Renewable Energy Target Setting & Policy Development

A Final Report to Lancashire County Council

April 2012

north west improvement and efficiency partnership

CLASP. Climate Change Local Area Support Programme

Contents

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1: Introduction and Methodology

Introduction

1.1 SQW Ltd was commissioned by Lancashire County Council in October 2011 to update the technical and deployable renewable energy capacity projections for each of the Lancashire local authorities (LAs) set out in SQW's report of July 2011 and to undertake exploratory work concerning the development of LA-specific renewable energy targets in core strategies and renewable energy planning policies. The work has been funded through the Climate Change Local Area Support Programme (CLASP) Sub-regional Climate Change Skills Fund and the CLASP Small Projects Grant.

1.2 Previous work for Lancashire County Council in 2011, which is available from the CLASP resources site: http://www.claspinfo.org/resources, includes the following:

- An assessment of the technical renewable energy capacity at the Lancashire level and for each LA, using the SQW authored national renewable energy capacity assessment methodology produced for the Department for Communities and Local Government (DCLG) and the Department for Energy and Climate Change (DECC), which resulted in the production of an overarching Technical Report and fourteen LA-specific reports in April 2011.
- An assessment of the deployable renewable energy capacity at the Lancashire level and for each LA, using the SQW devised *RE:Deploy* model, which resulted in the production of: the Taking Forward Renewable Energy Deployment in Lancashire report and fourteen LA-specific factsheets in July 2011.
- A Renewable Energy Planning Guide to assist LA officers with the development of renewable energy planning policy and guidance also produced in July 2011.

1.3 Lancashire is committed to protecting and enhancing its environment to make Lancashire a special place to live, work and visit[1]. In order to progress its contribution towards the national goal of generating 15% of the UK's energy needs from renewables by 2020[2], the need for a consistent evidence base across its LAs has been recognised. This drive towards increasing the deployment of renewable energy is as important for the achievement of economic and social imperatives, such as fuel security, business efficient, employment benefits, and addressing fuel poverty, as it is for environmental reasons associated with fostering a low carbon future for communities. The previous study provided an assessment of renewable energy potential (both technical and deployable) to 2020 and it was agreed that to fit better with most planning horizons, updating these to 2030 would be beneficial.

1.4 The Localism Act which was granted Royal Assent in November 2011 proposes the abolition of Regional Spatial Strategies (RSSs), and with them regional (and sub-regional) targets for renewable energy generation. Whilst the North West RSS remains part of LAs' local

[1] Lancashire County Council Corporate Strategy, 2011-2013
[2] *UK Renewable Energy Strategy, 2009*

development plans, abolition is imminent and with it planning for renewable energy deployment and generation at the LA level will become more challenging. There will soon be no targets in place below the UK requirement of producing 15% of the UK's energy needs from renewable sources by 2020 (UK Renewable Energy Strategy, 2009). The planned absence of targets at the regional level and increasing drive for localism are reflected in the 2011 Memorandum of Understanding between DECC and the Local Government Group[3], which states the need to '*encourage all councils to take firm action – underpinned by locally ambitious targets and indicators*'. It is important to note that this drive for action is not just led by policy requirements; the trajectory for economic growth is also radically affecting the attention given to carbon at national and local levels. This need for local action has led to the Lancashire authorities' request for further research into the development of targets and planning policy considerations to increase renewable energy deployment in Lancashire on the ground. This further research is the focus of this report.

1.5 The work also adds significant value to the Lancashire renewable energy studies funded by the CLASP Sub-regional Climate Change Skills Fund in 2011, ensuring that the evidence base produced is utilised in an effective way rather than just becoming a source of reference.

Methodology

1.6 In 2010, SQW undertook a renewable energy capacity and deployment study for the North West, on behalf of the North West Development Agency using the nationally endorsed DECC and CLG methodology: *Renewable and Low Carbon Capacity Assessment Methodology for the English Regions* (2010) – hereafter referred to as 'the DECC methodology'.

1.7 SQW's original assessment of technical and deployable renewable energy potential across Lancashire undertaken in 2011 used the North West Study, which also reported at sub-regional level as its basis. The Lancashire results from the North West Study were then further interrogated and disaggregated to the Lancashire local authority (LA) level in our 2011 study with an endpoint of 2020.

1.8 In this sub-section, we provide a brief recap of the methodology used to produce technical and deployable renewable energy potential at 2020 and then projected forwards to 2030. The full description of the methodology employed is detailed in the *Technical* and *Taking Forward Renewable Energy Deployment in Lancashire* reports produced by SQW in April and July 2011 respectively.

1.9 The core energy categories covered by the methodology include renewable energy and low carbon energy, including heat; it focuses on land-based resources only, offshore is not included. These resources include both commercial scale renewables (covering onshore wind, biomass and hydropower) and microgeneration (on-site and building-integrated renewables).The potential from waste heat has not been updated to 2030 as this was not projected forwards, but based on existing heat loads. In addition, the grid assessment has not projected forward, although it is understood that some major upgrades are proposed for the future, specifically the North West Coast Connections Project. These have not been included for two reasons: first, there is no actual constraint built into the modelling as a result of grid

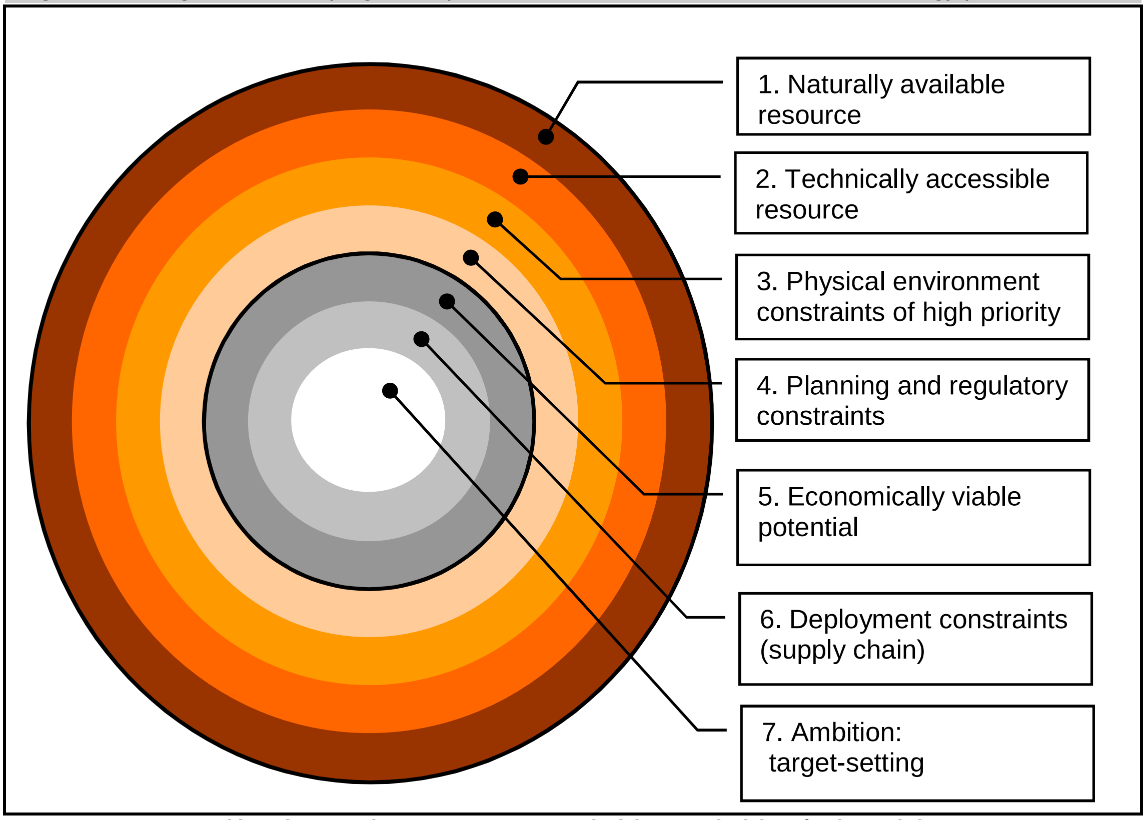
[3] http://www.decc.gov.uk/assets/decc/What%20we%20do/lc_uk/loc_reg_dev/1380-mou-lggroup-decc.pdf

connections and throughput as this does not have a major limiting impact at present and second, the actual date and likely impact of the upgrade has not been confirmed.

1.10 Stages 5 and 6 of the April 2011 work have been updated to 2030 with the results reported in Section 3 of this Report, whilst target setting is discussed in Section 4.

1.11 Figure 1-1 sets out the key stages which the DECC methodology identifies as being required to develop a comprehensive evidence base for renewable energy potential. The technical resource assessments, covering Stages 1-4, and the deployable resource assessment, covering Stages 5 and 6, have been updated to 2030 with the results reported in Section 3 of this Report, whilst target setting is discussed in Section 4.

Figure 1-1: Stages for developing a comprehensive evidence base for renewable energy potential



Source: DECC, Renewable and Low Carbon Energy Capacity Methodology: Methodology for the English Regions, 2010

Assessing technical potential

1.12 In brief, the methodology involves identifying the opportunities for harnessing renewable energy resources on the basis of what is naturally available within the context of the limitations of existing technology solutions (Stages 1-2), and then addressing high level resource constraints (Stages 3-4) to the deployment of technologies in relation to the physical environment and planning regulatory limitations to identify a more realistic measure of capacity and potential.

1.13 In order to assess the technical potential through the opportunity (Stage 1) and constraints (Stage 2) analyses, the methodology sets out a list of parameters and key data sources which should be used. Clearly, the parameters vary between the different renewables categories and require different levels of data input and assessment. Some of the information and assessments required are available at national level and therefore detailed assessments do not need to be undertaken at the lower spatial levels. However, for most on-shore renewables categories, more localised assessments are necessary. The methodology was designed for regional level assessments, but it has been adapted to undertake sub-regional and local assessments with some tailoring of the assumptions and data sources to address local characteristics. The assumptions employed and datasets utilised are set out in Annex B.

1.14 The previous study provided a technical assessment to 2020 and this study has projected those results forward to 2030. This is not a straightforward linear trajectory as some resources, such as wind, do not change with time, whilst others, particularly those related to human activity (e.g. energy from waste, building-integrated technologies) do. Section 3, which provides the updated results, explains how forward projections have been calculated.

Assessing deployable potential

1.15 The 2011 resource assessment results provide a view of the overall ***potential technical*** capacity for renewable energy generation across Lancashire to 2020. They do not provide an indication of ***what could or should be deployed***. The next stage involved translating this technical capacity to a more realisable deployable capacity. The deployment modelling was supported by the *RE:Deploy* modelling tool, which was developed in Microsoft Excel. The purpose of the tool was to further constrain the results by applying four key constraints:

- Transmission constraints (identified through discussion with Electricity North West and Grid UK)
- Economic viability (using national benchmarks)
- Supply chain (using national benchmarks)
- Planning acceptance (based on reviewing recent planning permission/refusal rates for each resource technology).

1.16 The 2020 deployable potential results were projected forward to 2030 and again this is not a straight line forward trajectory. Future economic and legislative considerations have been taken into account, such as a slowing down of the deployment of wind energy as the most commercially viable sites will have been taken up and a reduction in landfill gas production in line with EU legislative requirements. The metrics used to project forward each technology are again detailed in Section 3 along with the results. Section 2 identifies policy considerations that could impact on the assumptions used.

Target Setting

1.17 Initially, it was suggested that the study should identify targets for LAs based on the assessment of deployable potential. However, as each LA is at a different stage in terms of existing targets and Local Development Framework (LDF) Core Strategy preparation, it was considered more appropriate to investigate the issues associated with target setting on a more qualitative basis and make recommendations for how best to take the process of target-setting forward, rather than arriving at firm numbers. To inform this assessment, consultations were undertaken with LA planning officers, relevant agencies such as developers and renewable energy developers active in the area. In addition, a workshop was held with planning officers in January 2012 to inform this task. Annex E provides a list of all stakeholders consulted in the course of the study and Annex F sets out the workshop programme for the session.

Good Practice in Policy Development

1.18 The study was also tasked with considering how well existing planning policies within Lancashire support the increased deployment of renewable energy. As a Planning Guide was provided as one of the outputs from the preceding 2011 study, consideration of planning policies in this Study has focussed on the issues raised by consultees in relation to the adequacy of planning policies and the requirements of the National Planning Policy Framework (NPPF) and related issues such as maximising the potential for community schemes and neighbourhood planning.

Structure of the Report

1.19 The remainder of the Report is set out as follows:

- Section 2 provides a summary of relevant policy considerations
- Section 3 details the updated capacity assessment
- Section 4 sets out thoughts on target development
- Section 5 investigates good practice in renewable energy planning policy development
- Section 6 provides conclusions and recommendations.

1.20 In addition, there are five annexes which provide the following information:

- References
- Assumptions for the technical resource assessments
- Technical and deployable resource results updated to 2030
- List of stakeholders consulted
- Target Setting and Policy Development Workshop Programme.

2: Relevant policy considerations

2.1 This Section reviews the key current policy developments, since the previous study was completed in 2011, of particular relevance to the future deployment of renewable energy in Lancashire, target setting and policy production. The specific developments considered are the:

- Feed-in-Tariff Review
- UK Renewable Energy Roadmap
- Electricity Market Review.

Feed-in Tariff Review

Content of Proposals and Decisions

2.2 In February 2011, the Government announced the first comprehensive review of the Feed-in Tariffs (FITs) scheme for small-scale, low-carbon electricity generation. A principal objective of the Review was to determine how the efficiency of FITs should be improved to deliver £40 million savings (compared with the original estimate of costs), around 10% in 2014/15, as committed to in the 2010 Spending Review. The commitment was intended to ensure value for money for consumers. HM Treasury published a control framework for DECC levy-funded spending that includes the FITs scheme.

2.3 Prior to the comprehensive review, a fast track review was consulted upon between March and May 2011 concerning the tariffs for large-scale (over 50 kW) and stand-alone solar photovoltaic (PV) projects and farm-scale anaerobic digestion (AD) projects. The outcome of the consultation was announced in June 2011; to proceed with proposed tariff reductions for large-scale solar PV and all stand-alone PV projects, and increases for farm-scale AD projects (≤500kW). The farm-scale AD proposal required State Aid approval which has since been granted, with new tariffs applying from 30 September 2011.

2.4 The comprehensive review has been separated into two phases. Phase 1 covers:

- small-scale PV (with a total installed capacity of 250 kW or less)
- prioritising energy efficiency by linking PV tariffs to specified minimum energy efficiency requirements from 1 April 2012
- introducing new multi-installation tariff rates for aggregated solar PV schemes, applying to new installations with an eligibility date after 1 April 2012.

2.5 The consultation for Phase 1 was open from October – December 2011. The review proposed a reduction in tariffs with the greatest decrease being for schemes up to 4kW in size. The following table shows the proposed reductions in tariffs:

Table 2-1: Phase 1 FITs Review: proposed tariffs

Band (kW)	Current generation tariff (pence/kWh)	Proposed generation tariff (pence/kWh)
≤ 4 (new build)	37.8	21.0
≤ 4 (retrofit)	43.3	21.0
> 4-10	37.8	16.8
>10-50	32.0	15.2
>50-100	19	12.9
>100-150	19	12.9
>150-250	15	12.9
>250-5 MW	8.5	8.5*
Stand alone	8,5	8.5*

Source: FITs Review, DECC, October 2011(Note that these are current tariffs for which there is no proposed change and which, like all other tariffs, will be adjusted in line with the Retail Price Index from 1 April 2012).*

2.6 The Phase 1 Review proposed that the new tariffs should apply to all new solar PV installations with an eligibility date on or after 12 December 2011. Such installations would receive the current tariff before moving to the lower tariffs on 1 April 2012.

2.7 The justification for the proposed reduction in tariff rates was: substantial reductions in the costs of installing solar PV (30% since FITs started in 2009; installed costs are now £9k compared with £13k when the scheme was launched); falling costs plus rising electricity costs (and other factors) which have meant that the returns to new PV generators are higher than original envisaged; and pressure to minimise public spending.

2.8 On 19 January 2012, DECC confirmed the new tariffs for solar PV (as in Table 2-1) that should *'continue to provide a competitive return on investments for householders, communities and others'*. It was also detailed that the new energy efficiency requirement should be based on an Energy Performance Certificate rating of Level D or above (not C as previously suggested). In addition, the threshold at which the multi-installation tariffs apply was increased from generators with more than one PV installation to those with more than 25 to support community groups, small businesses and local authorities. Draft licence modifications were laid before Parliament on 9 February to make provision for the new requirements to come into date for new PV installations with an eligibility date of on or after 1 April 2012. The proposal to reduce tariffs for installations with an eligibility date on or after the proposed 12 December 2011 reference date, and before 31 March 2012, was defeated by the Supreme Court in March 2012 following an appeal by DECC against an earlier ruling.

2.9 Also on 9 February 2012, the Government launched two separate consultations for Phase 2 of the Comprehensive Review. The first relates to solar PV and will be open for eight weeks, the second to wind, hydro, anaerobic digestion and mini-CHP, which will be open for 12 weeks.

2.10 The solar PV consultation sets out proposals for six monthly reductions in solar PV tariffs with an added deployment trigger to ensure subsidy levels are kept in line with the market. The intention of the proposal is to prevent future emergency reviews providing more stability for the future installation of solar PV, and to keep the long term costs of PV down enabling more individuals and organisations to benefit. The consultation also proposes a review of export tariffs and seeks views on a possible reduction from 25 years to 20 years of the period for which solar PV tariffs are applied. The justifications for these continued reductions was based on updated research commissioned by DECC in 2012[4] and views obtained via the Phase 1 consultation suggesting that PV installation costs have fallen further with a typical domestic installation costing 45% less to install in 2011 than originally estimated in 2009. In addition, there was a significant peak in applications for FITs, probably stimulated by the reviews and concerns about future reductions in tariffs.

2.11 The second consultation for Phase 2 opened on 9 February 2012 for 12 weeks. The consultation proposes changes to tariffs for four non-PV technologies – onshore wind, hydro, anaerobic digestion and micro-combined heat and power (CHP). It also seeks views on making special arrangements for community projects, including greater tariff stability. For the non-PV technologies, an increase in the rate of return available for micro-CHP is proposed along with potential tariff guarantees for wind, anaerobic digestion and hydro projects to achieve greater certainty in return rates. This proposal is being made due to the overwhelming prevalence of the use of FITs to support solar PV – by December 2011, over 96% of FITs had been granted for solar PV.

Implications for this Study

2.12 The introduction of FITs has clearly had an impact on the deployment of microgeneration technologies, with a particular acceleration over summer 2011 and then from September to December 2011 (probably related to the FITs Review). By December 2011, total installed capacity had reached over 900 MW, compared with the 116 MW originally predicted for this stage of the scheme, with five times the number of installations supported than had been anticipated. The earlier Lancashire Study included an analysis of existing renewable energy deployment, including an analysis of schemes funded via FITs. The installed capacity figure has not been re-visited for this update as microgeneration would be the only technology that had changed significantly and the latest AEA Microgeneration Index data was only available to June 2011 at the time the re-modelling was undertaken (this is the data that was used in the original studies).

