



Subject: Realising a Welsh ‘Renewables Revolution’ in future energy policy

1. Background to briefing

This briefing has been developed by the NFLA Secretary Sean Morris in conjunction with the NFLA Policy Advisor Pete Roche. It is the final edition of a series of four reports looking at future energy policy in Wales, England, Ireland and Scotland. It promotes the NFLA’s approved policy that a combination of a wide renewable energy mix, microgeneration and energy efficiency can provide adequate future energy needs without recourse to new nuclear power generation.

The Scottish energy system was considered in NFLA Policy Briefing 76 – ‘**Scotland’s electricity needs – can they be met from renewables without recourse to nuclear?**’ which was updated in NFLA Policy Briefing 89. The English energy system was considered in NFLA Policy Briefing 86 – ‘**Realising an English ‘Renewables Revolution’ in future energy policy**’ and the Irish energy system was considered in NFLA Policy Briefing 87 – ‘**How Ireland can benefit from a ‘Renewables Revolution’ in its future energy policy**’. This policy briefing now considers energy security and needs in Wales.

“To the Germans, “energy revolution” is spelled j-o-b-s.”
Ulrich Beck, German Sociologist and member of the special expert commission appointed by Chancellor Merkel in the wake of the Fukushima disaster, 30th July 2011. (1)

2. Welsh Government Energy Policy

Unlike with the legislative powers provided to the devolved Scottish Government, energy policy for Wales predominantly remains a reserved matter for the UK Government. The Welsh Government though has the right to comment on all energy policy consultations and has some latitude to promote a low carbon approach to energy provision in the principality. (2)

The Welsh Government works currently to an official energy policy statement published in 2010 (3). This statement – ‘A Low Carbon Energy Revolution: Wales Energy Policy Statement’ seeks to move Wales from policy development to promoting support for practical examples of low carbon production.

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The Welsh Government policy has three main strands:

- to maximise energy savings and energy efficiency to make producing the majority of the energy that Wales needs from low carbon sources more feasible and less costly;
- Welsh future energy needs must be predominantly met from low carbon sources which should be produced via secure, indigenous renewables, on both a centralised and a localised basis;
- the transition to low carbon energy will seek to maximise the economic benefits of developing local jobs and skill base, strengthen and engage further with the research and development sectors in Wales, promote personal and community engagement and helps to tackle fuel poverty and the quality of life.

The NFLA fully supports these aims and this briefing will reflect on some of these themes.

Furthermore, the Welsh Assembly Environment and Sustainability Committee has recently announced an inquiry into Welsh energy policy which will consider whether the Welsh Government should seek to lobby for devolving this power for larger energy projects from Westminster (as it is in Scotland) and what Wales's future energy mix could look like. The closing date for submissions is the 24th September and the NFLA will be making a full submission reflective of the key elements contained in this briefing. The NFLA has also arranged an October meeting with other like-minded groups and the Welsh Environment Minister John Griffiths to specifically discuss Welsh energy matters.

3. **Fuel poverty**

Statistics published by the UK Department of Energy and Climate Change show 700,000 more UK families fell into fuel poverty¹ in 2009, bringing the total to 5.5 million, or one in five of all households. According to Consumer Focus the recent energy price increases announced in July 2011 for domestic consumers are likely to push this figure up to 6.4 million. (4) The Welsh Assembly Government estimated in 2009 that around 332,000 households were estimated as fuel poor, which was a 15% increase since 2004. It predicted a rise to 550,000 Welsh households in fuel poverty by 2012 if energy prices continue to rise, as they have. (5)

The devolved assemblies, including the Welsh Government, have a statutory duty under the Warm Homes and Conservation Act 2000 to eradicate fuel poverty, as far as is reasonably practical, by 2016. There is also an interim target to eliminate fuel poverty among vulnerable low income households (pensioners, disabled people and families with children) by 2010, but all the devolved assemblies and the UK Government have clearly failed to meet this target, yet it still remains the policy of all these bodies to seek to meet the 2016 target. (6)

At the same time under the Climate Change Act 2008, Wales is a component part of the UK's policy commitment to reduce its emissions of targeted greenhouse gases by **at least 80%** by 2050, relative to 1990 levels. The Committee on Climate Change (CCC) highlighted in its fourth carbon budget report that the near-total decarbonisation of the power sector by 2030 would play a key role in enabling the UK to meet this target. (7) This transformation is also important because it will allow the electrification of a substantial part of the transport and heating sectors without increasing carbon emissions.

