the building services engineering electricity, gas, waste management and water sector area are experiencing some issues with basic skill needs among learners; however the vast majority of these providers also have remedial basic skills support for learners in place.
- If microgeneration courses are developed by Welsh providers, the majority of these will be delivered through the medium of English.

- A small majority of providers who propose to develop or already deliver microgeneration courses will be partnering with Universities to develop and promote these courses.
- The majority of providers within the departments offering building services engineering electricity, gas, waste management and water sector courses have school links to promote the sector to schools.
- Solar panels and ground source heat pumps are currently the most installed microgeneration technologies by the sector, it is worrying to note how few photovoltaic panels were being fitted by the sector in Wales.
- The market in microgeneration seems to be growing as many companies interviewed in this research have moved into the microgeneration market in the last two years.
- Currently the firms interviewed are carrying out their microgeneration work within the locality (sub-region of Wales where located) with little expansion into the rest of the UK or Wales.
- The companies interviewed have not experienced any foreign competition, although one provider expresses the view that were such competition to come this would prove problematic for the sector in Wales as foreign competition is more efficient and higher skilled (see comments).
- There is no real demand for training in the Welsh language as the majority of companies operate within the medium of English.
- Penetration of Trade Associations dedicated to microgeneration technology is weak among the installers interviewed for this research. This cuts off the sector in Wales from the latest thinking and technological breakthroughs and requires urgent action from the trade associations themselves and partners and stakeholders to keep the sector up to date.
- Participation by women, ethnic minorities and disabled people replicates the building services engineering sector generally, as the majority of the companies have yet to engage fully with the sector.
- A significant minority of companies within the survey use sub-contractors, although it is believed that the microgeneration work remains in-house.
- A significant 91% of companies surveyed envisage that the market for microgeneration will grow significantly in the next five years, and the companies interviewed do expect to grow their businesses in response to this perceived trend.
- A significant percentage of companies 86% have not received any form of grant aid from the Welsh Assembly Government for their businesses with the majority of companies interviewed being resident in Wales because their owners were indigenous to the area.

- The majority of the companies surveyed 68% needed training in microgeneration.
- 73% of companies surveyed identified a skills gap in microgeneration installation skills, and 68% of companies said they found it difficult to recruit staff with the relevant skills in microgeneration.
- Companies within the building services engineering sector see microgeneration courses as being suitable for Level 3 qualified craft operatives and upskilling of the existing workforce (a view shared by providers) and therefore are unlikely to see the development of a separate skill set or occupation for microgeneration installers for example.
- Companies interviewed from the building services engineering sector are not generally adverse to recruiting from ex-military personnel, unemployed and ex-offenders.
- Some 50% of the companies interviewed have minor issues or issues with the basic skills abilities of their staff.
- The predominant supplier of training in the Principality remains the Further Education College 43% although these providers do not currently offer microgeneration training in Wales. Only 57% of companies interviewed are satisfied with the quality of the provision they receive (which includes Private Training Providers as well as Further Education Colleges) however 100% of the companies were satisfied with the microgeneration training they had received from manufacturers, the majority of which (if not the totality) would have taken place in England.
- No installations company interviewed had any links with Universities, despite the complex nature of some microgeneration training. 36% of companies interviewed were involved in some form of school links scheme and 77% of companies interviewed felt that microgeneration and the environmental link was a good tool for marketing the sector for young people.
- 95% of the companies surveyed were linked to the internet and therefore could be receptive to the delivery of learning materials on microgeneration through this medium. Only 9% of the companies interviewed however had video conferencing facilities, which limits the potential development of virtual classroom delivery modes currently.
- There is still scope to develop and improve the business effectiveness of internet use, as only 32% of the companies interviewed claimed to obtain business through their website or other internet resources.
- The biggest single issue that would face a company wishing to move into the microgeneration market is the lack of trained staff (33%).