2.13 The FITs review does not, however, provide any quantified projections of the potential impact of reducing the tariffs on the overall take-up of FITs. The Phase 2 Solar PV consultation suggests that future tariffs should be reduced on a six monthly basis in line with deployment and identifies specific trigger deployed capacities that would lead to changes. This is because '*the dynamic nature of the PV industry and the importance of working in a tightly constrained budget, suggests that there should be a move to a tariff structure which is directly responsive to changes in deployment*'. However, it does not actually project anticipated levels of deployment related to differing tariffs and states that '*we do not have robust evidence for how demand responds to average rates of return in practice*'.

2.14 The above comprehensive summary of the on-going review of FITs is important for this study; first, in terms of whether there are any projections that should be taken into account in

[4] DECC (2012) Solar Cost Update - http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/renewable-energy/4290-solar-pv-cost-update-report--3-feb-2012-.pdf

the modelling and target development; and second, because it demonstrates the dynamic state of flux and dynamism in both the microgeneration industry and the provision of financial incentives. Despite the changes underway and proposed, we have not changed the *RE:Deploy* model in updating the assessment of deployable potential for three reasons:

- None of the consultation and background research documents provide robust projections for the future deployment of microgeneration.
- Whilst reduced tariffs may lead to less deployment in the future, the significant amount of deployment supported by the FITs so far, which greatly exceeds initial expectations, is likely to more than compensate for any reduced levels of deployment in the future.
- Increased tariffs for non-PV technologies and the introduction of the Renewable Heat Incentive (RHI) are likely to lead to increase in the deployment of these elements at the same time as a reduced deployment of PV.
- The previous two points taken together highlight the difficulty of predicting an overall increase or decrease in deployment as a result of the FITs Review.

2.15 The consultations, particularly Phase 2 Solar PV, highlight the considerable uncertainty in which the industry is operating making it difficult to make any firm projections. As such, it is suggested that capacity assessments should be reviewed regularly and updated as should any targets within planning policies that are based on such assessments. Whilst the technical assessment is related to naturally occurring resources, which is unlikely to change significantly, the identified constraints particularly with regards to economic viability, supply chain and planning acceptance are likely to change over time.

UK Renewable Energy Roadmap

Content of the Report

2.16 The UK Renewable Energy Roadmap sets out a comprehensive suite of targeted actions to accelerate renewable energy deployment in the UK. The Roadmap sets out the current situation; an analysis of how deployment may evolve by 2020, together with separate estimates of the market's view of the potential; and the actions required to the UK on the path to achieve the deployment levels anticipated in the analysis.

2.17 The Roadmap focuses on eight technologies that are deemed to have either the greatest potential to help the UK meet the 2020 target in a cost effective and sustainable way, or offer great potential for the decades that follow. These technologies are onshore wind, offshore wind, marine energy, biomass electricity, biomass heat, ground source and air source heat pumps, and renewable transport. The analysis of the potential deployment of these technologies to 2020 considers factors such as technology cost, build rates, and the policy framework. Details of projections for the eight technologies and the Roadmap's commentary are provided in the table below.

Table 2-2: UK Renewable Energy Roadmap summary

Technology	Commentary
Onshore wind	• The UK has more than 4 GW of installed onshore wind capacity in operation (generating approximately 7 TWh of electricity annually). • The central range for deployment indicates that onshore wind could contribute up to around 13 GW by 2020. **Achieving this level of capacity equates to an annual growth rate of 13%.** • The existing pipeline for onshore wind contains an additional 11 GW. When taken together with the existing operational capacity, this could contribute a significant proportion of the central range for 2020 given historic planning approval rates although there are concerns with the pace at which capacity can be brought through. • Challenges to deployment include: minimising investment risk; reform the planning system; overcoming radar interference from windfarms; and ensuring cost-effective grid investment and connection.
Offshore wind	n/a – not part of Lancashire study
Marine energy	n/a – not part of Lancashire study
Biomass electricity	• This category is very broad in the Roadmap analysis. It includes several fuel types: wood residues, agricultural crops and farming residues, municipal solid waste, and other biodegradable waste (food and landfill and sewage gas). In addition to several conversion technologies: dedicated combustion, co-firing with fossil fuels, waste combustion, and (for wet material) anaerobic digestion to produce a flammable biogas. • Biomass electricity is a predictable and non-intermittent technology. In 2010 the UK had 2.5 GW of capacity in operation (generating approximately 11.9 TWh). • The central range for deployment indicates that biomass electricity could contribute up to 6 GW by 2020. **Achieving this level of capacity equates to an annual growth rate of 9%.** The breadth of the central range reflects uncertainty about the availability of sustainable biomass for electricity given competing demands from heat, transport and non-energy sectors. • Conversion of coal plant to biomass is a major new development. In addition to this and co-firing, the existing pipeline contains an additional 4.2 GW, taking into account historic planning approval rates. When taken together with existing operational capacity this could deliver the central range for 2020 if projects are brought through the pipeline in a timely manner. There is also scope for new projects to enter the pipeline. • Challenges to deployment include: minimising investment risk and de-risking the supply of sustainable feedstocks, planning and consenting, and regulatory framework. Advanced conversion technologies may, in addition, struggle to secure finance if they are viewed as commercially untested.
Biomass heat	• In 2010 the UK generated 12.4 TWh of renewable heat from biomass, 12.1 TWh of this from biomass boilers and 0.3 TWh from Energy from Waste. • The central range suggests that non-domestic biomass heat could contribute up to 50 TWh by 2020. The majority of this would come from biomass boilers (including some from district heating and CHP), with a smaller contribution from biogas injection to the gas grid. This central range requires **an annual growth rate of up to 17%.** • The Government does not currently collect pipeline data for renewable heat on a routine basis but will do so from the end of 2011. • Constraints on deployment include: technology cost, supply chain for sustainable fuel, air quality regulation, planning and environmental permitting, investor confidence, and the costs associated with biogas injection into the national gas grid.
Ground source & air source heat pumps	• There are approximately 37,000 air and ground source heat pumps installed across the UK. This equates to around 0.6 GWth in terms of installed capacity, generating 0.7 TWh at the end of 2010. • The central range suggests that non-domestic heat pumps could contribute up to 22 TWh by 2020, 14 TWh of this from ground source heat pumps and 9 TWh from air source. This central range requires **an annual growth rate of up to 41%.** • Constraints on deployment include: technology cost; planning & licensing processes; thin installer base; demands on the electricity grid; and performance & technical issues.
Renewable transport	n/a – not part of Lancashire study.

Implications for this Study

2.18 The Renewable Energy Roadmap provides an authoritative addition to the growing body of evidence providing UK-wide renewable energy deployment forecasts. Of interest to the Lancashire *RE:Deploy* analysis are the quantitative estimates that could be used to inform – and potentially update – the modelling inputs. As detailed below, the annual growth estimates outlined in the Roadmap are similar to the existing evidence already incorporated in the *RE:Deploy* modelling, and therefore no changes are required.

Onshore wind

2.19 The Roadmap suggests that that onshore wind deployment is likely to grow at an annual rate of 13% between 2010 and 2020. This is similar to the 15.7% growth rates used in the *RE:Deploy* analysis for the 2010-2020 period.

Biomass electricity

2.20 The Roadmap suggests an annual growth rate of biomass electricity deployment of 9%. Given the broad range of fuel types and combustion technologies that are included within this section of the Roadmap's analysis, it is difficult to provide evidence to improve the *RE:Deploy* modelling. Nevertheless, 9% broadly reflects the average of the range of growth rates currently used in the modelling.

Biomass heat

2.21 The Roadmap suggests an annual growth rate of biomass heat deployment of 17%. In line with biomass electricity, the broad range of fuel types and combustion technologies that is included within this section of the Roadmap's analysis causes difficulties when making direct comparisons to the estimates used in the *RE:Deploy* modelling. Nevertheless, 17% appears to be broadly in line with the wider selection of biomass heat estimates used in the *RE:Deploy* modelling.

Ground source and air source heat pumps

2.22 The Roadmap suggests an annual growth rate between 2010 and 2020 of 41%. Unfortunately the Roadmap has no distinction between the growth rates of ground source or air source heat pumps. The annual growth figure of 41% is similar to those used in the *RE:Deploy* modelling. For air source heat pumps, *RE:Deploy* modelling uses an estimate of 50% annual growth in the 2010-15 period and 27% growth is the 2015-20 period. The respective figures for ground source heat pump deployment are 17% and 20%.

Electricity Market Reform White Paper

Content of the Report

2.23 The White Paper (published alongside the Renewables Roadmap) sets out the Government's intention to develop the UK's electricity system, taking into consideration: security of supply; reducing carbon emissions; and affordability. The framework set out in the review consists of four parts:

- long-term contracts for both low-carbon energy and capacity
- institutional arrangements to support this contracting approach
- continued grandfathering, supporting the principle of no retrospective change to low-carbon policy incentives, within a clear and rational planning cycle
- ensuring a liquid market that allows existing energy companies and new entrants to compete on fair terms.

2.24 The most important measures outlined in the review include: **Feed-in Tariffs with Contracts for Difference** (which aim to stabilise revenues, increase the rate of investment and lower the cost of capital), the introduction of a **carbon price floor** (from April 2013, replacing the Climate Change Levy) and **an Emissions Performance Standard** (EPS) for new fossil-fuel power stations (biomass will be exempt).

2.25 The changes driven by Electricity Market Reform will have a significant impact on future networks and the way supply and demand is balanced. The review notes that the future electricity network will need to be able to support the new low carbon generation promoted by the Electricity Market Reform package. Changes to the network and growth in demand side response (DSR), storage and interconnection will need to accompany the transformation of electricity generation that is at the core of the reforms. The Government plans to set out electricity systems policy, focusing on challenges around balancing and system flexibility, in summer 2012.

Implications for this Study

2.26 The review provides useful insights and context around the future development of the electricity market and highlights the increasing importance of renewable and low carbon energy sources. However, it does not provide any quantified projections of the potential impact of these developments on the deployment of different energy technologies.

Localism Act

Content of the Act

2.27 The Localism Bill was granted Royal Assent on 16 November 2011. The resulting Act represents a key part of the government's agenda to shift powers away from central government and down to the local level and introduces significant changes to the planning process in England and Wales.

2.28 Specifically, the Act requires the following:

- Formal abolition of Regional Spatial Strategies removing planning guidance from the regional level, which included regional and sub-regional targets for renewable energy deployment.
- There is a new duty to co-operate in relation to the planning of a sustainable development, encouraging greater liaison between planning officers and applicants.
- LAs will now be under an obligation to publish details and timetables of local development schemes.
- Planning Inspectors will now make comments on local plans rather than having the power to decide against these; LAs are not bound to follow Inspectors' comments.
- LAs are required to publish five-year land supply, and other targets, at least annually.
- The Community Infrastructure Levy (CIL) is being retained and Councils are required to produce charging schedules, which will be subject to independent examination. The Act allows the CIL to be provided for initial costs towards infrastructure, or on an ongoing basis. It is expected to contribute towards the area or part of the area being impacted upon by the development, and contains provision for it to be passed to another body, such as a town or parish council, from the charging authority to which it is paid.
- Parish/town councils and local community groups will have the power to apply for neighbourhood development orders and produce neighbourhood development plans. The plans set out the policies for development for a particular area, whilst the orders grant planning permission, enabling town and parish councils (or, in their absence, local community groups) to become decision-making bodies. This presents an opportunity for developers to work with local community groups and town and parish councils.
- Pre-application consultation becomes a statutory requirement**.** It will be crucial for developers to begin consultation at an early stage, ensuring objections can be minimised. Upon submission of an application, applicants must document how they have complied with the consultation requirements, what responses they have received and how they have taken account of those responses.

Implications for this Study

2.29 Clearly, the proposed abolition of the North West RSS has significant implications as there will no longer be relevant renewable energy targets at the regional level. Whilst some LAs or sub-regions may choose to continue using the RSS targets, they are based on the North West Sustainable Energy Strategy which is dated (published in 2006) and the validity of these targets is questionable as they were apportioned across the North West's sub-regions rather than based on an understanding of potential. This means that LAs are operating without a clear context in terms of the amount of deployment they should be looking to support, making decision-making uncertain and measuring distance travelled difficult.

2.30 Other requirements related to liaison between planning officers and applicants, and mandatory pre-application discussions plus early consultation. These are of importance as renewable energy planning applications can be extremely controversial and result in objections from local residents. Early discussions on proposals may alleviate some concerns if local communities are sufficiently involved at an early stage.

2.31 CIL provides an opportunity for greater support to communities, but it cannot be used to fund renewable energy schemes such as turbines. It could, however, encourage greater support from communities for renewable energy developments if CIL is granted for the local community affected by the development. Section 5 provides further consideration of the role of CIL in promoting community renewables schemes.

2.32 Neighbourhood planning and neighbourhood development orders provide an opportunity for community plans including renewable energy proposals and the potential for local communities to make decisions on renewable energy applications within their area.

Summary of Policy Implications for this Study

2.33 In brief, the above policy implications are important for three aspects of the Study which are summarised below:

- **Constraints used within the *RE:Deploy* modelling.** Whilst the FIT Review, UK Renewables Roadmap and Electricity Market Review provide useful contextual material and evidence concerning the current state of renewable energy deployment and the Government's current and future intentions with regards to financial incentives, no specific projections concerning future deployment are identified which could be used within the modelling. A key issue highlighted from these Reviews and policy statements, is the degree of future uncertainty with regards to technological developments, load factors, rate of return of current and proposed tariffs and ultimate take up of renewable energy, all of which point to a clear need for regular review and updating of capacity assessments and deployment targets.

- **Target setting.** The Localism Act, November 2011 will ultimately result in the abolition of RSSs. This will leave a 'target gap' at regional and sub-regional level meaning that LAs will be required to make decisions on renewable energy with the only metric being the UK requirement to produce 15% of its energy requirements from renewable sources by 2020 (UK Renewable Energy Strategy, 2009). Making decisions on renewable energy planning applications is often complicated by strong local objections and the existence of locally defined targets could help provide additional certainty for local planning officers and planning committees, developers and local communities.

- **Planning policy developmen**t. The Localism Act has introduced several changes which need to be taken into account in the development of planning policies. The CIL and provision for neighbourhood planning are of particular importance.

3: Updated Resource Capacity

3.1 This Section provides the results from updating the technical resource assessments and then the translating of technical to deployable resource capacity using SQW's *RE:Deploy* tool. The methodology for each is summarised in Section 1, with Annex B providing more detail on the assumptions underlying the technical resource assessment.

Technical resource assessments

3.2 Before providing the results, the basis for projecting forward the 2020 results to 2030 are summarised. Future capacity for some resources does not change as it is related to naturally occurring resources, which are assumed to remain constant – such as wind. For those resources related to human activity, e.g. energy from waste and building-integrated microgeneration, a range of different assumptions have been used as detailed in Table 3-1.

Table 3-1: 2020 to 2030 projection assumptions

Technology	Forward projections required?	Assumptions for projection to 2030
Wind		
Commercial scale	✗	None - Wind speeds are not assumed to change significantly over time and therefore current results are assumed to be the same at 2030
Small scale	✗	None - Wind speeds are not assumed to change significantly over time and therefore current results are assumed to be the same at 2030
Biomass		
Plant biomass		
Managed woodland	✓	Results to be projected forward to 2030 assuming woodland area in Lancashire will increase 0.5% per annum to 2030 (based on previous consultations with the Forestry Commission)
Energy crops	✓	The DECC methodology states that yields from energy crops could increase by 10% across the period to 2020, this assumption has also been used to project forward capacity to 2030 (i.e. a further 10%)
Waste woodland	✓	Assume that existing feedstock should be increased by 1% per year as recommended by the DECC methodology
Agricultural arisings	✗	None - Projections to 2030 assume area for the cultivation of straw remains unchanged
Animal biomass		
Wet organic waste	✓	Assumed animal numbers in Lancashire remain unchanged in 2030. Food and drink waste in 2030 to be increased by 0.5% per annum based on a UK benchmark (UKCES) for increases to employee numbers[5]

[5] NB: a UK figure was provided as this was the only published secondary data available that is consistent across the country and therefore aligned with the DECC methodology; however, the figure for Lancashire is likely to be slightly lower

Technology	Forward projections required?	Assumptions for projection to 2030
Poultry litter	✗	None - Assumed poultry numbers in Lancashire remain unchanged to 2030.
Waste		
Municipal Solid Waste	✓	Project forward to 2030 based on household growth projections for Lancashire.
Commercial & Industrial waste	✓	Project forward to 2030 based on employee number growth using a UK-wide benchmark of 0.5% per annum.
Landfill gas	✗	Assume the capacity in 2030 is the same as in 2020 - 20% of today's capacity in accordance with EU Landfill legislation
Sewage gas	✓	Projected forward to 2030 based on ONS sub-national population projections for the Lancashire local authorities, average 0.3% per annum
Hydropower		
Small scale hydro	✗	None - No future predictions are made on changes to the potential small hydropower capacity by 2030. It is unlikely that up to 2020 the Environment Agency would allow significantly more barriers to be built across rivers, as this runs contrary to many of their aims
Microgeneration		
Solar		
Solar Photovoltaic	✓	For residential assessment - RSS allocations projected forward to 2030[6]
Solar Water Heat	✓	For industrial and commercial assessment – projected forward to 2030 in accordance with employee number growth using a UK-wide benchmark of 0.5% per annum For public and community buildings – projected forward to 2030 on basis of ONS sub-national population projections for the Lancashire local authorities, average 0.3% per annum
Heat pumps		
Ground Source Heat Pumps	✓	Same projections used as for solar
Air Source Heat Pumps	✓	

Source: SQW

3.3 It is important to note that the DECC methodology was initially developed in order to provide a consistent basis for renewable energy capacity assessment across the English regions. Applying the methodology to sub-regional and local authority levels has some drawbacks due to the reliance on some data sources only available at national and sub-regional levels, which do not necessarily reflect local characteristics. The assessments results need to be considered within this context – as indicating the overall scale of resource that is available, rather than providing exacting forecasts.