More than 20 large coal, oil and nuclear plants are due to close in the UK over the next decade which means the electricity industry needs to invest around £200bn across the UK in new generating capacity. (8) As a result it is widely agreed that energy prices will have to increase over the next 20 years whichever energy path Wales and the wider UK follows. (10) Ofgem has predicted that, in the worst-case scenario, household energy bills could double to £2,000 a year within a decade (11) adding perhaps another million households to those in fuel poverty. (12) This means that Wales and the wider UK face two urgent and over-riding challenges which are sometimes seen as being in conflict with each other - to rapidly decarbonise the electricity sector using sustainable technologies, at the same time as eliminating fuel poverty.

¹ In the UK, fuel poverty is when a household needs to spend more than 10% of its income on fuel in order to heat its home to an adequate standard, and have hot water and run lights and appliances.

In the NFLA's view, the Welsh Government can seek to meet both its climate change and fuel poverty objectives by concentrating on developing an ambitious target-led energy efficiency and micro-generation programme, coupled with the promotion of a wide mix of renewable energy projects. A climate change focus that reinforces the solutions to fuel poverty means a greater emphasis on capital investment in the energy efficiency of our housing stock. (13) As WWF-UK pointed out in evidence to the House of Commons Energy and Climate Change Committee:

“Not only can energy demand reduction allow great cost savings for consumers and enhance the UK's energy security, but it also fundamentally reduces the size of the decarbonisation challenge. This can be done by setting clear energy demand reduction targets and a robust policy framework for reaching these targets, which would need to involve ambitious nationwide energy efficiency and demand reduction measures in the residential, transport and business sectors.” (14)

UK households are responsible for around 27% of greenhouse gas emissions. Most of the properties standing today will still be around by 2050 (25 million out of 25.8 million), so if the UK Government and the devolved assemblies are to meet their carbon reductions targets, they will need to implement a set of policies which can cut emissions from the domestic sector in any case. To do this every house will need excellent insulation and some form of Low and Zero Carbon Technology – microgeneration or a connection to a community heating scheme. This means carrying out refurbishment of virtually all the UK's dwellings over the next 40 years or 625,000 dwellings every year between now and 2050. (15).

This briefing focuses on the role that the Welsh Government and Welsh Local Authorities can, and are, playing in trying to implement such a programme.

3. **The UK Government's Response**

The Energy Bill which is currently going through the UK Parliament (and which would be implemented for England and Wales) includes provision for a “Green Deal” and associated measures which are supposed to be the key to improving household energy efficiency and tackling fuel poverty. (16) But research by E3G suggests the Green Deal will struggle to achieve the UK Government's limited ambitions on energy efficiency because householders are likely to reject the scheme as a result of its high cost, (17) and a survey by the Federation of Master Builders (FMB) found builders expect the response to the Green Deal to be “*underwhelming*”. (18) The Bill proposes a new Energy Company Obligation (ECO) which will target help towards low income and vulnerable consumers from 2013 onwards. But, according to Consumer Focus, much more extensive resources will be required to eradicate fuel poverty. (16) The trouble is that it is the fuel poor, particularly in this case in Wales, who tend to live in older properties with solid walls or off the gas grid which require more expensive measures, such as solid wall insulation and new heating systems. (18)

The UK Government is also attempting to facilitate the investment required to build the equivalent of up to 20 large new nuclear power stations in England and Wales by reforming the electricity market and has recently published a White Paper on its plans, but this is overwhelmingly focussed on incentivising new electricity supply rather than demand reduction. (19) The UK Parliament has also just passed a National Policy Statement on Nuclear Power Generation that endorses the building of such facilities. WWF-UK argues that these reforms should aim to deliver decarbonisation of the power sector by 2030 in the most environmentally sustainable way (without relying on environmentally hazardous new nuclear power stations) and provide best value for consumers and most benefit to the UK economy. (20) In the NFLA's view, ambitious energy demand reduction targets and a clear framework to deliver these targets would have been one of the best ways for ‘Electricity Market Reform’ to achieve these objectives, but these are absent from the White Paper.