11 Recommendations

1. SummitSkills will lead the updating of the National Occupational Standards for appropriate microgeneration and environmental technologies relevant to the building services engineering, electricity, gas, waste management and water sector.
2. SummitSkills, Energy & Utility Skills and relevant partners will lead the introduction of an appropriate training and assessment model for Wales, utilising best practices gained from the microgeneration training and assessment model within Northern Ireland. We will encourage certification bodies to develop assessment models for appropriate microgeneration and environmental technologies, so that we have a skilled and competent workforce, including designers and installers for the future implementation of the key Welsh policies to promote successful economic development.
3. SummitSkills, Energy & Utility Skills and relevant partners will integrate the appropriate microgeneration and environmental technologies relevant to the building services engineering electricity, gas, waste management and water sector, into future training of Advanced Apprentices and those carrying out training and assessment to achieve NVQ's. We will promote the integration on these technologies into the 14-19 curriculum.
4. SummitSkills and Energy & Utility Skills will encourage the Welsh Assembly Government to ensure the integration of all microgeneration and environmental technologies relevant to the building services engineering electricity, gas, waste management and water sector, are integrated into the Communities and Local Government Competent Persons Schemes for the Building Regulations. We will work with the Welsh Assembly Government to ensure that the public and public awareness bodies are provided with appropriate guidance on the competence requirements to be expected of competent installers.
5. SummitSkills working with Energy & Utility skills will lead on with work in partnership with the Basic Skills Agency in Wales, Sector Led European Project, to increase the capacity of the sector to address the shortfall in basic skills amongst sector employees. They will also work in partnership, to attend the basic skills awareness training, as well as, pilot sector specific basic skills courses, which include a City & Guilds E3/ Level 1 qualification.
6. SummitSkills and will work in partnership with the Basic Agency in Wales, to sign the Employer Pledge itself and to encourage all SummitSkills employers to do so. This will highlight the sectors commitment to improve the basic skills and to improve the basic skills and as a result develop the potential of all the employees within the Sector. This will also help to:-

- Increase quality
- Increase accuracy
- Improve customer relations
- Deliver better team performance
- Encourage initiative and innovation
- Meet legal as well as health and safety requirements.

Summit Skills and the Basic Skills Agency will work together to provide appropriate learning programmes and resources, to enable basic skills to be integrated into training programmes and qualifications for the sector.

7. SummitSkills and Energy & Utility Skills are proactive members of the Built Environment Group Wales; they will ensure that this document is incorporated into the future work of the group.
8. To implement the Ten Point Plan of Action.

12 Ten Point Plan of Action

1. Market stimulation from the Welsh Assembly Government is needed to kick-start the microgeneration sector with a focussed strategic approach running alongside the occupational standards potentially through the Low Carbon Buildings Programme.
2. Current training provision availability is low and is therefore seen as a real barrier to obtaining training for the both sector. Implement of the Welsh Energy Policy will be difficult without the support of a competent workforce; a best practice model is required such as that adopted within the Northern Ireland model.
3. Wales is not seen as a place for inward investment by the employers interviewed in this research. To provide assistance in perception DEIN should consider a scheme that provides grant aid at the microgeneration sector to stimulate diversification, similar to biomedical technologies.
4. As there is no provision for training consultants, higher education establishments and those that offer Level 4 qualifications need to be targeted to address this problem. The gap between the operatives and consultants needs to be closed.
5. Within the microgeneration installer's population solar thermal and heat pumps are the most common installations; hence a gap exists in the skilled workforce across Wales for other microgeneration technologies placing Wales in a vulnerable position when exploring factors around globalisation. In particular from Europe where the market has been well established for decades.
6. As there are no definable courses available in Wales that could attract Welsh Assembly Government funding. Therefore consideration should be taken in future, in the area of the Common Qualification Framework.
7. Cross border training needs to be addressed by the Welsh Assembly Government, many employers recruit within Wales that could operate across the English border and vice versa. Access to funding in such circumstances can be challenging to employers whom reside in Wales but work within England.