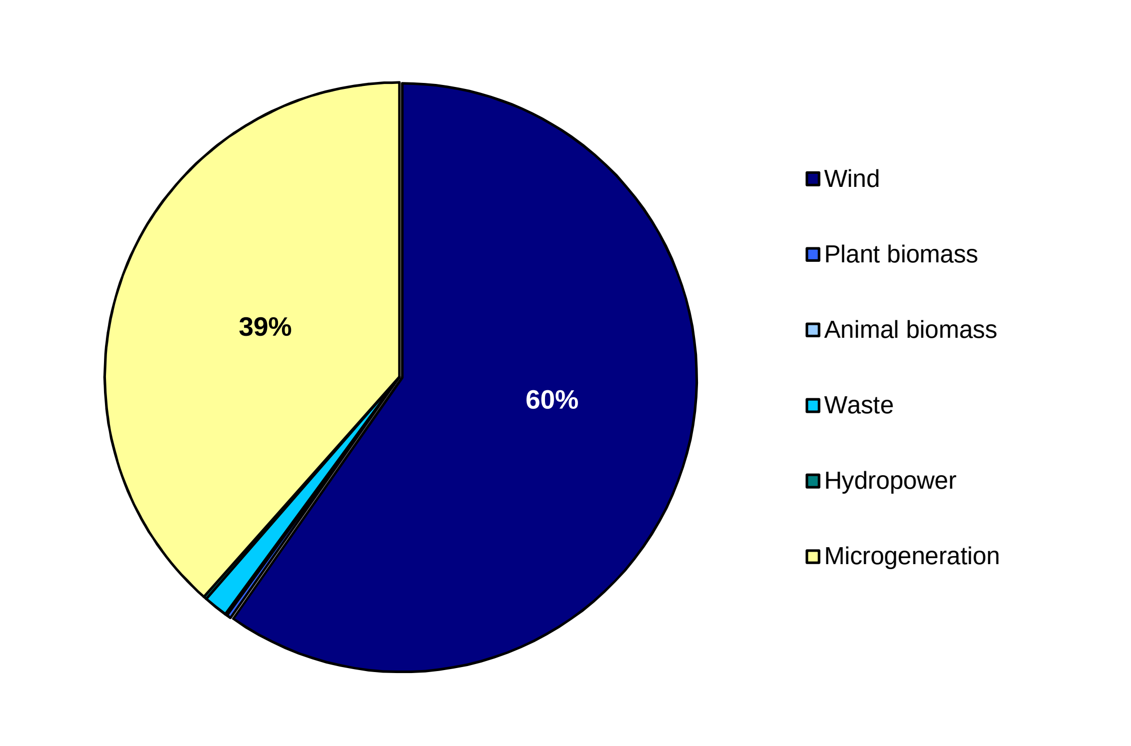
[6] The changed economic climate since the publication of RSS means that the levels of new homes provision identified may be over-ambitious

Technical Resource Assessment Results

3.4 Lancashire has a substantial potential accessible onshore renewable energy capacity of 11,513 MW[7] at 2030, an increase of 900MW of the potential accessible resource by 2020. This may appear to be a small increase considering the time period, but this is because the largest capacity is identified for onshore wind, which is assumed not to increase over time. The largest increases are shown for microgeneration, largely as a result of its growth rate being related to housing provision which in turn is derived from the RSS housing figures.

3.5 The greatest absolute increases in potential accessible resource are in the LA areas of Blackpool (24%), Preston (14%), Hyndburn and South Ribble (both increasing by 11% respectively). Despite the lack of increase from 2020 to 2030, commercial wind remains the dominant source of capacity with 60% of the total resource and West Lancashire is the LA identified to have the largest potential (15% of the total).

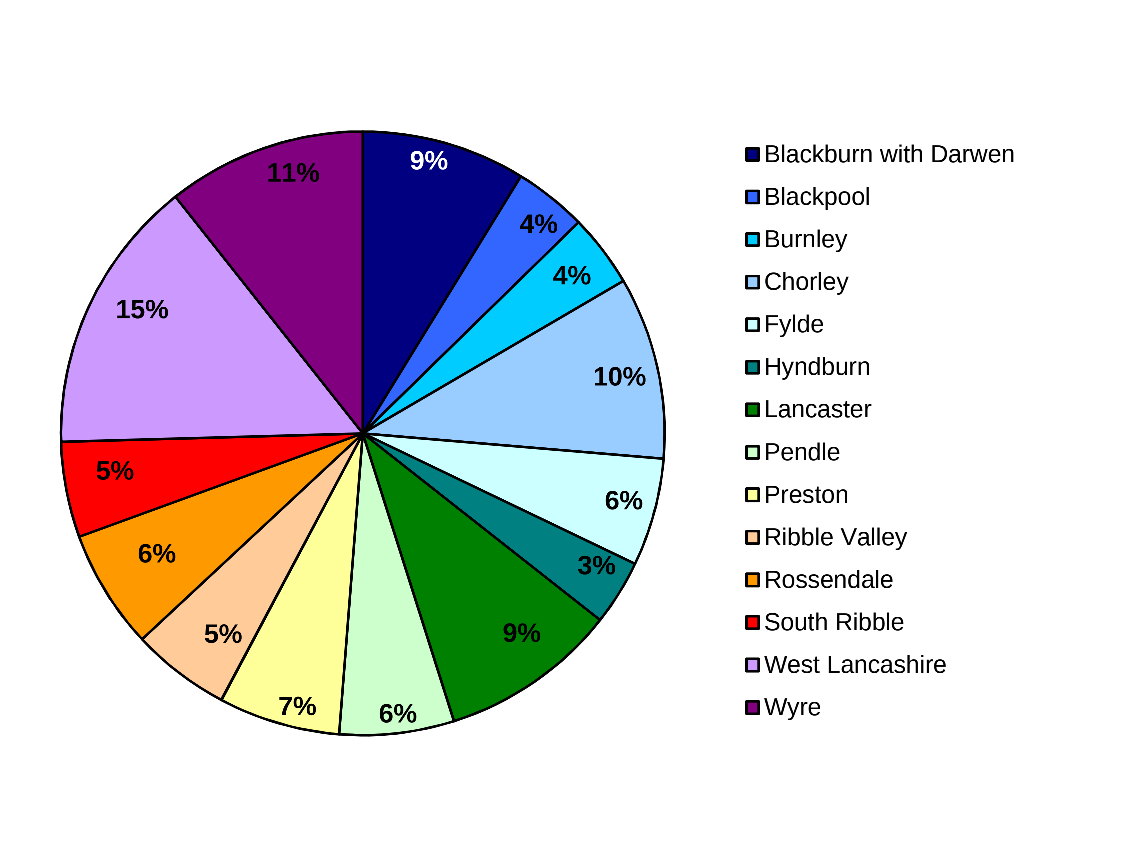
Figure 3-1: Potential accessible energy resource for Lancashire by technology at 2030



Source: SQW

[7] This total excludes the potential capacity for managed woodland (electricity), energy crops (electricity) and waste wood (heat) as these technologies provide both electricity and heat potential which are mutually exclusive.

Figure 3-2: Potential capacity by Local Authority at 2030



Source: SQW

3.6 The following Table 3-2 presents the detailed results for each technology for each LA across Lancashire.

Table 3-2: Potential accessible renewable energy resource (MW) by LA at 2030

Local Authority	Wind		Biomass			Hydro power	Micro-generation		TOTAL	
	Commercial scale	Small scale	Plant biomass	Animal biomass	Waste	Small scale	Solar	Heat pumps	Absolute[8]	Proportionate (%)
Blackburn with Darwen	592	11	2	1	13	2	63	325	1010	9
Blackpool	1	0.0	1	0.1	11	0.0	70	367	449	4
Burnley	200	1	1	1	8	2	37	200	449	4
Chorley	755	33	4	4	10	1	52	267	1125	10
Fylde	371	8	2	4	10	0.0	43	225	664	6
Hyndburn	171	0.0	1	1	9	1	35	186	403	4
Lancaster	598	36	6	11	14	4	67	358	1095	10

[8] Figures may not total due to rounding

Local Authority	**Wind**		**Biomass**			**Hydro power**	**Micro-generation**		**TOTAL**	
	Commercial scale	**Small scale**	**Plant biomass**	**Animal biomass**	**Waste**	**Small scale**	**Solar**	**Heat pumps**	**Absolute[8]**	**Proportionate (%)**
Pendle	446	4	1	2	7	1	39	206	706	6
Preston	285	27	2	5	13	1	68	350	750	2
Ribble Valley	361	12	6	9	5	5	33	177	609	7
Rossendale	516	0.0	1	1	6	3	33	174	735	6
South Ribble	257	11	3	3	10	1	49	253	589	5
West Lancashire	1,292	44	15	2	8	1	54	287	1703	15
Wyre	828	29	4	8	12	1	54	292	1227	11
Lancashire total[9]	6,674	215	49	53	136	21	697	3,667	11513	100

Source: SQW

3.7 The following table presents the heat and electricity potential of each LA and the proportion of the sub-regional total.

Table 3-3: Potential resource capacity split be electricity and heat generation

Local authority	**Electricity (MW)**	**Heat (MW)**	**Total (MW)[10]**	**Proportion of Lancashire total (%)**
Blackburn with Darwen	652	359	1010	9
Blackpool	47	403	449	4
Burnley	230	219	449	4
Chorley	829	296	1125	10
Fylde	416	249	664	6
Hyndburn	199	204	403	3
Lancaster	699	398	1095	9
Pendle	480	227	706	6
Preston	365	386	750	7
Ribble Valley	410	201	609	5
Rossendale	543	192	735	6
South Ribble	309	281	589	5
West Lancashire	1,378	328	1703	15

[9] Figures may not total due to rounding
[10] Total does not equal the sum of electricity and heat capacity as they are mutually exclusive for some technologies.

Local authority	Electricity (MW)	Heat (MW)	Total (MW)[10]	Proportion of Lancashire total (%)
Wyre	906	322	1227	11
Lancashire total[11]	7,462	4,065	11513	**100**

Source: SQW

3.8 No amendments have been made to the previous assessment of waste heat as this was not projected forward from the current capacity. In addition, the grid assessment has not been updated. Lancashire as a whole has reasonable connections to the grid. The only areas with poor coverage are the Areas of Outstanding Natural Beauty (AONB) at Arnside and Silverdale, and the Forest of Bowland. Major renewable energy developments are unlikely to be sited in these areas due to the landscape designations in place.

3.9 It is important to recognise that this assessment has produced an estimate of *technical* potential based on naturally occurring resources. The capacity identified can be cited as useful evidence, but should be highly caveated as the only constraints relate to those as a result of the physical landscape and high level landscape designations – it does not take into account economic viability, planning policy or practice or supply chain issues.

Translating Technical to Deployable Potential

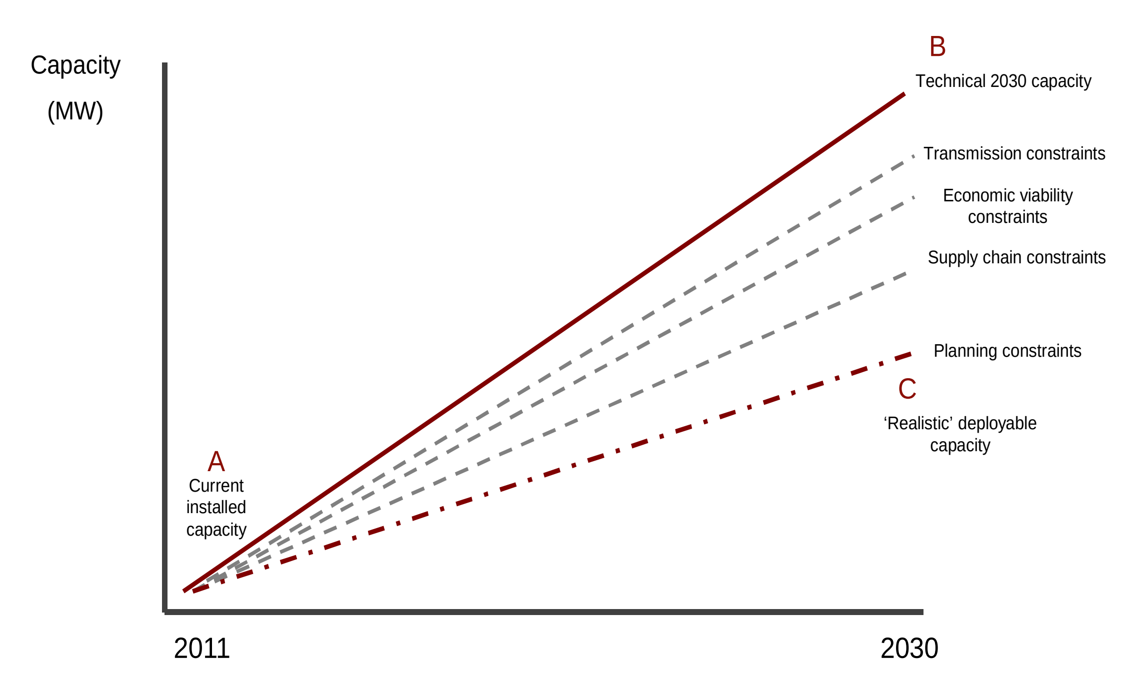
Approach

3.10 In the previous study undertaken by SQW for the Lancashire authorities, reporting in *Taking Forward Renewable Energy Deployment in Lancashire*, technical potential was translated into more realistic deployable potential by identifying the baseline, in terms of currently installed capacity and projecting this forward to 2020 with growth rates constrained by transmission, economic viability, supply chain and planning factors. This is illustrated in Figure 3-3.

3.11 Demand is not taken into account in this assessment, which is deliberate. The DECC methodology and *RE:Deploy* modelling is intended to identify the potential capacity that can be brought forward regardless of local demand. The justification for this is that in contributing towards the UK Renewable Energy target, LAs should be looking to deploy the maximum possible within their areas, without causing detriment to the environment or local amenity, rather than satisfying their own economy- or socially-driven requirements.

[11] Some totals are inaccurate by 1MW due to rounding

Figure 3-3: Overview of the Deployment Modelling



Source: SQW

3.12 In moving from the 'gross' (technical capacity at 2030) to 'net' (deployable capacity at 2030) position, the four specific constraints have been applied to each resource technology separately using metrics identified from national or local evidence. For those technologies where national benchmarks were used (economic viability and supply chain), the constraint factor was identified in the literature. Consultations were undertaken with Electricity North West and Grid UK to identify the constraint factor; this was applied at 0% as there are no major connection issues in Lancashire, other than in the AONBs. Planning constraints were identified by reviewing planning acceptance rates in recent regional reports which were then applied differentially to the different resource technologies. The below paragraphs provide some further information on these constraints and their application.

Transmission constraints

3.13 The electricity transmission system can constrain the deployment of large scale (transmission connected) new renewable energy capacity. This is most likely to occur if a proposed site for a renewable energy project is a long distance from the existing electricity transmission grid or if the grid is already at or near full capacity. In these situations, access to the grid will be granted and in the context of the period 2010-2030, time delays to provide the connection can be seen as temporary. However, significant investment may also be required to provide connection to the grid. Under the agreed charging schemes[12] these up front investments can render particular renewable energy projects as uneconomic.

3.14 During the first stage of the study, we undertook a detailed analysis of grid transmission constraints for gas and electricity which involved consultation with the electricity supply industry. The individual LA resource assessments reported on the key issues for each LA; largely constraints are minimal other than in designated areas such as Areas of Outstanding

[12] http://www.nationalgrid.com/uk/Electricity/Charges/

Natural Beauty and therefore should not have a major impact on the deployment of renewable energy across Lancashire. Further into the future, the major upgrade planned in Cumbria to support the development of developments such as at Sellafield, will boost transmission and distribution in the western half of Lancashire from 2020, but this has not been translated into an uplift in renewable energy deployment due to uncertainty around timing and the exact impact that this will have.

Economic viability

3.15 Given that many renewable energy technologies are relatively new and still undergoing significant innovation, economic viability varies between them and is of key importance. The economic viability of each technology has a significant effect on the probability of its deployment and we have utilised the findings from a number of recent studies to inform our analysis[13]. These include:

- Committee on Climate Change (2011), *Achieving deployment of renewable heat*, undertaken by Element Energy and NERA Economic Consulting
- Committee in Climate Change (2011), *Cost of low carbon generation technologies*, undertake by Mott Macdonald
- Element Energy (2008), *The growth potential for Microgeneration in England, Wales and Scotland.*

Supply chain constraints

3.16 Given that many renewable energy technologies are relatively new and still undergoing significant innovation, supply chains for producing and installing some technologies may be constrained. As supply chains for some of the renewable technologies are global, consideration is needed of what is happening outside of the UK as well as any likely regional variations. Clearly the picture will also change over time with new supply chains established in response to committed demand and as regional, national and international support initiatives help to tackle initial bottlenecks. The investigation of supply chain constraints has utilised the findings from a number of recent studies conducted in this area, in particular a study on *Supply Chain Constraints on the Deployment of Renewable Electricity Technologies (BERR, 2008).*

Planning constraints

3.17 The planning system can have a major influence on the deployment rate of new renewable energy projects where planning consent is required. The key parameters are the approval rate for planning applications and the duration and delays to planning decisions for different technologies and types of project. Recent historic data has been used as the starting point for the analysis of planning constraints, largely drawing upon a study of planning approvals for renewable energy projects in the North West region between 2004 and 2009 (Envirolink Northwest, 2010) and also publicly available data from RESTATS. As explained in Section 2,

[13] The analysis was undertaken prior to the publication of the Arup study on study on projected costs and deployment potential for different renewable electricity technologies up to 2030 for DECC (June 2011).

assumptions and constraints within *RE:Deploy* have not changed due to recent policy and financial incentive developments.

Deployable Resource Assessment Results

3.18 From the *RE:Deploy* modelling the results for Lancashire and for each LA are shown in Table 3-4 alongside the current installed capacity and total technical capacity figures. Overall the results suggest that **1167 MW of renewable energy** could be generated by 2030. As with the 2020 results, this is a very significant reduction from the technical potential, suggesting that just 10% of this can be deployed. The most significant constraint is economic viability and whilst the long-term outlook for financial incentives is uncertain, costs of production and installation are reducing far more quickly than had originally been envisaged so it is possible that this constraint may become less severe in the future.

3.19 As with the assessment at 2020, there is substantial deployable capacity for commercial wind within most districts, with the notable exception of Blackpool, and a significant increase in microgeneration is envisaged, which is starting from a low base. It should be noted that microgeneration is projected forward on the basis of future housing provision as set out in the North West Regional Spatial Strategy. With the recent and current economic downturn and its impact on house-building, the potential identified should be viewed as ambitious. Landfill gas currently provides a large proportion of installed capacity, but is a declining resource as a result of EU legislation requiring the reduction of waste to landfill.