The UK Government claims that “*even with major improvements in overall energy efficiency ... demand for electricity is likely to increase*”. The Government's ‘Revised Overarching National

Policy Statement on Energy' foresees a need for a doubling or even tripling of total installed electricity generating capacity in the UK by 2050. (21) Yet Germany, which is planning an entirely non-nuclear route, even with the same 2050 objective of an 80% reduction in greenhouse gases, expects electricity demand to be 25% below present levels by implementing an energy efficiency programme. (22) The UK Government relies on something called the 'Pathways Analysis' to reach its conclusion, but this consists of various scenarios for 2050 none of which assume penetration of basic energy-saving measures like solid wall insulation into more than 1 in 3 homes. Similarly, it is assumed that the commercial sector can only improve its energy efficiency by just 20% over the next 40 years – so far below what has been achieved historically as to be inexplicable. (23)

Germany has put in place new incentives to support the renovation of buildings and is using the auction revenue from the European Emissions Trading Scheme for renovation programmes. It has also put in place special tax reductions for the renovation of buildings. Together 3.4 billion euros will go towards a lower energy consuming, modernized building sector in Germany. (24)

Professor of Energy Policy at Exeter University, Catherine Mitchell, says what Electricity Market Reform should have included is a new type of energy system with regulated obligations which would have stimulated a refurbishment programme on the level required - on the scale of the transition from town gas to natural gas. Tendering for street-by-street or area-by-area contracts to make homes energy efficient would have been a much more cost effective way of moving towards a sustainable low carbon economy. (25)

"The opportunity should exist for companies not to generate low-carbon electricity but instead to reduce the demand for energy through efficiency measures, so-called 'negawatts'. In electricity markets in the US, for example, 10% total demand is routinely removed at lower costs than supply. Moreover, the institutional framework for how the complex interaction of all the mechanisms will work is also missing." (26)

4. **The Welsh Government Response**

Without the additional devolved powers of the Scottish Government to more directly determine its own energy policy, Wales is in some ways beholden to the UK Government in determining its future energy needs. However, the Welsh Government's own ambitious carbon reduction and renewable energy policies, and its considerably lower penetration to the proposed new nuclear power programme, does provide it with some latitude in developing a largely, if not completely, non-nuclear way forward with its energy policy.

The only new nuclear power station proposed for Wales is at Wylfa in Anglesey and it has been at the centre of a passionate debate in Welsh politics over whether it is required or not. The Welsh Government has no specific policy tool to oppose the development of a new nuclear power plant at Wylfa, but it can comment on all new nuclear policy matters, and the previous Welsh Environment Minister Jayne Davidson was the only one of the devolved assemblies who expressly called for a public inquiry into the radioactive waste management issues arising from the development of new nuclear power stations (27).

In 2009 the Welsh Government officially set a series of highly ambitious targets for its domestic energy production and energy efficiency programmes including:

- to produce more electricity from renewables than the nation consumes within 20 years;
- to increase recycling rates from 36% today to over 70% by 2025;
- to send just 5% of Welsh waste to landfill sites by 2025;
- to phase out free plastic bags (like the Republic of Ireland);
- to develop new marine and biomass energy plants;

- to make annual 3% cuts in greenhouse gas emissions from 2011;
- to spend £623 million over the next three years on improving energy efficiency in Welsh homes, with South Wales becoming a 'low carbon region' and up to 40,000 social housing homes equipped with solar, wind and heat-saving equipment.

The plan committed Wales to becoming possibly the only "one planet" country in the world – a nation whose use of resources could be sustained for the entire global population (28).

As the Welsh Low Carbon Energy Revolution document also notes, Welsh Ministers do have significant powers relevant to deliver wider aspects of a low carbon economy such as responsibilities for transport, economic development, skills and education, housing, regeneration and local government. This allows it to set some impressive targets for microgeneration, where it has direct powers, such as:

- developing 20,000 micro-heating systems by 2012, rising to 100,000 by 2020;
- developing 10,000 micro-electricity projects by 2012, increasing to 200,000 by 2020;
- constructing 50 combined health and power and / or district heating systems in place by 2020. (29)

Sections 5 – 9 below will outline some of these projects, within its powers and in co-operation with the UK Government, on how the Welsh Government is seeking to put its bold words on renewable energy, microgeneration and energy efficiency into action, and whether they are succeeding.

The Welsh Government's position on whether nuclear power generation should be part of a future energy mix for Wales remains a sensitive issue to it. The Welsh Government's official approach to nuclear power is set out as follows:

- "We remain of the view that the high level of interest in exploiting the huge potential for renewable energy reduces the need for other, more hazardous, forms of low carbon energy and obviates the need for new nuclear power stations.
- We have a way to go in justifying to the public what must be done in dealing with future nuclear waste. We therefore support the call for a public inquiry on dealing with the waste arising from new nuclear build on the grounds of concern over the safety and security of its management. This carries with it the implication that any proposed new nuclear power station must contain credible plans for nuclear waste management.
- Maximise energy savings from energy efficiency and low-carbon energy production from renewables in Wales". (30)

They also comment that, if the UK Government and the Infrastructure Planning Committee (IPC) allows new nuclear build at Wylfa to go ahead, they "will engage with stakeholders to ensure the maximum local and regional benefit from the building and operation of the new station, including the provision of skills, and supply chain opportunities."