8. A longer term objective is to ensure that the Modern Apprenticeship, Baccalaureate and the 14-19 curriculum has these technologies integrated into their curriculum offer including the requisite basic skills.
9. The main priority for the sector is to up-skill its current workforce; there are insufficient public or private contracts for microgeneration installations, dominantly due to cost. In the first instance there will not be the economic boost to jobs as some believe. If the correct economic interventions are put in place the market demand will follow.
10. Both Sector Skills Councils will work with the Basic Skills Agency Wales, Built Environment Strategic Group, the Welsh Assembly and other relevant partners to ensure that the needs of the employers in this new and evolving sector are heard and responded to. Wales has a unique opportunity now, to chart its own destiny in terms of its skills and training agenda.

13 References

ECOTEC 2005, Toward an Occupational and Functional Map of Renewable Energy, ECOTEC, Cardiff, November 2005.

EFRA 2006, Climate Change The UK Programme 2006, Presented to Parliament by the Secretary of State for the Environment, Food and Rural Affairs, March 2006.

DTI (2006) Our Energy Challenge: Power from the People, London, Department of Trade and Industry.

Environment Agency 2005, Greywater, Conserving Water in Buildings EA 2005.

14 Appendix

14.1 Appendix A- Development of Competence Standards

for

Emerging Environmental Technologies in Building Services Engineering

The Sector Skills Agreement development process has identified the following areas of responsibility that fall within the sector footprint.

- **Solar Water and Heating**
- **Photovoltaics for Microgeneration**
- **Combined Heat and Power**
- **Micro Wind Energy**
- **Ground Source Heat Pumps**
- **Air Source Heat Pumps**
- **Biomass**
- **BioFuels (Liquid)**
- **Micro Hydro Generation Systems**
- **Fuel Cell Technology**
- **Rainwater Harvesting**
- **Grey Water**

As part of that process the consultation to date has already identified the need for appropriate company competence. With Skills for Business Network (SfBN) responsibility for the development of appropriate National Occupational Standards, further information is required from key partners across the sector.

Existing consultation feedback below has already set the scene and identified a range of information on which your views and comments are sought.

Skills and Competence

Within the context of building services engineering, consultation has identified the requirements of the emerging environmental technologies listed above will require skills and competence related to

- Design
- Installation
- Commissioning
- Servicing
- Maintenance

Competence of the workforce

Consultation with Government representation indicates that the contractor undertaking one or more of the above systems will be required to have an appropriately competent workforce to carry out the complete process including

- Design
- Installation
- Commissioning
- Servicing
- Maintenance

The workforce may consist of directly employed persons or sub contractors. The above processes would include any health and safety processes to ensure the safe installation and operation of the system and the contractor would expect to carry out and document, as appropriate, any health and safety risk assessments.

It would be the responsibility of the contractor to ensure the competence of all employees carrying out any work and to verify compliance of the completed installation in accordance with any regulation or standard, applicable to the system.

Existing Skills and Competence

Consultation has indicated that those in the existing workforce who are operating at NVQ Level 3 or above will already have significant skills towards full competence in the identified technologies. Those who have experience of installation of the technologies indicated may already have gained competence.

Consultation has identified that installers who are not yet appropriately competent, may require upskilling for the appropriate technology, in one or more of the following areas:

1. The context and requirements to meet current carbon saving related to UK and EU targets.
2. To provide an overview of the range of new alternative environmental technologies related to the system to be considered.
3. To provide appropriate design skills to integrate the technology into;
 - An existing system
 - A new system
4. Carry out appropriate regulatory requirements including application of appropriate building control processes.
5. Provide the skills and competence to carry out the installation to appropriate specified standards.
6. Carry out processes related to product specific requirements, where manufacturers products have different installation requirements, or use differing technologies.