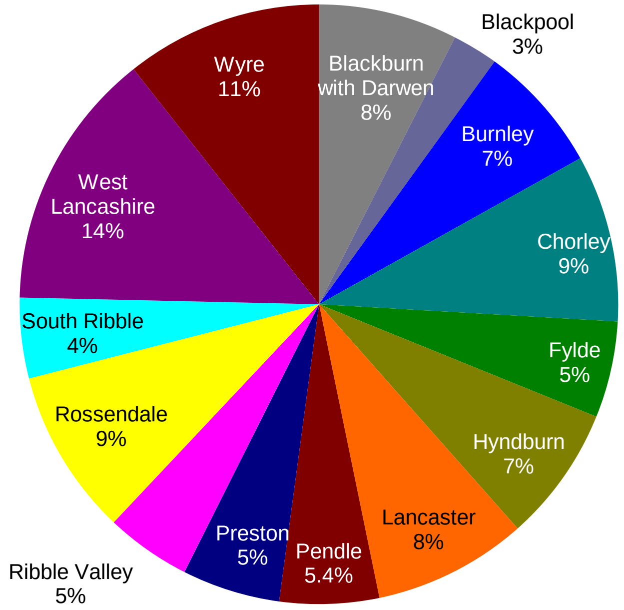
Table 3-4: Deployable resource potential projections to 2020 and 2030

Local Authority	Technical potential at 2030 (MW)	Current Installed Capacity 2011 (MW)	Total deployable potential 2020 (MW)	Total deployable potential 2030 (MW)
Blackburn with Darwen	1010	7	58	**88**
Blackpool	449	0	13	**29**
Burnley	449	30	60	**81**
Chorley	1125	10	76	**105**
Fylde	664	6	43	**61**
Hyndburn	403	26	61	**86**
Lancaster	1095	21	66	**97**
Pendle	706	0	42	**63**
Preston	750	0	37	**62**
Ribble Valley	609	0	36	**54**
Rossendale	735	33	76	**105**
South Ribble	589	1	32	**51**
West Lancashire	1703	5	118	**163**
Wyre	1227	22	91	**124**
Lancashire total	11513	**162**	**807**	**1167**

Source: SQW

3.20 This proportion is split between the LAs as shown in Figure 3-4.

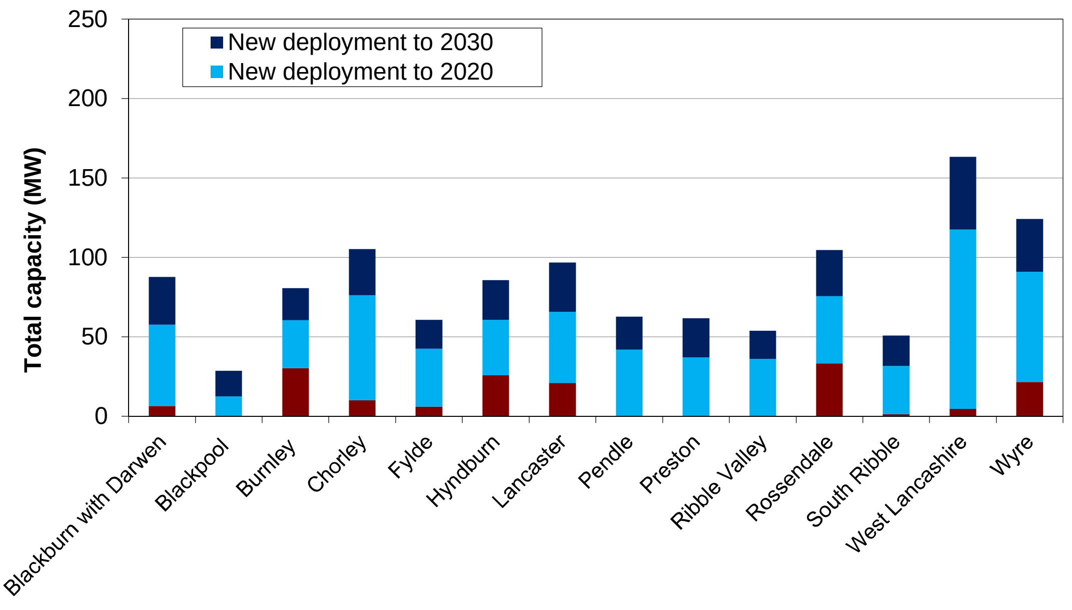
Figure 3-4: *RE:Deploy* modelling results by LA



Source: SQW

3.21 The additional amount that each LA is expected to deploy is shown in Figure 3-5

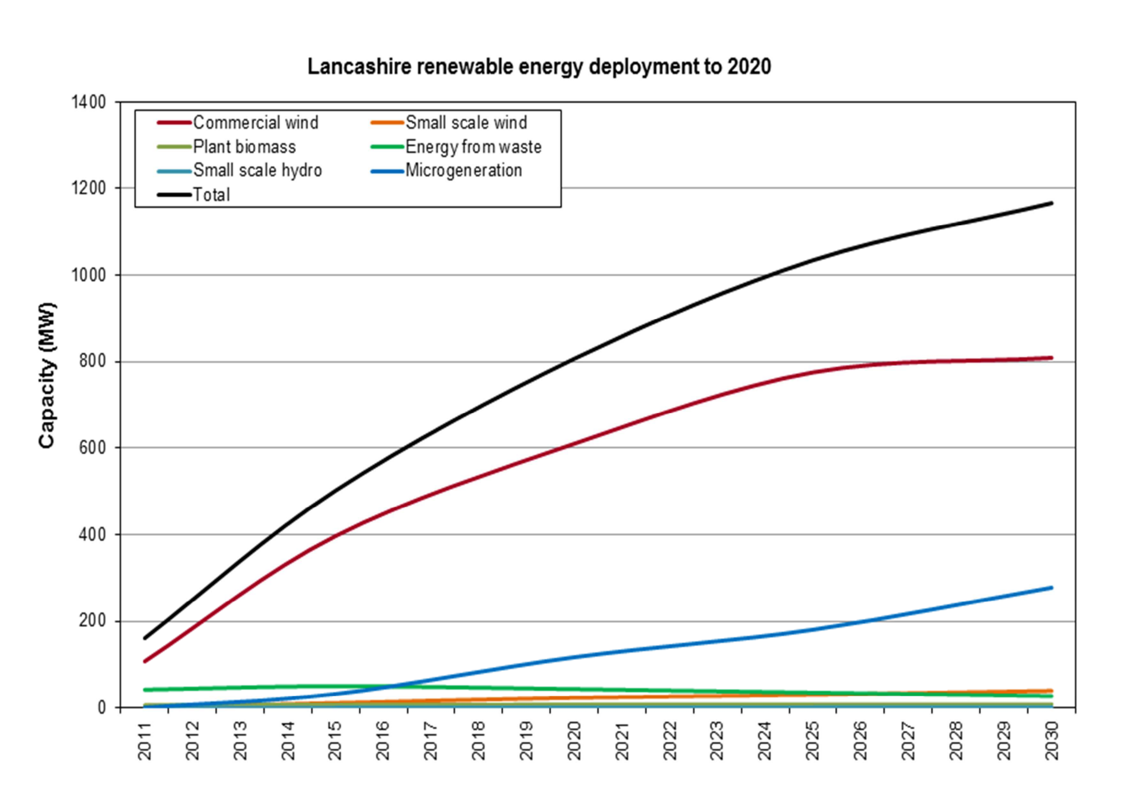
Figure 3-5: Current and projected additional deployment by LA to 2020 and 2030



Source: SQW

3.22 Figure 3-6 shows the deployment curves (i.e. the "build rates") for the onshore renewable energy technologies for Lancashire as a whole. These reveal that commercial scale wind will continue to play an important part of the sub-region's technology mix; a substantial increase is envisaged to be in microgeneration which is starting from a very low base.

Figure 3-6: Lancashire renewable energy deployment curves to 2030



Source: SQW

4: Target Development

4.1 Against the general technical and deployable potential for renewable energy in Lancashire, this Section focusses on the use of targets for renewable energy deployment/generation in planning policies. It provides the context for their use, explores the advantages and disadvantages of applying targets, articulates how these can be defined including the potential use of the updated renewable energy potential results, in the context of this Study, and provides recommendations.

4.2 The Section has been informed by the review of policy developments (detailed in Section 2); the revised potential results (Section 3); consultations with LA officers, North West agencies, such as the Forestry Commission, and renewable energy developers; and a Workshop with planning officers held in Preston on 20 January 2012.

Context

4.3 Currently, there is no requirement for local authorities to establish their own targets for renewable energy deployment/generation although there are many reasons why doing so may be desirable. In addition, the planned revocation of Regional Spatial Strategies means the regional and sub-regional targets will soon have no status. Our understanding from DECC, is that local renewable energy targets are not specifically required, but neither are they discouraged.

4.4 The National Planning Policy Framework[14] (published on 27 March 2012) includes policy guidance to *'help increase the use and supply of renewable and low carbon energy'*, which takes forward the Government's current stance of the presumption in favour of sustainable development. Also, as with the preceding Planning Policy Statement 22 (Planning for Renewable Energy), the NPPF does not require applicants for energy development to demonstrate the overall need for renewable or low carbon energy. The guidance also requires LAs to consider identifying suitable areas for renewable and low-carbon energy sources and supporting infrastructure, and recommends that these should be mapped and formalised in local plans.

4.5 In 2011, DECC and the Local Government Group (LGG) agreed a Memorandum of Understanding (MoU); this is not binding, but more a statement of intent. This MoU sets out the DECC and LGG partnership approach to helping meet climate change mitigation and related objectives including the target to supply 15% of the UK's energy consumption from renewable sources by 2020. The MoU suggests that targets have a role to play in addressing climate change and delivering renewable energy policy and suggests that DECC and the LGG should work together to help local councils to reduce carbon emissions from their own activities and those from homes, business and transport within their areas, *'underpinned by locally ambitious targets and indicators'*. The MoU also sets out some milestones for the future which includes the following action:

[14] http://www.communities.gov.uk/publications/planningandbuilding/nppf

'April – November 2011: Local Government, Central Government and industry to develop and agree a collaborative approach to promoting locally appropriate and evidence-based renewable and low-carbon energy deployment'.

4.6 At the Lancashire level, there is a range of different approaches to the use of targets in planning policies. Three of the LAs include targets within their Core Strategy renewable energy policies or within the justification for these policies. These have been developed using different evidence bases and using different approaches. In the following Section 5, Table 5-1 provides a summary of the status of each LAs' core strategy and renewable energy planning policies detailing which have targets. These targets are based on the adoption of a Merton 10% type policy in which all new developments are required to provide 10% of their energy requirements from renewable energy (Ribble Valley), and more detailed landscape capacity studies for Pendle and Rossendale using the previous South Pennines Study.

The pros and cons of a target-based approach

4.7 Before discussing how targets could be developed, it is important to explore briefly the advantages and disadvantages of developing and using targets for renewable energy deployment or generation at the local level, in a context where there is no mandatory requirement to do so.

4.8 It is important to note that if particular developments are is significant, as is the case with the extension of the Scout Moor wind farm, then the application will be determined by the Infrastructure Planning Commission (currently) or the Secretary of State (based on the recommendation of the Major Infrastructure Planning Unit, as from April 2012).

Pros

4.9 Considering documentary evidence and from discussion with stakeholders, the following were suggested as reasons to take forward the development of targets:

- ***Promoting the agenda*** – having targets in place both promotes LAs' corporate support for the renewable energy agenda and should result in increased renewable energy deployment meeting environmental, economic and social imperatives.
- ***Provision of certainty*** – to planning officers and elected members, developers and local communities. With only a UK target now in place, it can be difficult, at the local level, to understand what level of renewable energy deployment should be encouraged and whether enough is being done to contribute to the UK goal. Currently a large proportion of renewable energy planning applications, particularly for large-scale onshore wind development, are decided at appeal. That is, planning committees reject the application and then when the applicant appeals, Planning Inspectors grant permission. This process can waste time and resources, and having a target in place could give planning committees more confidence to grant permission and ensure developers do not submit applications which are little chance of success. Developers consulted as part of this study were unanimously in favour of targets as these can provide added weight to the case for granting permission.

- ***Understanding progress*** – whilst planning officers monitor the results of planning applications, the number of renewable energy developments given permission and their cumulative capacity, this does not have much meaning without a target or goal against which to compare progress. The setting of a local level target would enable distance to be travelled and help identify where progress is falling short of what is required leading to action to promote increased deployment.

Cons

4.10 Whilst the advantages of having targets are evident, some disadvantages were also highlighted, through the documentary evidence and via consultations:

- **Potential to 'cap' renewable energy deployment** – there is anecdotal evidence that some LAs (in Lancashire and elsewhere) may wish to adopt renewable energy targets in order to provide a ceiling and restrict the granting of planning applications for renewal energy development. This clearly contravenes the *'presumption in favour of sustainable development'* within the NPPF and the fact that there is no requirement to demonstrate the need for renewable energy development in the NPPF. For example, at the Examination of the Core Strategy for Rossendale, the renewable energy targets were the most significant issue with a special examination session held solely to confirm and clarify that the targets included would not be used as a ceiling.
- **Not a level playing field** – as previously stated, three Lancashire LAs currently include renewable energy targets in their Core Strategy policies based on differing evidence bases and approaches. Some consultees were concerned that a patchwork approach across Lancashire could result in developers *'playing LAs off against one another'* and difficulties in understanding the consolidated Lancashire approach as the targets are not comparable and cannot be aggregated. There is no evidence of developer concerns with their primary driver being the economic viability of schemes, whilst recognising that targets provide added certainty in the development and granting of planning applications. Understanding the Lancashire wide-situation is also less of a concern than it may have been previously, due to the Government's focus on localism and the need to develop and manage approaches at local level. That said, there is appetite for joint approaches as evidenced by the Central Lancashire Core Strategy covering Preston, Chorley and South Ribble.
- **Potential for perverse action** – several consultees suggested that having a target could lead to perverse action, in that moving towards the target takes priority over the most appropriate development for the area. For example, in capacity terms, large scale wind can contribute significant MW, but due to load factors and proportion of use, the actual generation may be fairly low. In addition, it may have a larger visual impact than a biomass plant, which may be more efficient in producing power, but have less potential capacity. These examples provide insight into the sorts of real-world problems that, theoretically, such targets can create.
- **Inflexibility resulting in a limited time-span** – as detailed in Section 2, the current environment for renewable energy development is very uncertain. Over the next 20

years, there are likely to be major advances in technology impacting on the economy, efficiency and effectiveness of renewable energy technologies; financial incentives are also changing, including the specific proposal for a rolling reduction of FITs for solar PV related to deployment. Such uncertainty makes definitive target setting very challenging and any targets set will require regular review. For example, Rossendale's targets based on pragmatic capacity developed through a landscape capacity approach have almost been reached within two years of being set.

Issues in defining possible targets

4.11 As we know, the current situation is one in which targets are not required. But their benefits, particularly in terms of providing a degree of certainty and a clear goal at the local level, probably outweigh their drawbacks. The updated assessment of renewable energy potential to 2030, detailed earlier, provides some headline evidence as a starting point for the consideration of local renewable energy deployment targets; however, there is no defined or accepted process for developing such targets and there is unlikely to be one in the near future. The DECC methodology explicitly refers to target setting, albeit on a regional basis, as the expected final 'Stage 7' of the process for renewable energy assessment. But the methodology itself only addresses the capacity assessment activities (Stages 1-4).

Parameters

4.12 As well as defining the process to be adopted, it is important to consider how a target will be articulated. For example, should a capacity (MW) or generation (MWh) metric be used; should targets be absolute or proportionate to energy use; should they be articulated as an aspiration, ceiling or floor; should they identify capacity or generation to be identified at a fixed future date or prescribe an annual increase; is a technology-specific approach appropriate, or an aggregate figure allowing a more flexible mix more appropriate; and finally, at what spatial level should they be fixed – Lancashire, groups of LAs, individual LA or even sub-LA (e.g. at the Area Action Plan level)?

4.13 Again advantages and disadvantages can be identified for each of the above considerations, but the consensus view (from consultations and the review of documentation) was for an absolute capacity aspiration, fixed at a certain date in the future, which is stated as an aggregate figure and set at the level of the LA. The main reasons for this were pragmatism in terms of the capacity metric, a fixed date to provide a goal to aim towards prevent the need for constant revision if a year on year % increase were provided and an aggregate figure to allow a flexible mix of technologies. The spatial scale has been set at the level of the LA, partly to reflect practical realities in terms of administrative boundaries and also in keeping with the Localism agenda.

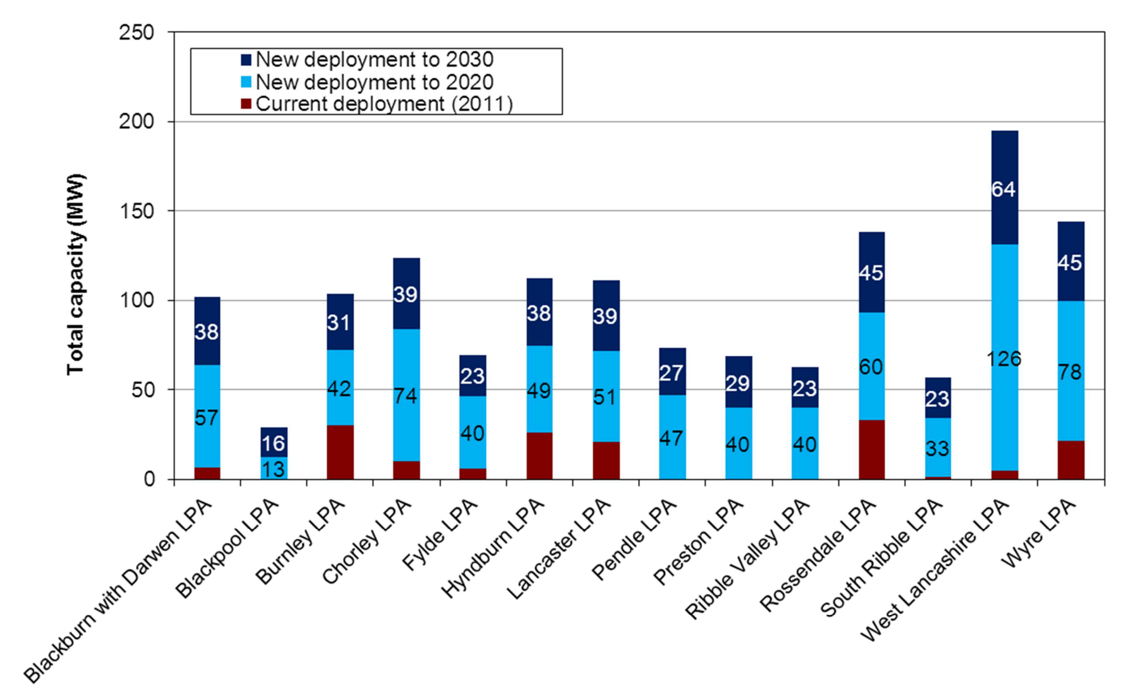
Process

4.14 A source of potential guidance for local target setting is provided in the Planners Toolkit produced by Regen SW (2010). Within the toolkit, guidance is provided concerning the development of area-wide renewable energy targets. It outlines the following five tasks (as well as a series of steps within each Task). It was our intention to use this Planners Toolkit as the broad framework for suggesting targets or ranges of targets. Below the prescribed five steps are detailed with our response in italics:

1. Develop baseline for existing energy demand in the local authority area and projected energy demand by 2020 (2030 in this case) – *it was agreed to focus this study on supply rather than demand due to the resources available and the need to contributing towards national targets rather than covering individual authorities' own energy needs*
2. Identify existing (and firm proposals for) installed energy capacity - *this was undertaken as part of the deployment analysis undertaken in the summer, which took account of all renewable energy developments under or awaiting construction and all those with planning permission*
3. Assess area-wide potential for renewable energy (non-microgeneration) covering: wind power, biomass, hydro power and energy from waste – *updated to 2030, and reported in Section 3*
4. Assess potential uptake of microgeneration and building integrated renewable energy in existing and new buildings – *updated to 2030, and reported in Section 3*
5. Develop target scenarios for renewable energy and heat, and test with stakeholders – *different scenarios based on varying the planning acceptance to onshore wind were developed and applied to the capacity results. Planning acceptance was chosen as this appeared the most likely to change; future scenarios concerning economic viability were considered too uncertain to be used.*

4.15 The outputs from Task 5 above were presented at the Workshop with planning officers in January 2012. The planning acceptance rate for onshore wind based on recent evidence and used in *RE: Deploy* was 57%. This rate was increased to 65%, 75% and 80% in order to understand the impact on overall deployment. Figure 4-1 details the results of increasing the planning acceptance rate within the *RE:Deploy* model from the existing 57% to 75% as one potential scenario to inform the development of targets.