The NFLA believe that it is in the interest of Wales for it to be granted the same powers over developing large energy projects as Scotland has, which would allow it to take a more consistent view on the development of new nuclear power stations and not be subject to the prevailing view of the UK Government. The upcoming inquiry into Welsh energy policy by the Welsh Assembly Environment and Sustainability Committee provides a further opportunity for all the parties in the Assembly to seek to support a campaign to grant these powers over energy policy from Westminster.

Notwithstanding this, the NFLA believes the Welsh Government should take a more definitive policy line with potential new nuclear power stations and vociferously oppose them for the reasons of health, safety, waste management and the diversion of funds from other energy projects, as it has outlined in its 2010 Energy Policy Statement.

4. Energy by numbers

The UK Government's Overarching National Policy Statement on Energy gives the following numbers for future energy production required by 2025:

Total Current Generating Capacity	85 Gigawatts (GW)
Large combustion plant directive – coal station closures by 2015	12GW
Nuclear closures over next 20 years	10GW
Generating Capacity required in 2025	113GW
Of which new generating capacity	59GW
Of which renewable	33GW
For industry to determine	26GW
Non-nuclear already under construction	8GW
Proposals for new reactors already proposed	16GW

Note: Figures taken from DECC's EN-1 document. (31)

However, as already noted, if instead of planning for a doubling or tripling of electricity demand by 2050, the UK Government was planning for a reduction of 25%, as in Germany, then it would be expected that the capacity required by 2025 would fall by around 15%, removing the need for new reactors.

5. A sustainable energy plan for Wales – building a renewable energy manufacturing base.

Several well respected reports such as the European Climate Foundation's Roadmap 2050 report (28) and the Offshore Valuation Report (29) have made it clear that it is technically feasible for the UK (and Wales as a constituent part of the UK) and the EU to receive the overwhelming majority of their electricity from renewable sources without endangering the reliability of the electricity system (and at costs not substantially higher than other ways of decarbonising the power sector), as long as the UK significantly improved its interconnection infrastructure with other European grids. In particular the Offshore Valuation Report highlights that by using 29% of the UK's practical offshore resource, the offshore renewables industry could enable the UK to install 169GW of offshore renewable capacity, thus allowing the country to become a net exporter of electricity by 2050. The development of such a European energy 'smart-grid' is one of the key components of the Centre for Alternative Technology's (based in Powys) 'Zero Carbon Britain 2030' and the NFLA supports such a development (32).

The UK Government also says the UK needs 59GW of new generating capacity by 2025. Of this, 33GW needs to be renewable capacity to meet our obligation to European Union targets. Government and industry have been planning to meet this requirement for 33GW of new renewable capacity mostly with offshore wind. (33)

If Wales is to make the most of this new industry and play a central role in providing new generating capacity it needs an industrial strategy to help build a renewable energy manufacturing base. This is acknowledged in its 2010 Energy Policy Statement. A few examples of recent developments are listed below.

6. Welsh offshore wind

With a 1200 kilometre (746miles) coastline Wales and some of the highest wind-speeds in Western Europe, Wales has considerable latitude to take advantage of offshore wind. The Welsh Government has set a target of delivering a further 15kw/H of capacity from offshore wind by 2015/16 (34).

Commencing operation in 2003, North Hoyle Offshore Wind Farm was the first offshore wind farm in Wales and was also the UK's first major renewable energy project. Located 7.5 kilometres off the coast of Rhyl and Prestatyn in Denbighshire it initially involved 30 turbines

and produces 60 MW of electricity a year in a project developed by RWE Npower Renewables, producing power for effectively 50,000 homes a year. Its success partially led to a second development at Rhyl Sands, 8 kilometres off the coast at Abergele with an additional 25 larger turbines, producing 90 MWs of electricity. (35)

This will be dwarfed by the Gwynt y Mor development 17 miles off the North Wales coast at Colwyn Bay / Llandudno which was granted planning permission in 2010 and which is currently under construction, planned to be completed by 2014. This will lead to the creation of around 1000 construction jobs and is currently the largest offshore wind project in Europe with 160 turbines under construction. When fully operational it will generate around 576 MW and it is estimated it could power as much as 400,000 homes and prevent the release of 1.7 million tonnes of carbon dioxide.