7. Use of skills and competence to carry out commissioning to appropriate standards and provide initial guidance and support to client on operational processes, where appropriate.
8. Use of customer facing skills to assist the client, to use the system efficiently, on a daily basis.
9. Use of skills and competence to carry out routine servicing and non planned maintenance and de-commissioning of the system and products in accordance with good practice and manufacturers requirements.

Recognition of appropriate competence through training and assessment

Skills for Business Network, as standard setting bodies for the building services engineering sector national occupational standards, would expect any identification of competence to match the points below.

1. Mapped into the building services engineering careers framework and qualifications.
2. Training linked to work place development of competence.
3. Assessment of appropriate knowledge and competence within a workplace process.
4. Any Certificate would identify competence level against the appropriate National Vocational Qualifications levels (3, 4 etc.)
5. Any Certification would be issued by an awarding or certification body, appropriately accredited for that certificate, by a sector recognised third party organisation such as QCA, SQA, and UCAS with appropriate and recognised quality assurances systems in place.
6. Any awarding or certification body should indicate appropriate entry requirements, S/NVQ Level 3 or alternatives if applicable.
7. Any awarding or certification body should provide mapping of existing eligible prior learning certification applicable.
8. Any awarding or certification body should indicate EU recognised qualifications that could be used as an alternative entry requirement.
9. Guidance on training and certification should identify the full range of skills required to carry out the installation, and from the following functions indicate those competences that are provided within the certification process.
 - a. Design
 - b. Installation
 - c. Commissioning
 - d. Servicing
 - e. Maintenance
10. Each area of competence should fully incorporate appropriate health and safety competencies.
11. Each certificate would clearly identify the functions within the competence indicated by the parameters of the certificate.
12. Training for the above elements will use common training material, appropriate to the country where it is delivered and assessed.
13. Trainers will have undertaken an appropriate “Train the Trainer” programme including guidance on the use of the common training material and administration processes to associate with the certification

- process. The trainer will also have gained competence in the certificate in which they are training.
14. Training will identify the need for appropriate continuous personal development, to meet changes in building regulations or technology.
 15. Where “Competent Persons Schemes” are in place to meet building regulation requirements, the identification of competence would be linked to the approved certification process.

14.2 Appendix B Steering Group Membership

Kathryn Hopkins-Morgan – SummitSkills Operations Manager Wales
Role: Project manager, secretary to the group and provide the final project evaluation report to ELWa upon completion of the project. Position as evaluator to be agreed by the steering group.
Kathryn.morgan@summitskills.org.uk

Mike Carney: - Energy & Utility Skills National Client Director (Wales)
Role: To advise and support SummitSkills in terms of project management, final project evaluation and the projects aims and objectives.
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Jo Sutcliffe : Energy & Utility Skills Microgeneration Manager
Role: To advise and support SummitSkills in terms of project management, final project evaluation and the projects aims and objectives.
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Bob Blake: SummitSkills Operations Manager Wales
Role: To advise and support SummitSkills in terms of project management, final project evaluation and the projects aims and objectives.
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John Burgess: Consultant
Role: To support with the project management and conduct interviews.
Johnburgess@btinternet.com

Dr Mike Hammond – Development Manager SummitSkills
Role: To carry out the project analysis on behalf of SummitSkills and Energy & Utility Skills for ELWa.
Mike.hammond@summitskills.org.uk

Paul Jenkins: FSW Employer Representative. Also representing plumbing sector company Connaught and Building Services Training
Role: To advise SummitSkills and the research company on delivering the aims & objectives of the project
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Mr Alan Sims: Technical Manager Caradon Ideal Chair of SummitSkills
Microgeneration Energy Employers Group, Chair HHIC Training Group, Chair

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Mr Roy Coleman: General manager Gas Care Wales Ltd

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Role: To advise SummitSkills and the research company on delivering the aims and objectives of the project

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The steering group will aim to meet bi-monthly is ending j with the presentation of the final report to DELLS (department of education lifelong learning and skills) in March 2007.