Figure 4-1: Revised deployment potential based on 75% planning acceptance rate for onshore wind



Source: SQW

4.16 The results were discussed briefly at the Workshop, but a particular concern was that the political acceptability and therefore the planning acceptance rate concerning onshore wind vary considerably between LAs and using a Lancashire approach is not appropriate. It was felt more appropriate to consider these issues taking into account more locally tailored variables. Whilst noting that this could result in a patchwork quilt effect as identified in 4.6 and 4.10, the push for localism lessens the need for a homogenous approach across Lancashire, and developers are driven by the financial viability of their schemes regardless of the public sector targets in play.

4.17 The majority of attendees considered that the *RE:Deploy* results provided useful context and a helpful indicator of the direction of travel, but that more detailed landscape characterisation/capacity studies should be undertaken to develop more specific and pragmatic targets. It is suggested that the *RE:Deploy* results could be useful in providing an aspirational target; many LAs were concerned that the resulting capacity was very high in some areas for large scale onshore wind, particularly where current deployment is low or non-existent. This is not as a result of local or political objections but relates to a lack of developer interest. This may be exacerbated by the fact that the DECC methodology considers a wind speed of 5m/s at 45m above ground level to be viable whilst few developments on the ground are currently being realised at speeds of less than 6m/s. The reasons for the 5m/s figure was related to potential future technological developments enabling better generating returns at lower wind speeds.

Summary

4.18 Overall, it is recommended that the assessment of potential reported in Section 3 should be used more as providing ‘indicators of travel’ or aspiration, rather than formal targets. It was suggested at the Workshop in January 2012 that it is difficult to articulate definitive targets without having a firm underlying policy intent, which not all of the LAs currently have. In order to move towards clearer policy intent, it may be sensible to develop a joint, consolidated, overarching indicator/target (e.g. carbon reduction) for the Lancashire authorities, under which individual targets/indicators could then sit. In addition, as the DECC methodology was intended for the assessment of regional capacity and the Lancashire specific results have used national and Lancashire-wide constraints, it may be appropriate for LAs to undertake more specific landscape characterisation/capacity studies that can identify and characterise local constraints more explicitly.

4.19 In terms of monitoring progress, the capacity results from Section 3 provide a useful basis for the development of indicators, whether formally stated in Core Strategy policies or used in the justification for these policies or in Supplementary Planning Documents. It is suggested that LAs, without targets, should take steps to do so regardless of their stage in Core Strategy preparation. If Core Strategies have been recently adopted, for example, such indicators could be included in Supplementary Planning Documents or in other relevant strategies such as Sustainable Community Strategies.

4.20 Monitoring is essential and whilst LAs already monitor developments requiring planning permission, microgeneration installations, in the main, do not require planning permission. However, the Ofgem microgeneration data is analysed at the LA level by AEA and can be accessed from their website to inform monitoring on a quarterly basis[15].

[15] http://www.aeat.com/microgenerationindex/

5: Planning Policy for Renewable Energy

5.1 This Section provides a summary of the policy context for the development of renewable energy planning policy, provides an overview of the current situation within Lancashire and suggests how planning policies could be further developed to meet emerging policy requirements. It then highlights some considerations with regards to the planning policy support for community schemes including the Community Infrastructure Levy (CIL) and highlights current issues with regards to the use of LA assets to generate renewable energy.

5.2 The outputs from the previous renewable energy study for Lancashire completed by SQW in summer 2011 included a planning guide which detailed the specific types of policies that could be developed and the type of issues that would need to be taken into account in planning policy for each of the different resource technologies. This guidance is not repeated here, but a more discursive approach is taken, focussing particularly on issues raised by consultees in bilateral consultations and at the workshop for planning officers held in January 2012.

The National Context

5.3 The current overarching policy document within which renewable energy planning guidance should be developed is the NPPF, which states an overall presumption in favour of renewable energy development; local planning policies should not require applicants to demonstrate the overall need for renewable energy. The NPPF is a key part of the Government's reforms intended to make the planning system less complex and more accessible, and to promote sustainable growth. Within a section on climate change, flooding and coastal change, the Framework contains text addressing specifically how planning should *'help increase the use and supply of renewable and low carbon energy'*. The main new policy emphasis for renewable energy relates to identifying suitable areas for renewable and low-carbon energy sources, and supporting infrastructure.. Other elements of note within the policy are the need to *'support community-led initiatives . . . including development outside such areas being taken forward through neighbourhood planning'* and a positive focus on identifying opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers. As with the preceding PPS22, the Framework does not require applicants to demonstrate the overall need for renewal or low carbon energy, and requires that applications should be approved if their impacts are acceptable or can be made so.

5.4 Finally, the Localism Bill contains a duty to co-operate in relationship to the planning of sustainable development. The duty is being introduced due to the need for coordination at a spatial level higher than individual LAs. The duty applies to LAs and other public bodies involved in plan making.

The Local Situation

5.5 The Lancashire LAs are all at different stages in their LDF development processes as summarised in Table 5-1. Blackburn with Darwen, Hyndburn, Lancaster and Rossendale have all adopted their Core Strategies, whilst Burnley, Fylde and Wyre are all still at fairly early stages. The remainder of the Lancashire authorities are due to adopt their Core Strategies in 2012 or 2013, including the joint Central Lancashire Core Strategy which covers Chorley, Preston and South Ribble.

5.6 The majority of LA Core Strategy documents have criteria-based policies, but only Blackpool and Lancaster have location-specific policies of the type favoured by the NPPF. However, others do contain more location-specific detail in the justification for their policies and further information may be provided in Supplementary Planning Documents and Area Action Plans.

Table 5-1: Assessment of Lancashire LA policies

Local Authority	Status of Development Plan	Renewable Energy Planning Policy?	In which document?	Criteria-based	Location-specific	Building Integrated	Other	Contains targets
Blackburn with Darwen	Core Strategy Adopted January 2011	Yes	Core Strategy – CS13 : Environmental Strategy				Presumption in favour of renewable energy development	No, but requirement for all new development to provide a percentage of its own energy requirements from renewable sources
Blackpool	Core Strategy preferred option approved for public consultation March 2010 and was consulted on during the summer of 2010	Yes	Core Strategy Preferred Option: three policies – G9, G10, G11	Policy G9: Energy requirements of new development	Policy G11: Strategic Site Energy Requirements	Policy G10: Sustainable Design, Layout & Construction		No
Burnley	New Local Plan (combining Core Strategy, Allocations and Development Management policies) Issues and Options consultation scheduled for early 2013	Yes	Saved policies from existing Local Plan Second Review 2006	E31: Wind Farms E32: Development of other renewable energy facilities in rural areas				No
Chorley	Joint Central Lancs Core Strategy submitted 2011, Inspector's report expected May 2012 and final	Yes	Core strategy Publication Version	Policy 28: Renewable and Low Carbon Energy Schemes				No

Local Authority	Status of Development Plan	Renewable Energy Planning Policy?	In which document?	Criteria-based	Location-specific	Building Integrated	Other	Contains targets
	adoption in July 2012							
Fylde	Public consultation concerning Issues and Options to be undertaken in June 2012,	No information yet	N/A					N/A
Hyndburn	Adopted – January 2012	Yes	Core Strategy	Policy ENV5: Renewable Energy				No
Lancaster	Adopted - 2008	Yes	Core Strategy	Policy ER7: Renewable Energy	Policy ER7: Renewable Energy			No – RSS targets stated in supporting text for context.
Pendle	Core Strategy Preferred Option Report consulted upon October – December 2011, due to be adopted 2012/13	Yes	Core Strategy	Policy ENV3: Renewable and Low Carbon Energy Generation				Yes (based on previous Maslen Study)
Preston	Joint Central Lancs Core Strategy submitted 2011, Inspector's report expected May 2012 and final adoption in July	Yes	Core strategy Publication Version	Policy 28: Renewable and Low Carbon Energy Schemes				No

Local Authority	Status of Development Plan	Renewable Energy Planning Policy?	In which document?	Criteria-based	Location-specific	Building Integrated	Other	Contains targets
	2012							
Ribble Valley	Core strategy: proposed revisions to key statements and Development Management policies document consulted upon in 2011, Submission to Secretary of State planned for Spring 2012	Yes	Core Strategy Development Management Policy	Policy DME5: Renewable Energy				Yes – Merton type policy
Rossendale	Core Strategy adopted in 2011	Yes	Core Strategy	Policy 19 Climate change and low and zero carbon sources of energy Policy 20 Wind energy				Yes (based on Julie Martin and Maslen studies)
South Ribble	Joint Central Lancs Core Strategy submitted 2011, Inspector's report expected May 2012 and final adoption in July 2012	Yes	Core strategy Publication Version	Policy 28: Renewable and Low Carbon Energy Schemes				No
West Lancashire	The new Local Plan Preferred Options was consulted upon in January 2012,	Yes	New Local Plan	Policy EN1: Low Carbon Development and Energy		EN1: Low Carbon Development and Energy Infrastructure		Not at this stage but may do in final document.

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Local Authority	Status of Development Plan	Renewable Energy Planning Policy?	In which document?	Criteria-based	Location-specific	Building Integrated	Other	Contains targets
	adoption is expected by mid-2013.			Infrastructure				
Wyre	Core Strategy Issues and options was Consulted on in 2008. Fleetwood-Thornton Area Action Plan adopted 2009. Core Strategy Preferred option to be consulted on in April/May 2012.	No detail within Issues and Options document. AAP Policy 9 Energy Efficiency & Sustainability in New Developments. Draft Preferred Options for the Core Strategy includes a criteria based Renewable & Decentralised Energy policy Four (of nine) Area Strategies refer to the support of renewable energy schemes and in four Area Strategies renewable energy schemes to be judged on their merits.		No detail within Issues and Options document, but aware that a draft criteria-based renewable energy policy will be included in the Preferred Option document				No

Source: SQW

5.7 As previously detailed, targets are contained within the policies, or justification for policies, for Pendle, Ribble Valley, and Rossendale. Those LAs who have recently adopted Core Strategies, or are due to do so in the near future, may be less willing to develop targets for inclusion than those at an earlier stage in the process due to the time and resources required to make changes to the Core Strategy.

5.8 From consultations undertaken during the course of the study, the following key issues were raised with regards to planning policy development for renewable energy:

- Several planning officers consulted considered that their existing policies were insufficient, mainly on the basis of being too broad and unfocussed. Where policies were considered insufficient, it was generally preferred to address this through other documents rather than revising Core Strategies e.g. site allocations and Development Management Policies. Linked to the assertion that policies may be insufficient was the suggestion that policies have little weight without including targets.

- Others, notably those who had had undertaken more research and developed a robust evidence base from which targets had been developed, were satisfied with their policies and felt these provided a certain environment for developers and communities alike.

- The need for cross-LA boundary working was recognised, and it was suggested that there is a lack of guidance from DCLG which should be addressed. The NPPF actively promotes planning strategically across boundaries and includes the '*duty to cooperate*' requiring that LAs collaborate to ensure that strategic priorities are properly coordinated and addressed in local plans. In addition, it highlights the need for collaborative planning to support sustainable economic growth in conjunction with the Local Enterprise Partnership (LEP) and Local Nature Partnership. Collaborative working can be in the form of formal documents such as Core Strategies, as has been taken forward for Central Lancashire, and less formal protocols and joint approaches.

- Consultees from organisations other than LAs considered that planning policies tend to be reactive rather than proactive and could be doing much more in terms of promoting available resources and encouraging more CHP and micro schemes as well as wind.

- Across all LAs, the priority within the current economic environment is for rebalancing economic growth with job creation being a key imperative, and managing public spending cuts. The economic benefits of promoting and increasing the deployment and generation of renewable energy need to be highlighted explicitly in order to increase corporate commitment. Renewable energy should not be seen simply as a climate change and planning matter, but also of economic and social importance. Addressing fuel poverty is a further local driver, particularly within East Lancashire, where retrofit programmes have been developed as part of wider housing regeneration activity.

5.9 Across Lancashire, elected members are largely supportive of renewable energy deployment, particularly microgeneration involving retrofit in regeneration areas. However, in some authorities there is considerable anti-wind feeling although the recent CLASP funded seminars and member training has helped raise awareness more positively.

Good Practice

5.10 The Planning Guide produced previously as part of SQW's Lancashire Renewable Energy Study in 2011 provided guidance for the development of planning policies for renewable energy; it is not repeated here. Target setting has been discussed in detail in Section 4 and, on balance, is recommended, mainly to ensure greater certainty. Other issues that should be taken into account in the development of planning policy, in Core Strategies and other documents, to address the issues highlighted in paragraph 5.10 and meet the requirements of the NPPF, are as follows:

- identification of suitable locations supported by mapping of the availability of resources (e.g. wind capacity, heat mapping) where available
- consideration of cross-authority working where this is not part of a formal document such as the Central Lancashire Core Strategy
- support community-led initiatives including development outside areas being taken forward through neighbourhood planning
- positive support for the promotion of locally identified opportunities to support development which draws energy from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers
- undertake further research including landscape capacity studies particularly where a significant wind resource has been identified through the results in Section 3, but there has been limited or no deployment on the ground.

Community Involvement

5.11 The promotion of community-level schemes for renewable energy generation is supported nationally; this has been reinforced through special mention in the proposed renewable energy policy within the NPPF. Whilst there are some small schemes across Lancashire with particular interest in small scale hydro, take-up hitherto has been limited. This was reported in the previous study, and was considered to be due to a lack of expertise and understanding at the community level and reduced availability of support from public sector organisations as a result of funding cuts.

5.12 Neighbourhood plans provide an opportunity to promote community renewable energy schemes, although none have come forward yet within Lancashire. Across the country, different approaches are being taken to the development of neighbourhood plans with some being facilitated by LAs. Local Development Orders (LDOs) also provide an opportunity for the promotion of renewable energy and are being taken forward elsewhere; for example, Dacorum Borough Council has proposed creating an LDO for small-scale renewable energy systems in its major business park.

5.13 Separately, the Community Infrastructure Levy (CIL) was set out in the Planning Act 2008 as a means for LAs to raise funds from developers. The funds raised from the charge, which can be gained from any new developments in an LA's area, must be spent on infrastructure. The definition of infrastructure in this instance includes schools, flood defences, open space, transport, sporting and recreational facilities, play areas, parks, health and social care facilities or drainage systems. The Localism Act confirmed the retention of the CIL model with some amendments including the ability to ring-fence part of the CIL to go to third party organisations such as town/parish councils. LAs are bringing forward CIL schedules – in Lancashire, the Central Lancashire authorities have drafted a joint charging schedule which went out to consultation in January 2012, and Blackburn has submitted a bid to become a Planning Advisory Service (PAS) pilot for CIL; other LAs are currently investigating the potential for CIL and drafting charging schedules. Overall, there is the potential for CIL to pump-prime renewable developments, but this is only likely to be at a very modest level given the competing calls for CIL resource.

LA schemes

5.14 As with community level schemes, there is generally support within LAs for the deployment of renewable energy linked to LA owned assets and land, but lack of expertise and resource are considerable barriers to forward progress. Several schemes are in existence, most notably nine schools in East Lancashire with biomass boilers (funded through PFI) which have been running for over two years with no difficulties and the retrofit of energy-efficiency measures on housing in regeneration areas. However, overall action has been fairly limited, which is likely to remain the case for some time as short term budget balancing remains the key priority.

Summary

5.15 This Section has provided an overview of the national context for the development of local planning policies for renewable energy, summarised the current status of renewable energy policies and Core Strategies for each Lancashire LA and provided some suggestions for how these could be improved to address local concerns and meet the requirements of the NPPF. On balance, the inclusion of renewable energy targets within these policies would help sharpen their focus and could help encourage greater deployment of renewable energy through community schemes and via LA assets, noting the challenges that remain in terms of constrained resources and access to expertise.

6: Conclusion and Recommendations

6.1 This final Section highlights the key conclusions flowing from the Study, before going on to identify a number of key recommendations to enhance the deployment of renewable energy across Lancashire.

Conclusions

Updated resource assessment results

6.2 Lancashire has substantial potential deployable renewable energy resources at 2030 of 1,167 MW, a considerable increase on the 807 MW identified at 2020. As with the previous Study, the deployable capacity is just one tenth of the technical potential with the largest constraint identified as economic viability along with supply chain issues and planning acceptance. This deployable potential should be revised on a regular basis (at least every three years) due to the considerable uncertainties surrounding the deployment of renewable energy particularly with regard to future technology and market change, financial incentive regimes.

6.3 The deployable potential capacity has been converted into its generation equivalent by multiplying up the snapshot capacity by the number of hours in a year and then constraining each technology by its load factor (as defined by accepted industry benchmarks). This has identified the deployable electricity generation potential as 2,468 GWh at 2030. This compares with current electricity consumption for Lancashire of around 6,413 GWh[16] based on 2009 figures. The UK Renewable Energy Strategy suggests that 15% of total future energy needs should come from renewable sources by 2020 which translates to approximately 30% of electricity production. It is noted that the national 30% indicative target includes electricity generated from offshore sources and energy consumption is projected to forecast to reduce slightly over the next 10 years. The potential deployable electricity generation figure for Lancashire of 2,468 GWh by 2030 would be arithmetically equivalent to 38% of the County's electricity consumption in 2009, demonstrating the significant opportunity for Lancashire, even from onshore renewable electricity sources alone.

6.4 As detailed in the previous study completed in 2011, the successful deployment of commercial scale onshore wind is critical to the overall growth in renewable capacity, and it is unlikely that Lancashire could make significant progress towards meeting its potential for renewable energy by 2030 without increasing the deployment of this resource. This is due to the modest scalability and/or limited capacity of other naturally occurring resources such as plant biomass, small scale wind, small scale hydropower and energy from waste. Microgeneration is also expected to provide a substantial contribution of future renewable energy deployment, but is starting from a low base.