In announcing the decision, Welsh Secretary Cheryl Gillan commented: "Surrounded by wind, wave and tidal resources, we are in a prime position to be able to benefit from investment in the green economy whilst making a significant contribution to the (UK) government's carbon reduction targets through safe, clean renewable means." (36)

This work is being undertaken by 3 German firms – RWE Innogy, Stadtwerke Munich and Siemens and local critics of the development have suggested that, apart from it being in their view unsightly, it will not create a huge level of local jobs. The Gwynt y Mor wind farm though is a prominent example of the great potential of offshore wind power and enables the North Wales coast to be seen as one of the potential powerhouses of the alternative renewable energy revolution that could be developed across the British and Irish Isles. The NFLA encourages further development of offshore wind in Wales wherever practical.

7. **Welsh onshore wind**

Like elsewhere in the UK, Welsh onshore wind projects have developed in scope and size, but have been beset with some high profile sensitive political campaigns, particularly over the last 12 months. The Welsh Government has set a target of onshore wind production of 800 MW by 2010 and up to 2500 MW by 2025. (37)

Following the 2011 Welsh Parliamentary elections the Labour First Minister of the Welsh Government, Carwyn Jones announced that he had taken over personal responsibility for energy policy in Wales. At a May 2011 Welsh renewable energy policy conference he advocated that the next 10 years should be 'Wales's energy decade'. At the same conference the Conservative (UK) Welsh Office Minister Cheryl Gillan said businesses and politicians should not ride roughshod over local public opinion. This followed a major demonstration of over 1,500 people protesting against large on-shore wind projects in mid Wales. In Powys concern has grown over the large amount of pylons, electricity cable and a substation that would connect around 10 wind farms proposed for the north of the county and a site near Shrewsbury in Shropshire (38).

Both politicians agree with the need to sensitively agree such proposals with local communities while disagreeing over which body should have the powers to develop bigger renewable schemes of 50 – 100 MW. In the run-up to the 2011 Welsh election the Conservatives also argued that the dependence with onshore and offshore wind to drive Welsh energy policy should be reduced in favour of biomass, hydro, wave, tidal, solar, biogas, heat pumps and microgeneration.

In June 2011 the Welsh Government announced a plan to restrict further wind energy projects in the Strategic Search Areas (SSAs) of mid and west Wales. Renewable Energy Cymru (part of Renewable UK) has pointed out this would imply the construction of as many as 40 new wind farms of 25 MW (which is approximately 12 turbines each) would have to be built in sites outside the SSAs in other parts of Wales. They warn this could put into question the Welsh Government's 2025 onshore-wind target and also put into jeopardy investment in what could be thousands of new jobs. They also note the report by leading industry analysts Garrad

Hassan demonstrate that if all the wind farms were built in the SSAs as much as £1 billion in investment could be put into the local mid-Wales economy. (39)

Renewable UK notes that the Welsh Government is running 79% behind schedule for onshore wind projects. They remain concerned that Council planning processes and wider political considerations may exacerbate these delays and that the planning process 'Technical Advice Note (TAN) 8' (40).

The NFLA urges clarification of the Welsh policy on onshore wind farm development and encourages it and the relevant Welsh Councils to meet with Renewable UK Cymru and local concerned community groups to ensure that this potential logjam is resolved as quickly and sensitively as possible. The NFLA will be raising these concerns with its Welsh members and with the Welsh Environment Minister at upcoming meetings in October. It is clear that real concerns remain over the speed of development in this area compared with offshore wind.

8. **Tidal and wave energy**

Tidal and wave energy developments in Wales were severely curtailed by the decision of the UK Energy Minister Chris Huhne in October 2010 to cancel any public investment in a 10 mile long Severn tidal barrage scheme, over concerns from a feasibility study that it could cost in excess of £30 billion. (41)

The 10 mile long barrage scheme had been due to run from Cardiff to Weston-super-Mare in Somerset. It had been severely criticised by the RSPB and Friends of the Earth over its potential damage to the local marine environment. Its supporters had suggested it could provide as much as 5% of UK energy needs. The UK Government did state that it may look at this project again at a later date when market conditions are more preferable.

A number of smaller tidal and wave projects are taking place in Wales which may provide the increasing evidence of the great potential of this energy source, whilst not affecting the local marine environment. In March 2011 the UK Government gave approval for the company Tidal Energy Ltd's 'Deltastream' device which is being constructed at Ramsey Sound off the Pembrokeshire coast. In its initial 12 month test period it will produce 1.2 MW and, if tests prove to be successful, will then be scaled up from 2014 onwards. Similar projects are being considered for Swansea Bay and Liverpool Bay in North Wales. Tidal current turbines could also produce potentially large amounts of electricity with the Welsh coastline ideally placed for it. (42)

The Welsh Government has great hopes for the deployment of tidal and wave devices off the Welsh coast, claiming it could produce 4GW of clean, predictable and reliable energy by 2025 (43). The UK Government has also set a target of 4% of UK electricity coming from such sources (44); though independent studies have suggested it could, with sufficient investment produce as much as 20% of the UK's electricity. (45)

The NFLA believe tidal and wave energy needs greater policy certainty from both the UK and Welsh Governments. Following the decision not to go ahead with the Severn Tidal Barrage, the NFLA urgently encourages the increased development of more environmentally sensitive tidal and wave projects which could take advantage of Wales's coastal geography and tidal flows.