6.5 Again reflecting back on conclusions from the previous study, whilst it is technically and, we believe, practically possible to increase deployment of renewable energy across Lancashire to

[16] DECC (2009) Sub-national domestic and non-domestic electricity consumption statistics - http://www.decc.gov.uk/en/content/cms/statistics/energy_stats/regional/electricity/electricity.aspx

1,167 MW by 2030, any delays in the planning consent or construction process, future changes to financial incentives, lack of developer interest, policy changes or technological developments in other technologies, e.g. nuclear will affect this. In addition, a substantial, sustained and widespread increase in the adoption and implementation of energy efficiency measures, both in business and domestically, may mean that a lower level of renewable energy generation may suffice. In addition, potential improvements in grid connection planned for the future should provide an opportunity for a higher level of renewable energy generation across Lancashire.

Targets

6.6 With the absence of regional or sub-regional targets, LAs now only have the UK Renewable Energy Strategy target to assist in the deliberation of planning applications and the assessment of the potential contribution that these may make. Informed by this Study, locally defined targets are recommended to increase certainty for planning officers and planning committees, developers and local communities. The development of targets is challenging and the current uncertain environment for policy, technology and financial support means that these will need regular review. It is also recommended that the assessment of potential reported in Section 3 could be used more as providing 'indicators of travel' or aspirations rather than formal targets. As such, these could be used in the justifications for Core Strategy policies (rather than be included within the detail of the policy). In addition, where the resource assessment results, provided earlier, detail much higher figures than LAs had expected, particularly in relation to onshore wind, and where current deployment is low, it is suggested that further landscape characterisation/capacity studies should be undertaken that can identify local constraints more explicitly.

6.7 A further important issue is that the process of designing and using targets can be used to educate both planning officers and elected members, and also the local community through consultation. The process can also provide a greater sense of ownership over likely developments with local areas supporting the localism agenda. The CLASP-funded series of events run over the last year has had considerable success in raising awareness and 'myth busting' in relation to renewable energy developments and it is suggested that LAs should continue awareness-raising with local communities, as far as resources allow.

Policies

6.8 All of the Lancashire LAs have renewable energy policies within their Core Strategies or are in the process of developing them. These vary in content and approach and the recommendations made in the following sub-section should ensure that these accord with emerging policy requirements. Where targets are to be pursued, these can be included in associated documents rather than spending further time and resources in revising Core Strategies particularly where these have only recently been adopted. Planning policies for renewable energy should take the following issues into account:

- identification of suitable locations supported by mapping of the availability of resources (e.g. wind capacity, heat mapping) where available

- consideration of cross-authority working where this is not part of a formal document such as the Central Lancashire Core Strategy
- support community-led initiatives including development outside areas being taken forward through neighbourhood planning
- positive support for the promotion of locally identified opportunities to support development which draws energy from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers
- undertake further research including landscape capacity studies particularly where a significant wind resource has been identified through the results in Section 3, but there has been limited or no deployment on the ground.

Wider considerations

6.9 Undoubtedly, targets can help sharpen policy intent and sound, robust policies can provide greater certainty to planning officers, committees and developers. But, there needs to be greater political acceptability (which relates to wider public opinion) of renewable energy development, particularly large-scale onshore wind, if a significant step-change in renewable energy deployment and generation is to be realised. In the current economic climate, setting out the economic benefits of greater deployment in terms of cost efficiencies (including addressing fuel poverty) and job and wealth creation are essential in order to achieve real political and community traction. The NPPF is committed to a '*presumption in favour of sustainable development*' within which it highlights the importance of '*contributing to building a strong, responsive and competitive economy*'. But the task will not be easy; it is recommended that greater collaboration is fostered between economic development and planning officers within and between LAs and with other local organisations such as the LEP, and business and community groups locally, to ensure that the economic benefits of greater renewable energy deployment are promoted.

6.10 In addition to wealth and job creation arguments for a substantial uplift in renewable energy deployment across Lancashire, there are clear community benefits which are supported through emerging policy in the NPPF, neighbourhood planning and local development orders and the CIL. LAs are currently developing charging schedules for CIL and whilst recognising that there will be strong competing priorities for the resources available, support for community renewables should be reflected where appropriate.

Recommendations

6.11 The Study's recommendations are summarised overleaf in Table 6-1.

Table 6-1: Study recommendations

1) The results from SQW's updated resource assessment should be disseminated within LAs and used as part of the evidence base to 2030 to help inform the development of renewable energy planning policies and targets.
2) Locally defined targets for the deployment of renewable energy are recommended for inclusion within planning policies. The resource assessment results can be used as aspirational targets or further work undertaken such as landscape characterisation/capacity studies to provide targets, which take into account detailed local circumstances.
3) Planning policies for renewable energy should take the following issues into account:
   - identification of suitable locations supported by mapping of the availability of resources (e.g. wind capacity, heat mapping) where available
   - consideration of cross-authority working where this is not part of a formal document such as the Central Lancashire Core Strategy
   - support community-led initiatives including development outside areas being taken forward through neighbourhood planning
   - positive support for the promotion of locally identified opportunities to support development which draws energy from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers
   - undertake further research including landscape capacity studies particularly where a significant wind resource has been identified through the results in Section 3, but there has been limited or no deployment on the ground.
4) Greater collaborative working between planning and economic development departments is encouraged along with joint working with other organisations such as the Local Enterprise Partnership to ensure that the economic benefits of increased renewable energy deployment are fully understood and appreciated
5) Whilst recognising that conflicting priorities are inevitable, consideration should be given to the use of CIL to support community renewables schemes.

Annex A: References

Blackburn with Darwen Borough Council (2011) *Local Development Plan Core Strategy (adopted)*

Blackpool Council (2010) *Local Development Plan Core Strategy Preferred Option*

Burnley Borough Council (2006) *Local Plan*

Central Lancashire (2011) *Joint Local Development Plan Core Strategy (draft)*

DCLG (2007) *Climate Change Supplement to Planning Policy Statement 1: Delivering Sustainable Development*

DCLG (2012) *National Planning Policy Framework*

DECC (2012) *Consultation on comprehensive review phase 2 B: Tariffs for non-PV technologies and scheme administration issues*

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DECC (2011) *Electricity Market Review*

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Ribble Valley (2011) *Local Development Plan Core Strategy (draft)*

Rossendale (2011) *Local Development Plan Core Strategy (adopted)*

SQW and Maslen Environmental (2011) *Lancashire Sustainable Energy Study – a technical report*

SQW and Maslen Environmental (2011) *Planning guidance for Renewable Energy*

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Wyre (2011) *Local Development Plan Core Strategy Issues and Options*

Annex B: Assumptions for the technical potential assessment

B.1 This Annex provides further detail of the assumptions that underpin the assessments undertaken for each of the different resource technologies. The following tables summarise the DECC methodology suggested datasets and assumptions, those that were adopted within the North West Study (including an explanation of how they differ from the national methodology) and then details where any assumptions or datasets have been changed for the Lancashire study.

B.2 The tables cover the following renewable energy technologies:

- Commercial and small scale wind
- Plant biomass - managed woodland, energy crops, waste wood and agricultural arisings
- Animal biomass – wet organic waste and poultry litter
- Municipal Solid Waste
- Commercial and Industrial waste
- Landfill gas
- Sewage gas
- Small scale hydropower
- Microgeneration – solar and heat pumps.

Table B-1: Assumptions for commercial wind

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Commercial scale wind							
Table 3-1	Wind Speed	NOABL	NOABL	Include area with wind speed 5 m/s at 45m above ground level (agl)	Include area with wind speed 5 m/s at 45m above ground level (agl)	Regional, sub-regional and LA Can be broken down by any scale	
Table 3-1	Turbine size	Use 2.5MW turbine (tip height 135m, rotor diameter 100m, hub height 85m)	Turbine 2.5MW	Use 2.5MW turbine (tip height 135m, rotor diameter 100m, hub height 85m)	Use 2.5MW turbine (tip height 135m, rotor diameter 100m, hub height 85m)	Regional, sub-regional and LA Can be broken down by any scale	
Table 3-1	Turbine density	Use greater of 9MW/km square or distance of 5 rotor diameters between turbines (500m), whichever is larger	Use 500m theoretical spacing between turbines	Use greater of 9MW/km square or distance of 5 rotor diameters between turbines (500m), whichever is larger	Use 500m theoretical spacing between turbines	Regional, sub-regional and LA Can be broken down by any scale	
Table 3-1	Roads (A Roads, B Roads, Motorways)	OS Strategi data	OS Strategi data	Exclude areas within roads and within 150m of roads	Applied buffers to approximate footprint of road and additional topple distance buffer	Regional, sub-regional and LA Can be broken down by any scale	
Table 3-1	Railways	OS Strategi data	OS Meridian data	Exclude areas within railways and within 150m of railways	Applied buffers to approximate footprint of Railways and additional topple distance buffer	Regional, sub-regional and LA Can be broken down by any scale	

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Table 3-1	Inland waters (rivers, canals, lakes, reservoirs)	OS Strategi data	OS Meridian data	Exclude areas within rivers, canals, lakes and reservoirs	Rivers, canals with buffer to approximate footprint. Meridian lakes	Regional, sub-regional and LA Can be broken down by any scale	
Table 3-1	Built up areas	OS Strategi data	OS Strategic Urban Areas	Exclude areas within Urban areas and within 600m of urban areas	Excluded areas within 600m of Urban Areas	Regional, sub-regional and LA Can be broken down by any scale	
Table 3-1	Airports	OS Strategi data	Civil Aviation Authority centrepoints for airports and additional internet search for military airports	Exclude areas within 5km of airports	Excluded areas within 5km of civil airports, aerodromes and military airports	Regional, sub-regional and LA Can be broken down by any scale	Please note, data used at NW level had an error identifying air traffic restraints for Pendle, this data has been corrected and re-analysed.
Table 3-1	Ancient semi-natural woodland	MAGIC	Natural England	Exclude areas within Ancient semi-natural woodland	Excluded areas within all Ancient woodland (including PAWS)	Regional, sub-regional and LA Can be broken down by any scale	
Table 3-1	Sites of historic interest	MAGIC	English Heritage	Exclude areas within heritage boundaries with no buffer	No information on Conservation areas. Applied 15m buffer to listed building points to approximate boundary. Excluded land within World heritage Sites (include site specific buffer zone), Battlefields, Scheduled Monuments, Parks and gardens and	Regional, sub-regional and LA Can be broken down by any scale	

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
					listed buildings		
Table 3-1	Civil air traffic control constraints	None	Met office Zones and MOD Low fly zones	None	Exclude high priority low fly zones and two inner rings of Met Office Zones	Regional, sub-regional and LA Can be broken down by any scale	
Table 3-1	MOD constraints	MOD	N/A	Exclude training sites, explosive safeguarded areas, danger areas near ranges, MOD sites (other operational and unused land), air defence and air traffic control radar, other safeguarded areas, MOD byelaws	None	Regional, sub-regional and LA Can be broken down by any scale	
Table 3-1	International and national nature conservation designations	MAGIC	Natural England	Do separate assessment	Excluded all these designations (SPA, SAC, Ramsar, NNR, SSSI)	Regional, sub-regional and LA. Can be broken down by any scale	
Table 3-1	Landscape designations (National Parks and AONB's) and Heritage Coast	MAGIC	Natural England	Do separate assessment	Assume zero deployment	Landscape designation	
Table 3-1	Within 2km of landscape designations	N/A	Natural England	N/A	Assume zero deployment	Landscape designation	

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Table 3-1	Within potential national park extensions	N/A	Natural England	N/A	Test a scenario with zero deployment	Landscape designation	
Table 3-1	Bird sensitive areas	N/A	Natural England/RSPB England sensitivity map	N/A	Assume 50% deployment in high and medium sensitivity areas	1km grid covering whole of England	
Table 3-1	Peat designations	N/A	Natural England/BGS	N/A	Assume 50% deployment	No data supplied	

Summary of methodology

The analysis was undertaken using GIS data. All opportunities (wind speed above the threshold of 5m/s at 45m agl) were mapped and then constraints (non-accessible and exclusion areas) collated in GIS and removed from the opportunities layer. This left a layer of 'unconstrained' land which was examined in terms of the density of turbines it could potentially accommodate. Consultation with Natural England and others determined the approach to protected landscapes and other sensitive areas.

Wind speeds are not assumed to change significantly over time and therefore current results are assumed to be the same at 2020 and 2030.

Source: Maslen Environmental

Table B-2: Assumptions for small scale wind

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Small scale wind							
Table 3-2	Wind Speed	NOABL	NOABL	Include area with wind speed 4.5 m/s at 10m above ground level (agl)	Include area with wind speed 4.5 m/s at 10m above ground level (agl)	Regional, sub-regional and LA Can be broken down by any scale	
Table 3-2	Scaled wind speed	NOABL/Address data/wards	NOABL/Address data/wards	Include address points where scaled wind speed 4.5m/s at 10m above ground level (agl). Assume scaling factor of 56% for urban, 67% for suburban, 100% for rural	Include address points where scaled wind speed 4.5 m/s at 10m above ground level (agl). Assume scaling factor of 56% for urban, 67% for suburban, 100% for rural	Regional, sub-regional and LA Can be broken down by any scale	
Table 3-2	Address points	OS Address Point	OS Mastermap Address Layer 2	Estimate total number of residential and non-residential buildings	Use NLUD classification within address data to classify as residential, commercial and industrial. Others excluded. Unless categorised in NLUD as dwelling, address point must be postal/multi-occupancy and permanent building	Regional, sub-regional and LA Can be broken down by any scale	
Table 3-2	Turbine size	6kW per address point	6kW per address point	6kW per address point	6kW per address point	Regional, sub-regional and LA. Can be broken down by any scale	

SQW

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Table 3-2	Ward classification	DEFRA Rural Definition dataset	DEFRA Rural Definition dataset	Classify wards as urban, suburban or rural	Classified as Urban, semi-urban or rural	Regional, sub-regional and LA Can be broken down by any scale	DEFRA classifies wards as Urban >10k (urban), Town and Fringe (semi-urban) and Village, hamlet and isolated dwellings (rural)

Summary of methodology

This assessment was GIS based and involved identifying the number of residential and non-residential properties within an area and assuming that a 6kW machine would be installed on all sites with a wind speed above 4.5m/s. A wind speed scaling factor was applied to take account of the potential for obstructions in built up areas to reduce the average wind speeds and therefore the number of suitable properties. Consultation was undertaken with Natural England concerning the deployment of small scale wind in protected landscapes.

Wind speeds are not assumed to change significantly over time and therefore current results assumed to the same at 2020 and 2030.

Source: Maslen Environmental

Table B-3: Assumptions for managed woodland

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Managed Woodland							
Table 3-3a	Amount of biomass available in the region in odt	Option 1) Woodfuel Resource Tool or Option 2) National Inventory of Woodlands and Trees	Peter Fox (FC) provided woodland data for North West region split by broad type and management. Peter recommended not using Resource tool data, and starting with raw data to build up sub-regional picture. Resource Tool data not available at sub-regional level	N/A	Use Forestry Commission managed woodland, Non-FC managed and undermanaged woodland as well as Grants and Licensing Activity woodland. Yield classes of 4 (Broadleaved), 12 (conifers) and 6 (mixed woodland). Do not use non-productive woodland. 1 cubic metre = 1 green tonne. Loss of 50% when converting from green tonnes to oven dried tonnes	Regional, sub-regional and Local Authority	Parameters agreed with Forestry Commission as per North West Study
Table 3-3a	Exclude woodfuel uneconomic to harvest	None given	No actual data to calculate this. Peter Fox would prefer to see total theoretical figure of all woodland and follow this up with a caveat that states an estimate of 50% may be unavailable due to constraints such as access, owner objectives and economics. Woodfuel Strategy's 2 million tonnes figure by 2020 represents an aspirational target of 50% of what is available.	None	Followed Peter Fox suggestions, but will need to present this very carefully in the reporting. Table shows 50% reduction	Regional, sub-regional and Local Authority	Parameters agreed with Forestry Commission as per North West Study

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Table 3-3a	Exclude wood that could go to alternative markets	Forestry Commission Deliveries of UK grown softwood	For Forestry Commission managed woodland, assume constant percentage = 3.7% of total (in 2008). For unmanaged and other woodland, cannot make assumptions, so assume 100%. Could caveat with potential 50% figure to estimate alternative markets.	None	For FC managed woodland, 3.7% and for other, 100% , then apply 50% reduction	Regional, sub-regional and Local Authority	
Table 3-4	Calorific values	Biomass Energy Centre	Peter Fox suggests 18GJ/organic dried tonnage (odt) to represent stemwood.	Various figures for different woodfuel categories. N/A as not using woodfuel resource tool	18GJ/odt	Regional, sub-regional and Local Authority	

Summary of methodology

Woodfuel resource data provided by the Forestry Commission data available for each LA was used to calculate available biomass. DECC methodology assumptions were used to convert this biomass resource into a potential capacity figure.

Results are projected forward to 2020 and 2030 assuming woodland area in Lancashire will increase 0.5% per annum (based on previous consultations with the Forestry Commission).

Source: Maslen Environmental

Table B-4: Assumptions for energy crops

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Energy crops							
Table 3-3b	Existing areas of established SRC and Miscanthus Existing areas of established SRC and Miscanthus	Woodland Grant Scheme, Natural England, National Non-food crops centre	Natural England	Use all schemes	Used all Energy Crop Schemes data Natural England provided	Sub-regional and LA.	
Table 3-3b	Amount of land available for growing energy crops (ha) - HIGH scenario Assume all available arable land and pasture will be planted with energy crops	Rural Payments Agency with DEFRA agricultural land classification	DEFRA agricultural land classification	Use Grades 3 and 4	Use Grades 3 and 4	Sub-regional	
Table 3-3b	Amount of land available for growing energy crops (ha) - HIGH scenario. Assume all available arable land and pasture will be planted with energy	Rural Payments Agency with DEFRA agricultural land classification	DEFRA energy crop opportunity maps	Use highest yield where short rotation coppice (SRC) and Miscanthus overlap	Combined SRC and Miscanthus and took highest yield for each square. Where equal, assume miscanthus because DECC method assumes miscanthus 15GJ/odt and SRC 10GJ/odt	Sub-regional	

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
	crops						
Table 3-3b	Amount of land available for growing energy crops (ha) -MEDIUM scenario All abandoned land and pasture	None	DEFRA Agricultural and horticultural survey GAEC12 land	None	DEFRA Agricultural and horticultural survey GAEC12 land	County/Sub-regional and Local Authority	Data source: Defra Horticultural and Agricultural Census (2007) No data on bare fallow land is noted in the Census for Blackburn with Darwen and Blackpool - it is to prevent disclosure of information about individual holdings, meaning that the amount of hectarage is likely to be very small. Pendle, Preston and Rossendale areas are estimated by reallocating remainder of Lancashire total evenly between the authorities
Table 3-3b	Amount of land available for growing energy crops (ha) - LOW scenario new crops planted to extent of Energy Crop	2010 applications	None	2010 applications	No applications for 2009 or 2010, therefore no low scenario	N/A	

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
	Scheme for 2010						
Table 3-3b	Required amount of biomass per MW capacity	Electricity: 6000 odt/MW	Electricity: 6000odt/MW	Electricity: 6000odt/MW	Electricity: 6000odt/MW	N/A	
Table 3-3b	Required amount of biomass per MW capacity	Heat: varied assumptions based on diameter	Heat: 18GJ/odt	Heat: varied assumptions based on diameter	Heat: 18GJ/odt	N/A	
Table 3-3b	Exclusion areas: Permanent grassland/pasture	MAGIC	IACS database	Exclude	Select all permanent grassland IACS points within remaining opportunity areas and subtract total area	County/sub-regional	
Table 3-3b	Exclusion areas: Public rights of way and buffers	MAGIC	None	exclude PROW and buffers (3m RC, 5m Miscanthus)	None - no data available	N/A	
Table 3-3b	Common land	MAGIC	Natural England	Exclude	Exclude	County/sub-regional	
Table 3-3b	Exclusion areas: SPS Cross-compliance buffers	MAGIC	Percentage reduction on total land area	None	15% reduction to account for buffers and other non-cropped areas. Based on average field size from IACS database	County/sub-regional	
Table 3-3b	Exclusion areas: Nature conservation	MAGIC	Natural England	Exclude	Exclude	County/sub-regional	
Table 3-3b	Exclusion	MAGIC	English Heritage	Exclude	Exclude	County/sub-	

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
	areas: Heritage					regional	
Table 3-3b	Environmental impacts: water stressed areas	Consult Environment Agency	None	Consult Environment Agency	None	County/sub-regional	Not excluded
Table 3-3b	Environmental impacts: biodiversity impacts	Consult Natural England	Consult Natural England	Consult Natural England	Consult Natural England: response too late to be included in assessment	Consult Natural England: response too late to be included in assessment	Not excluded
Table 3-3b	Environmental impacts: protected landscapes	Consult Natural England	Consult Natural England	Consult Natural England	Consult Natural England: response too late to be included in assessment	Consult Natural England: response too late to be included in assessment	Not excluded

Summary of methodology

The DECC methodology requires the generation of estimates for heat and electricity from biomass energy crops under three scenarios - high, medium and low as follows:

• High – Assumes that all available arable land and pasture will be planted with energy crops

• Medium – Assumes that all abandoned land and pasture will be planted with energy crops

• Low – Assumes that new crops will only be planted to the extent of submitted applications to the Energy Crop Scheme.

The high scenario, as defined in the DECC methodology, is acknowledged to be neither possible nor desirable due to other uses of the land that are not considered within the assessment (such as food production). This scenario is entirely theoretical. The medium scenario was used, but the assessment was also undertaken for the low scenario.

GIS data was used to make the analysis as spatially relevant as possible. The approach to protected landscapes was discussed with Natural England.

Both electricity and heat capacity were assessed as alternative options.

The DECC methodology states that yields from energy crops could increase by 10% to 2020, this assumption has also been used to project forward capacity to 2030.

Source: Maslen Environmental

Table B-5: Assumptions for plant biomass – waste wood

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Plant biomass – waste wood							
Table 3-3	Existing and potential new feedstock	Forestry Commission/WRAP	WRAP Report " Wood Waste Market in the UK" August 2009	For sawmill - regional level assessment of sawmill throughput. For construction wood waste- use regional data and disaggregate on the basis of new housing allocations. For future additional feedstock-apply and increase of the existing feedstock of 1% per year	All wood waste used except for MSW which has already been accounted for within other technologies. Future additional feedstock as per DECC methodology	Regional	Sub-regional arisings data were disaggregated on the basis of number of construction employees in each LA
Table 3-3	Fuel requirement	Biomass Energy Centre	Biomass Energy Centre	Benchmark of 6,000 odt/year per 1 MW for electricity. For heat apply standard calorific values	Benchmark of 6,000 odt/year per 1MW for electricity. For heat apply standard calorific values and that wood is of poorer odt quality. It is also assumed that for heat generation, the plant is available 45% of the time and has an efficiency of 80%.	Regional	
Table 3-3	Available feedstock	No data required	No data required	Assume 50% of resource is available	Assume 50% of resource is available	Regional	

Summary of methodology

The North West study identified the amount of sawmill and construction wood waste in the region. Both electricity and heat capacity were assessed as alternative options. Sub-regional arisings data was disaggregated on the basis of number of construction employees in each local authority in Lancashire. An assumption that only 50% of this resource will be available for biomass due to competing demands was applied.For future additional feedstock it was assumed that existing feedstock should be increased by 1% per year to 2020 and 2030 as recommended by the DECC methodology

Source: SQW

Table B-6: Assumptions for plant biomass – agricultural arisings (straw)

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Plant Biomass - Agricultural Arisings (Straw)							
Table 3-3	Existing feedstock	Defra-Agricultural and Horticultural Survey-England	Defra-Agricultural and Horticultural Survey-England	Use data of existing feedstock of all wheat and oil seed rape straw only	Use data of existing feedstock of all wheat and oil seed rape straw only. Assume 3.5 tonnes per ha of wheat and 1.5 tonnes per ha of oil seed rape	Regional, sub-regional and Local Authority	New data used as updated Agricultural and Horticultural Survey became available Some data were only available at the levels of groupings of authorities (due to commercial sensitivities). In these instances the capacity was apportioned to each LA on the basis of proportions of farmed areas.
Table 3-3	Fuel requirement	N/A	N/A	Apply benchmark of 6,000 odt of baled straw per 1MW capacity	Apply benchmark of 6,000 odt of baled straw per 1MW capacity	Regional, sub-regional and Local Authority	
Table 3-3	Available feedstock	Defra-Agricultural and Horticultural Survey-England	Defra-Agricultural and Horticultural Survey-England	Apply 1.5 tonnes of straw per annum per head of cattle in the region	Apply 1.5 tonnes of straw per annum per head of cattle in the region. Assume 3.5 tonnes per ha of wheat and 1.5 tonnes per ha of oil seed rape	Regional, sub-regional and Local Authority	

Summary of methodology

The assessment methodology involved identifying the amount of wheat & oilseed rape straw available from the Agricultural and Horticultural Census. A reduction in the quantity of feedstock available was applied to take account of the demand for straw for cattle bedding. It is important to note that there is substantial variation in the range of gas from different feed stocks and the recoverable gas from different technologies. Data are available at the levels of groupings of authorities so the capacity was apportioned to each LA on the basis of proportions of farmed areas.

Projections to 2020 and 2030 assume area for the cultivation of straw remains unchanged.

Table B-7: Assumptions for animal biomass – wet organic waste

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Animal biomass – wet organic waste							
Table 3-4	Existing feedstock	ADAS Manure Management Database, Defra Agricultural and Horticultural Survey- England and Food and Drink Federation	For livestock data- Defra Agricultural and Horticultural Survey- England For manure factor -biomass energy centre For food and drink waste used Environment Agency Report "North West Commercial and Industrial Waste Survey 2009", March 2010	For manure and slurry -use data on number of livestock multiplied by a manure factor For food and drink waste use data from Defra and food and drink federation	For manure and slurry -use data on number of livestock multiplied by a manure factor For food and drink waste use data for food, (drink and tobacco plus data for retail and wholesale) from the North West Commercial and Industrial Waste Survey 2009 report	Regional, County LA - partially	New data used as updated Agricultural and Horticultural Survey became available Future food and drink waste was based on employee number growth projections (in the NW study, no growth was assumed) Some data were only available at the levels of groupings of authorities (due to commercial sensitivities). In these instances the capacity was apportioned to each LA on the basis of proportions of farmed areas.
Table 3-4	Biogas yield	UK National Non-Food Crops Centre (NNFCC)		Use following assumptions: cattle 25m^3/t, pigs 26m^3/t , food and drink 46m^3/t	Use following assumptions: cattle 25m^3/t, pigs 26m^3/t , food and drink 46m^3/t	Regional, County LA - partially	
Table 3-4	Feedstock requirements	N/A	N/A	Apply benchmark of 37,000 tonnes of wet organic waste required per 1MW capacity per year	Apply benchmark of 37,000 tonnes of wet organic waste required per 1MW capacity per year	Regional, County LA – partially	

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Table 3-4	Limits to extraction	N/A	N/A	Assume 80% of the resources can be collected	Assume 80% of the resources can be collected	Regional, County LA - partially	
Table 3-4	Competing uses	N/A	N/A	For manure and slurry- assume 100% of total resource is available for energy For food and drink - assume 50% of total resources is available for energy	For manure and slurry- assume 100% of total resource is available for energy For food and drink - assume 50% of total resources is available for energy	Regional, County LA - partially	

Summary of methodology

The assessment methodology used data on the number of livestock (cattle and pigs) multiplied by a manure facture (i.e. amount of manure per head per year); for food and drink waste the methodology used data on the animal and vegetable and non-metallic waste fraction of the total food, drink and tobacco and retail and wholesale sectors wastes.

The methodology applied a benchmark of 37,000 tonnes of wet organic waste required per 1 MW capacity per year.

Assumed animal numbers in Lancashire remain unchanged in 2020 and 2030. Food and drink waste in 2020 and 2030 was projected to increase in line with a 0.5% per annum increase in employee numbers as projected by UKCES.

Source: SQW

Table B-8: Assumptions for animal biomass – poultry litter

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Animal biomass – poultry litter							
Table 3-4	Existing and potential new feedstock	Defra-Agricultural and Horticultural Survey-England	Defra-Agricultural and Horticultural Survey-England	Use data on poultry numbers and excreta factor per head of poultry	Use data on poultry numbers and excreta factor per head of poultry. Use assumption that broilers typically produce 16.5 tonnes per annum per 1000 hens	Regional, County LA - partially	New data used as updated Agricultural and Horticultural Survey became available. All poultry used, no just broilers. Some data were only available at the levels of groupings of authorities (due to commercial sensitivities). In these instances the capacity was apportioned to each LA on the basis of proportions of farmed areas.
Table 3-4	Feedstock requirements	N/A	N/A	Apply benchmark of 11,000 tonnes of poultry litter required for 1MW capacity per annum	Apply benchmark of 11,000 tonnes of poultry litter required for 1MW capacity per annum	Regional, county LA - partially	
Table 3-4	Available feedstock	N/A	N/A	Assume 100% of the resource is available for energy	Assume 100% of the resource is available for energy		

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?

Summary of methodology

The assessment methodology used data on poultry numbers and excreta factor for head of poultry (from Defra) to calculate the total resource produced per year. Assumptions on litter were taken from Biomass Energy Centre.

The methodology applied a benchmark of 11,000 tonnes of poultry litter required for 1MW capacity per annum.

Assumed poultry numbers in Lancashire remain unchanged to 2020 and 2030.

Table B-9: Assumptions for municipal solid waste

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Changes to assumptions for Lancashire?
Municipal Solid Waste							
Table 3-5	Existing and potential new feedstock	Defra's quarterly MSW Statistics	Defra WasteDataFlow	Collate information from all local waste management plans	Use LA municipal and household waste statistics 2008/09 data derived from WasteDataFlow - waste collection only then assume Biodegradable Municipal Waste is 68% of total MSW	Regional, County, LA	Future resource was based on household growth projections (in the NW study, no growth was assumed)
Table 3-5	Feedstock requirement	N/A	N/A	Apply a benchmark of 10 kilo tonnes of MSW required for 1 MW capacity per annum	Apply a benchmark of 10 kilo tonnes of MSW required for 1 MW capacity per annum	Regional, County, LA	

Summary of methodology

The assessment methodology drew on data from Defra waste data flow and used a benchmark of 10 kilo tonnes of MSW required for 1 MW capacity per annum.

The resource assessments for 2020 and 2030 were based on household growth projections for Lancashire.

Source: SQW

Table B-10: Assumptions for commercial and industrial waste:

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to Lancashire assumptions?
Commercial and industrial waste							
Table 3-5	Existing and potential new feedstock	No specific source provided.	Collate information from all local waste management plans	Collate information from all local waste management plans	Use data on estimate of North West England C &I Waste Arisings, by sector from North West of England Commercial and Industrial Waste Survey 2009 report produced by the Environment Agency. Includes animal and vegetable waste and non - metallic waste only	Regional, County	The non-metallic fraction of the food, drink and tobacco and retail and wholesale sectors' wastes was added to the assessment Future resource was based on employee number growth projections (in the NW study, no growth was assumed) The resource was disaggregated to LAs based on employee numbers
Table 3-5	Feedstock requirement	No specific source provided	North West of England Commercial and Industrial Waste Survey 2009 Report - for the Environment Agency (Urban Mines)	Apply a benchmark of 10 kilo tonnes of MSW required for 1 MW capacity per annum	Apply a benchmark of 10 kilo tonnes required for 1 MW capacity per annum	Regional, County	

Summary of methodology

The assessment methodology drew on data from the North West of England Commercial and Industrial Waste Survey 2009 report.

The methodology applied of 10 kilo tonnes required for 1 MW capacity per annum.

The resource assessment in 2020 and 2030 are based on employee number growth using a UK-wide benchmark of 0.5% per annum.

Source: SQW

Table B-11: Assumptions for Biogas - landfill gas

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to Lancashire assumptions?
Biogas - landfill gas							
Table 3-6	Available resource	Environment Agency's Waste Management Licence Data and OFGEM RO Register	OFGEM RO Register	Use inventory of landfill sites and sizes and capacity	All 'live' landfill sites in the NW from the OFGEM RO Register	Regional County	
Table 3-6	Lifetime of resource	Environment Agency's Waste Management Licence Data and OFGEM RO Register	OFGEM RO Register	Refer to inventory of landfill sites and their age	Assume that the present day capacity will continue flat for 5 years to 2015, then straight line reduction until the capacity in 2030 is 20% of today's capacity	Regional County	

Summary of methodology

The assessment methodology referred to the inventory of landfill sites and their size and capacity to calculate total available biogas resource.

Relevant data was also sourced from the BERR landfill gas production forecast study to forecast landfill gas potential.

Assumed that the present day capacity will continue flat for five years to 2015, then straight line reduction until the capacity in 2020 is 20% of today's capacity. Following 2020 no additional capacity is identified in accordance with EU Landfill Legislation

Source: SQW

Table B-12: Assumptions for Biogas – sewage gas

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to Lancashire assumptions?
Biogas – sewage gas							
Table 3-6	Available resource	Water Utilities	OFGEM RO Register	Refer to inventory of sewage treatment sites and their size and capacity	Assume a 50% increase in capacity from 2010 to 2020 based on more efficient technology and smaller units becoming more economically viable, hence being able to be deployed at smaller treatment works.	Regional County	
Table 3-6	Potential new resource	Water Utilities	OFGEM RO Register	Refer to water utility business plans and forecast	As above - assumes growth comes from smaller more efficient treatment works that give greater coverage.	Regional County	Future resource was based on population growth projections (in the NW study, only growth due to more efficient technology and smaller units was assumed)

Summary of methodology

The assessment methodology drew on data from the inventory of sewage treatment sites, their size and capacity to calculate total available resource.

An increase in capacity based on more efficient technology and smaller units was applied, along with an increase due to population growth.

Assumed a 50% increase in capacity from 2010 to 2020 based on more efficient technology and smaller units becoming more economically viable, hence being able to be deployed at smaller treatment works and projected forward from 2020 to 2030 on the basis of ONS sub-national population projections for the Lancashire LAs – average growth rate of 0.3% per annum

Source: SQW

Table B-13: Assumptions for Small Scale Hydropower

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Small scale hydropower							
N/A	Number of barriers identified in Environment Agency study 'Mapping Hydropower Opportunities in England and Wales'[17] (2010)	GIS data from Environment Agency study 'Mapping Hydropower Opportunities in England and Wales' (2010)	GIS data from Environment Agency study 'Mapping Hydropower Opportunities in England and Wales' (20210	Identify total resource available and the proportion that is accessible and viable for development	Total resource calculated using all barriers. Accessible and viable resource calculated using potential hydropower sites as defined in the Environment Agency study.	Regional, sub-regional and local authority.	Potential of sites deemed to be 'good' or 'moderate' opportunities based on the Environment Agency power-sensitivity matrix is also presented.

Summary of methodology

Data from the Environment Agency report, referenced above were used to assess the resource from all potential barriers within Lancashire.

Presented in the main reports are total resource figures using all barriers data; also presented in spreadsheet calculations are those which offer 'good to moderate' opportunities and those termed 'win-win' sites (i.e. existing heavily modified sites).

No future predictions are made on changes to the potential small hydropower capacity by 2020 or 2030. It is unlikely that up to 2030 the Environment Agency would allow significantly more barriers to be built across rivers, as this runs contrary to many of their aims. This means that the potential capacity is unlikely to increase. However, it may decrease, if the Environment Agency achieves a number of its aims, under the individual River Basin Management Plans, to remove barriers which have a negative impact on fish passage[18].

Source: Maslen Environmental

[17] http://publications.environment-agency.gov.uk/pdf/GEHO0310BRZH-E-E.pdf
[18] *http://www.environment-agency.gov.uk/research/planning/33106.aspx*

Table B-14: Assumptions for Microgeneration - solar

DECC Methodology ref	Parameters	DECC suggested data source	North West data source used	DECC suggested assumptions	North West final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Microgeneration – solar							
Table 3-8	Existing building stock	CLG Statistics, English Housing Survey and ONS data	OS Mastermap AL2 – address point data	Apply for domestic properties- 25% of all properties (including flats) For commercial properties - 40% of all hereditaments For industrial buildings - 80% of the stock	Apply for domestic properties- 25% of all properties (including flats) For commercial properties - 40% of all hereditaments For industrial buildings - 80% of the stock	Regional, county, LA	Assumed proportion suitable for Solar PV: 12.5% of all existing and 25% of all future domestic properties including flats, 36% commercial, 80% industrial Assumed proportion suitable for Solar WH: 12.5% of all existing and 25% of all future domestic properties including flats, 10% of the suitable proportion of commercial, 0% industrial
Table 3-8	New developments	RSS new housing provisions	RSS new housing provisions	Assume 50% of all new domestic roofs will be suitable for solar systems	Assume 50% of all new domestic roofs will be suitable for solar systems	Regional, county, LA	Assumed 0.5% annual compound growth of commercial and industrial buildings in accordance with UKCES report and 0.3% annual compound growth rate for community and public buildings in line with ONS population projections (2008 based)

Table 3-8	System capacity	N/A	N/A	For domestic - 2kW (thermal or electric) For commercial - 5kW (electric only) For industrial - each region use their own assumptions	For domestic - 2kW (thermal or electric) For commercial - 5kW (electric only) For industrial - 10kW (electric only)	Regional, county, LA	

Summary of methodology

This assessment used GIS address location data to calculate the potential roof space suitable for solar panels based on property type and location. The resource assessment for residential properties in 2020 was based on RSS allocations projected forward. The resource assessments for industrial and commercial buildings in 2020 and 2030 were based on employee number growth using a UK-wide benchmark of 0.5% per annum. The resource assessments used for public and community buildings in 2020 and 2030, were based on ONS sub-national population projections for the Lancashire local authorities, average 0.3% per annum.