9. **Other low carbon energy**

There were few mentions in the UK Government's Overarching National Policy Statement for Energy of contributions from other types of renewable or low carbon energy.

Of the 26GW of new capacity required which has been left for industry to determine, 8GW of new non-renewable capacity is already under construction, so that leaves a further 18GW of new capacity for which the type of generating plant is still to be determined. (46) The UK Government says it wants new nuclear power to contribute as much as possible to meeting

this need for new non-renewable capacity. (47) But the Appraisal of Sustainability (AoS) for the National Policy Statement on Nuclear Power (48) only looks at a scenario in which new reactors are replaced by gas-fired generating stations. It does not evaluate, for example, an alternative strategy based on a high level of Government support for decentralised energy and combined heat and power.

The UK's current centralised system of electricity generation is highly inefficient with two thirds of the energy generated wasted before it even reaches the consumer. It relies on a small number of huge power stations which generate electricity miles away from the point of consumption, and which throw away two thirds of the energy in the form of hot water. This is hugely inefficient. A more decentralised system could use proven technologies, such as Combined Heat and Power (CHP), to produce energy far more efficiently by capturing the heat usually lost in electricity generation, and piping it to nearby industry or houses via a district heating scheme. CHP schemes can achieve an efficiency of around 85% for the combined production of electricity and heat.

A study by Pöyry Energy Consulting, for example, looked at the potential for industrial Combined Heat and Power and found that across the UK it could generate as much electricity as 10 nuclear power stations (16GW of new electricity generating capacity) and halve gas imports using a combination of new and extended CHP plants. One of the sites identified in this study is in Pembrokeshire. (49)

In Germany district heating produced by renewable or low-carbon energy sources will eventually play a significant role. In the interim period new highly efficient and flexible gas power plants will probably be built as back-up power. (50)

In Wales the first CHP District Heating Schemes was built in Llanwddyn in 2006 in partnership with Powys County Council. (51) The NFLA is particularly supportive of the the 'Project Green' initiative. This is an innovative coalition of five Welsh Councils – Cardiff, Vale of Glamorgan, Caerphilly and Monmouthshire – which is seeking to build a CHP plant from waste left over after recycling at municipal landfill sites. The final contract for this major facility is likely to be signed off later in 2011 (52).

10. **Local Economic Development**

There is a huge potential for local economic development through the use of sustainable energy. Energy efficiency installation, advice, local small-scale generation and renewables are all labour intensive businesses rooted in the areas they serve. (53)

Although the UK Government says it would like to see decentralised and community energy systems such as micro-generation making a contribution to targets, it says it does not believe decentralised and community energy systems are likely to lead to significant replacement of large scale infrastructure. (54) Others disagree. A groundswell of actions by individual communities led by local authorities can inspire others to follow suit and achieve much higher penetration levels for small-scale renewables and micro-generation than currently envisaged.

The NFLA welcomes the Welsh Government's encouragement of decentralised and community energy systems through the Wales Strategic Energy Investment Programme – a £350 million investment into the energy performance of Welsh homes – and its support of an initial £15 million EU funding of 22 community energy projects across Wales in co-operation with Welsh Councils. The prominent support of a roll-out of an extensive smart-metre installation programme is also to be welcomed. (55)

The Chief Executive of National Grid, Steve Holliday, says that 15% of the country's electricity production could come from so called "embedded generation" in homes and offices by 2020 as micro-generation becomes increasingly viable after the £9 billion rollout of "smart meters" for every home in Britain. (56) Currently the UK Government is expecting only 2% of electricity to be supplied by small-scale renewable by 2020, (57) and it has excluded solar energy from its Renewable Energy Roadmap. (58) (The Welsh target is for 1 GW out of a total national

renewable energy target of 22.5 GW by 2020/25). Yet research by the Energy Saving Trust shows that micro-generation could provide around 30-40% by 2050, (59) so in the NFLA's view, it ought to be expected to provide a much larger contribution by 2020. In Europe the European Photovoltaic Industry Association expects solar energy to be providing 12% of all electricity by 2020. (60) The difference between this 12% and the Government's 2% would be enough to obviate the need to build new reactors.

While the costs of new nuclear reactors are rising, those of solar photovoltaics are falling rapidly. (61) One report says costs are falling so fast that by 2013 solar panels will be half of what they cost in 2009. (62) The technology is advancing too. Soon it could be possible to print solar panels onto paper (63) or even paint them onto walls. (64) This technology could be appearing on computer keyboards to power computers when on stand-by by Christmas this year. Ernst & Young's recent report on the Outlook for the UK solar PV industry points to costs for solar electricity falling so that by 2020 the technology will be economic in the UK without any subsidy. (65)

It will happen well before that in Germany as a direct consequence of the far-sighted decisions the German Government took a number of years ago. Germany plans to generate 50% of its day-time electricity from solar by 2020 – with installed capacity of 52 GW. Despite the fact that solar PV has the potential to meet more than 30% of the UK's day-time electricity by 2040, the UK Government target for 2020 is just 2.7 GW – not much more than the 2 GW that Germany installed in one month in June 2010. (66)

It is still not too late for Wales and the wider UK. There is a growing realisation that solar energy could be the next big thing after the internet. (67) Lots of local authorities and social housing providers are beginning to make the connections between energy-efficiency and micro-generation, tackling fuel poverty and reducing carbon emissions. With feed-in tariffs of up to 43.3p/kWh (plus 3.1p/kWh for each unit of electricity exported to the grid), it is hardly surprising that each week brings news of new projects and plans by local authorities in Wales to generate their own electricity. (68)

11. **Some examples of Welsh Local Authorities leading the local energy revolution**

Here are just a few examples of the growing local energy revolution led by Welsh Councils:

- a) **Gwynedd County Council** approved a detailed Carbon Reduction Management Plan in association with the Carbon Trust and it was launched in 2011. It involves the Council reducing its carbon emissions by 60% by 2021, with the first step a 30% reduction by 2014/15. This involves an investment of £7 million on carbon management projects to create annual savings of £900,000. The Council is also committed to provide leadership in the county with local businesses, schools and householders. (69)
- b) **Cardiff City Council** agreed in 2010 a 'Carbon Lite Cardiff Action Plan' in partnership with major employers and organisations in the city. In parallel it has signed up to the EU Covenant of Mayors to deliver a 20% reduction in carbon emissions by 2020. Within this policy area an Affordable Warmth Strategy for Cardiff has seen a 14.45% reduction in energy use and 12.51% reduction in carbon dioxide emissions from Cardiff's housing stock between 2006 and 2010 (based on 1997 levels). The city was announced as Wales first Sustainable Travel City by the Welsh Government in 2009. 81 renewable energy systems have been installed in the Cardiff Partnering Scheme housing stock including solar hot water panels, photovoltaic panels, ground source heat pumps and grey water recycling units. (70)
- c) **Caerphilly County Borough Council** has an innovative Local Authority Energy Financing Scheme as part of its own Carbon Reduction Plan. This has invested £932k since 2004 and resulted in lifetime energy savings of £3.1 million across the authority. 223 individual projects have been developed in this scheme, including 146 projects at Caerphilly schools. Caerphilly is also working with renewable energy companies to develop on-shore wind programmes, which are being developed with the aim of community consent. (71)

- d) **The Head of the Valley's Low Carbon Zone in South Wales** is a joint Welsh Government / South Wales Councils partnership to rapidly improve energy efficiency and promote renewable energy and microgeneration in deprived former coal-mining areas of the valley communities of South Wales. A key aim of the programme is to tackle fuel poverty and stimulate local industry with the creation of thousands of new 'green' jobs. (72)
- e) **Bridgend County Borough Council** has just received the highest level possible in the 'Green Dragon' environmental standard for its efforts to reduce the amount of energy the authority uses. In its February 2011 Renewable Energy Assessment it also outlines the amount of renewable energy projects in its area, and notes this is considerably higher than the Welsh or the UK average. (73)
- f) **Pembrokeshire County Council** has been particularly effective in developing a whole raft of renewable energy projects as a part of the Pembrokeshire Local Action network for Enterprise and Development (PLANED). A large number of sustainable communities have been developed and a Community Energy Network has been established across the county. The Council is a leader in bio-energy with biomass being installed in a large number of schools and at the Pembrokeshire Science and Technology Park. Hydro-electric projects are being considered to the local rivers in the county and tidal energy projects are being developed on the coast at Ramsey Sound as noted in section 8 above. (74)

12. Conclusions

- The UK Government and the Welsh Government have twin objectives of reducing greenhouse gas emissions by 80% by 2050 and eliminating fuel poverty by 2016. But the UK Government's proposed electricity market reforms focus almost exclusively on facilitating the construction of new low carbon electricity supply, which is likely to worsen fuel poverty, rather than demand management schemes which place a greater emphasis on capital investment in the energy efficiency of our housing stock. Such measures would tackle fuel poverty and reduce greenhouse gas emissions at the same time.
- It would benefit the Welsh Government to have the same level of devolved control over its energy policy as is given to Scotland. It is unable to completely develop its wide ambitions and impressive targets to develop a low carbon economy in the same manner that is occurring in Scotland. The NFLA encourages the Welsh Government to continue to lobby for increased devolved powers on energy policy, which has widespread cross-party support in Wales for it.
- The UK Government says there is a need for 59GW of new generating capacity by 2025, of which 33GW needs to be renewable. This leaves industry to decide what type of generating capacity should supply the remaining 26GW, but the UK Government says as much as possible of this should be nuclear. For Wales this would mean the development of a new nuclear reactor at Wylfa over which its devolved Government has no direct decision-making role.
- If instead of planning for a doubling or tripling of electricity demand by 2050 the UK Government was planning for a reduction of 25%, as is the case in Germany, this could remove the need for new nuclear reactors in England and Wales.
- The Welsh Government has developed ambitious energy plans for significant increases in a variety of renewable energy technologies, microgeneration and energy efficiency. There have been some excellent successes, some of which have been outlined in this report. However, in some areas of energy policy the reality does not mirror the aspiration and the NFLA encourages a more concentrated and determined political will of the Welsh Government to achieve its high targets. Potential policy drift, particularly in the areas of onshore wind and tidal energy, needs to be addressed as a matter of real urgency.
- Welsh Councils and Welsh Regional Bodies need an industrial strategy to make sure they make the most out of the rapid growth in the offshore wind industry and other forms of renewable energy.

- Wave, tidal and hydro-electric energy could provide up to 20% of the UK's electricity consumption with a practically extractable resource of 36GW, with over 2GW by 2020, with Wales providing a significant part of this new and exciting form of energy.
- Industrial Combined Heat and Power (CHP) has the potential to generate as much electricity as 10 nuclear power stations (16GW of new electricity generating capacity) and halve gas imports using a combination of new and extended CHP plants.
- According to National Grid, 15% of the UK's electricity production could come from micro-generation" in homes and offices by 2020.
- The European Photovoltaic Industry Association expects solar energy to be providing 12% of Europe's electricity by 2020. The difference between this 12% and the 2% the Government expects to be provided by all micro-generation would be enough to obviate the need to build new nuclear reactors in England and Wales.
- The UK's target for solar PV in 2020 is only a little more than was installed in Germany during the month of June 2010. Wales should seek to develop this form of renewable energy and take advantage of feed-in tariffs before they are significantly reduced by the UK Government.
- Most Welsh local authorities are leading the way in energy efficiency and micro-generation programmes. From fuel poverty busting solar panel installations on council housing to energy efficient street lighting schemes, to wood fuel biomass boiler installations in schools, councils are demonstrating how sustainable energy schemes can be used to tackle climate change and fuel poverty at the same time as raising much needed revenue.
- Welsh local authorities can learn from the examples provided in the similar NFLA reports produced on English, Scottish and Irish energy policy of best practice in developing dynamic renewable energy, microgeneration and energy efficiency programmes.

13. **Actions by the NFLA Secretariat**

- This briefing will be sent to all NFLA members in Wales (and to non-member Welsh authorities to consider membership) as an overview of Welsh energy policy and to inform them of some of the ways they can be involved in leading a local energy revolution. The next NFLA Welsh Forum seminar will highlight this report and the parallel submission to the Welsh Assembly energy inquiry.
- This briefing will be sent to the Welsh and the UK Government to encourage it to consider reviewing its energy strategy. An adapted version of this report will also be formally submitted to the Welsh Assembly's Environment and Sustainability Committee's inquiry into Welsh energy policy.
- Welsh local authorities will be encouraged to continue to work with local community partners and the private sector to develop innovative industrial policies to encourage job-creation in the renewable sector, energy efficiency schemes and local micro-generation projects.
- Welsh local authorities will be encouraged to contact the Welsh Government and the UK Government to encourage the financing of such schemes through appropriate local economic and enterprise partnerships.
- For free weekly news updates about the "local energy revolution" around Wales and the wider UK, the NFLA also encourages Welsh Councils to consult the website: www.microgenscotland.org.uk/news.php

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