Source: SQW

Table B-15: Assumptions for Microgeneration – heat pumps

DECC Methodology ref	Parameters	DECC suggested data source	NW data source used	DECC suggested assumptions	NW final assumptions	Coverage/scale (e.g. regional, county, LA)	Any changes to assumptions for Lancashire?
Microgeneration – heat pumps							
Table 3-9	Existing building stock	CLG Statistics, English Housing Survey and ONS data	OS Mastermap AL2 – address point data	For domestic 100% of all off-grid properties, for the remaining stock 75% of detached and semi-detached properties, 50% of terraced properties and 25% of flats	For domestic 100% of all off-grid properties, for the remaining stock 75% of detached and semi-detached properties, 50% of terraced properties and 25% of flat	Regional County	
Table 3-9	New developments	RSS new housing provisions	RSS new housing provisions	50% of all new build domestic properties	50% of all new build domestic properties	Regional County	Assumed 0.5% annual compound growth of commercial and industrial buildings in accordance with UKCES report and 0.3% annual compound growth rate for community and public buildings in line with ONS population projections (2008 based)
Table 3-9	System capacity	N/A	N/A	Domestic -5kw and Commercial -100kW	Domestic -5kw and Commercial -100kW	Regional County	

Summary of methodology

The resource assessment for residential properties in 2020 was based on RSS allocations projected forward. The resource assessments for industrial and commercial buildings in 2020 and 2030 was based on employee number growth using a UK-wide benchmark of 0.5% per annum. The resource assessments used for public and community buildings in 2020 and 2030, was based on ONS sub-national population projections for the Lancashire local authorities, average 0.3% per annum.

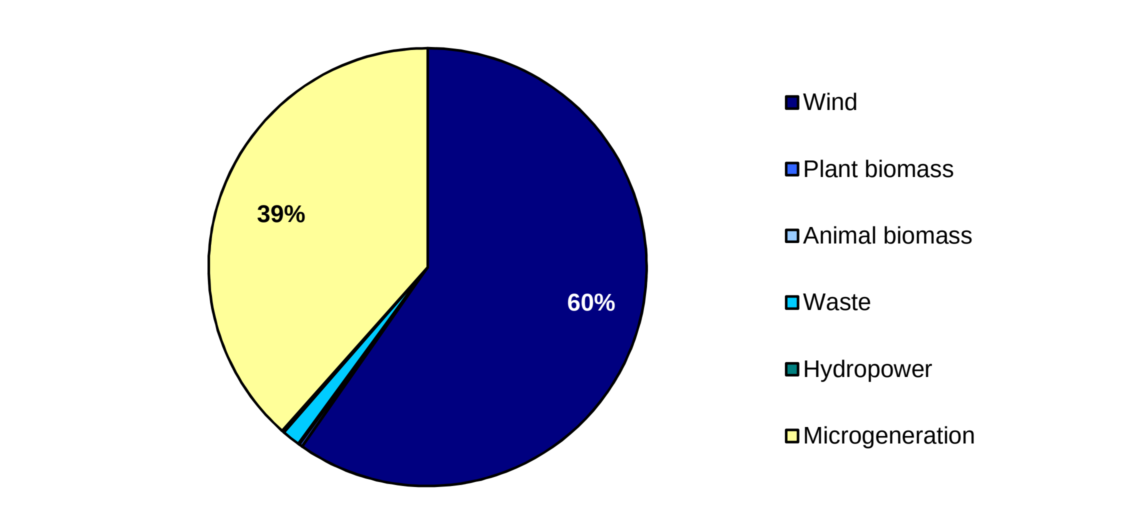
Annex C: Resource Assessments by Local Authority

Blackburn with Darwen

Technical potential, 2020 and 2030

C.1 The resource assessment reveals that Blackburn with Darwen has a potential renewable energy capacity of **1010 MW** by 2030 (933 MW by 2020), which equates to 9% of the total capacity identified for Lancashire.

Figure C-1: Potential renewable energy sources for Blackburn with Darwen by broad technology, 2030



Source: SQW

C.2 The detailed technical resource break down is shown below in Table C-1

Table C-1: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	591.7	591.7
Small scale wind	11.3	11.3
Plant biomass	2.2	2.3
Animal biomass	1.2	1.2
Energy from waste	11.9	13.3
Small scale hydro	1.8	1.8
Microgeneration - Solar	57.1	63.0
Microgeneration – Heat pumps	255.2	325.1
Total	**933**	**1010**

Deployable potential, 2020 and 2030

C.3 The detailed deployable resource break down is provided below in Table A-2

Table C-2: Blackburn with Darwen renewable energy deployment projections, 2020 and 2030

Technology	Existing deployment at 2011	Total deployment 2020	Total deployment 2030
Commercial wind	6.4	45.0	59.6
Small scale wind	0.0	1.2	2.0
Plant biomass	0.0	0.1	0.2
Animal biomass	0.0	0.1	0.1
Energy from waste	0.0	0.7	0.8
Small scale hydro	0.0	0.2	0.2
Microgeneration - Solar	0.1	6.5	16.2
Microgeneration – Heat pumps	0.0	4.0	8.7
Total	**7**	**58**	**88**

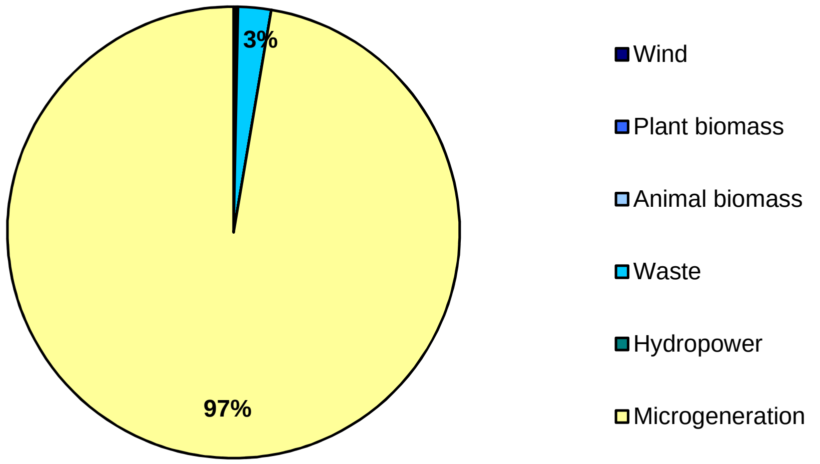
Source: SQW

Blackpool

Technical potential, 2020 and 2030

C.4 The resource assessment reveals that Blackpool has a potential renewable energy capacity of **449MW** by 2030 (362MW by 2020), which equates to 4% of the total capacity identified for Lancashire.

Figure C-2: Potential renewable energy sources for Blackpool by broad technology, 2030



Source: SQW

C.5 The detailed technical resource break down is shown overleaf in Table C-3.

Table C-3: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	0.8	0.8
Small scale wind	0.0	0.0
Plant biomass	0.5	0.5
Animal biomass	0.1	0.1
Energy from waste	9.3	10.6
Small scale hydro	0.0	0.0
Microgeneration - Solar	64.6	70.3
Microgeneration – Heat pumps	286.7	367.0
Total	**362**	**449**

Deployable potential, 2020 and 2030

C.6 The detailed deployable resource break down is provided below in Table C-4

Table C-4: Blackpool renewable energy deployment projections, 2020 and 2030

Technology	Existing deployment at 2011	Total deployment 2020	Total deployment 2030
Commercial wind	0.0	0.1	0.1
Small scale wind	0.0	0.0	0.0
Plant biomass	0.0	0.0	0.0
Animal biomass	0.0	0.0	0.0
Energy from waste	0.0	0.6	0.6
Small scale hydro	0.0	0.0	0.0
Microgeneration - Solar	0.0	7.4	18.3
Microgeneration – Heat pumps	0.0	4.5	9.8
Total	**0**	**13**	**29**

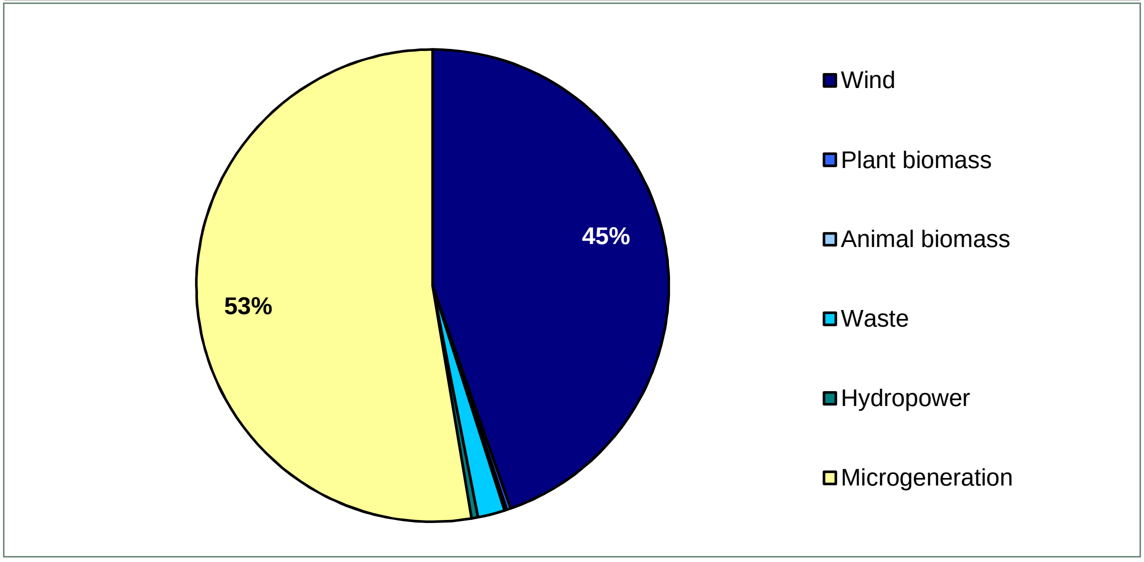
Source: SQW

Burnley

Technical potential, 2020 and 2030

C.7 The resource assessment reveals that Burnley has a potential renewable energy capacity of **449MW** by 2030 (408MW by 2020), which equates to 4% of the total capacity identified for Lancashire.

Figure C-3: Potential renewable energy sources for Burnley by broad technology, 2030



Source: SQW

C.8 The detailed technical resource break down is shown below in Table C-5

Table C-5: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	199.9	199.9
Small scale wind	0.6	0.6
Plant biomass	1.1	1.2
Animal biomass	0.7	0.7
Energy from waste	7.0	8.3
Small scale hydro	2.0	2.0
Microgeneration - Solar	35.0	36.9
Microgeneration – Heat pumps	161.7	199.6
Total	**408**	**449**

Deployable potential, 2020 and 2030

The detailed deployable resource break down is provided overleaf in Table C-6.

Table C-6: Burnley renewable energy deployment projections, 2020 and 2030

Technology	Existing deployment at 2011	Total deployment 2020	Total deployment 2030
Commercial wind	21.6	46.8	62.0
Small scale wind	0.9	0.9	0.9
Plant biomass	0.0	0.1	0.1
Animal biomass	0.0	0.0	0.1
Energy from waste	7.7	6.0	2.0
Small scale hydro	0.1	0.2	0.2
Microgeneration - Solar	0.1	4.0	9.9
Microgeneration – Heat pumps	0.0	2.5	5.5
Total	**30**	**60**	**81**

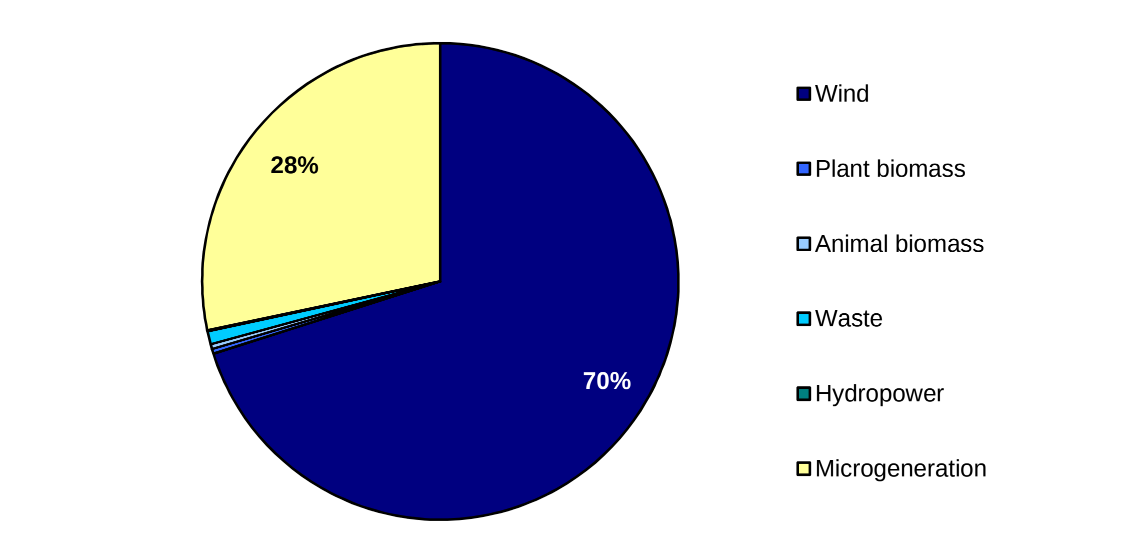
Source: SQW

Chorley

Technical potential, 2020 and 2030

C.9 The resource assessment reveals that Chorley has a potential renewable energy capacity of **1125MW** by 2030 (1057MW by 2020), which equates to 10% of the total capacity identified for Lancashire.

Figure C-4: Potential renewable energy sources for Chorley by broad technology, 2030



Source: SQW

The detailed technical resource break down is shown overleaf in Table C-7.

Table C-7: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	755.0	755.0
Small scale wind	33.3	33.3
Plant biomass	3.4	3.7
Animal biomass	3.7	3.7
Energy from waste	8.5	10.0
Small scale hydro	0.7	0.7
Microgeneration - Solar	46.7	51.6
Microgeneration – Heat pumps	205.1	266.6
Total	**1057**	**1125**

Deployable potential, 2020 and 2030

C.10 The detailed deployable resource break down is provided below in Table C-8

Table C-8: Chorley renewable energy deployment projections, 2020 and 2030

Technology	Existing deployment at 2011	Total deployment 2020	Total deployment 2030
Commercial wind	2.3	57.8	76.6
Small scale wind	0.0	3.5	6.0
Plant biomass	0.0	0.2	0.2
Animal biomass	0.0	0.2	0.3
Energy from waste	7.7	6.0	1.9
Small scale hydro	0.0	0.1	0.1
Microgeneration - Solar	0.1	5.3	13.2
Microgeneration – Heat pumps	0.0	3.2	7.0
Total	**10**	**76**	**105**

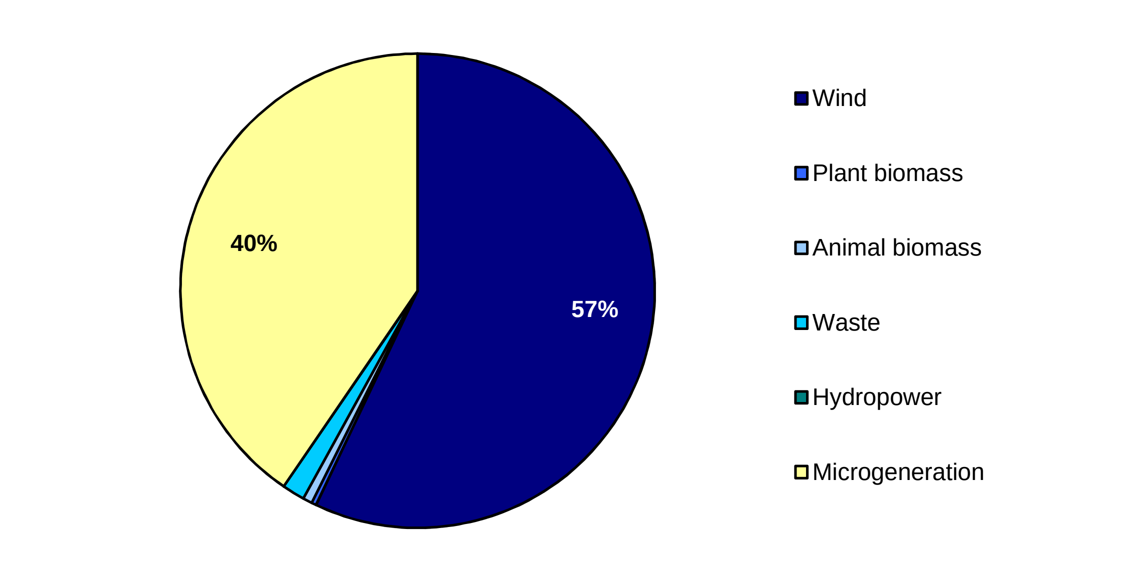
Source: SQW

Fylde

Technical potential, 2020 and 2030

C.11 The resource assessment reveals that Fylde has a potential renewable energy capacity of **664MW** by 2030 (604MW by 2020), which equates to 6% of the total capacity identified for Lancashire.

Figure C-5: Potential renewable energy sources for Fylde by broad technology, 2030



Source: SQW

C.12 The detailed technical resource break down is shown below in Table C-9

Table C-9: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	371.1	371.1
Small scale wind	7.7	7.7
Plant biomass	2.0	2.1
Animal biomass	4.3	4.3
Energy from waste	8.8	10.2
Small scale hydro	0.0	0.0
Microgeneration - Solar	39.6	43.3
Microgeneration – Heat pumps	170.1	225.3
Total	**604**	**664**

Deployable potential, 2020 and 2030

C.13 The detailed deployable resource break down is provided below in Table C-10

Table C-10: Fylde renewable energy deployment projections, 2020 and 2030

Technology	Existing deployment at 2011	Total deployment 2020	Total deployment 2030
Commercial wind	0.0	28.5	37.8
Small scale wind	0.0	0.8	1.4
Plant biomass	2.1	2.2	2.2
Animal biomass	0.6	1.1	1.4
Energy from waste	3.3	2.8	1.0
Small scale hydro	0.0	0.0	0.0
Microgeneration - Solar	0.1	4.5	11.1
Microgeneration – Heat pumps	0.0	2.7	5.8
Total	**6**	**43**	**61**

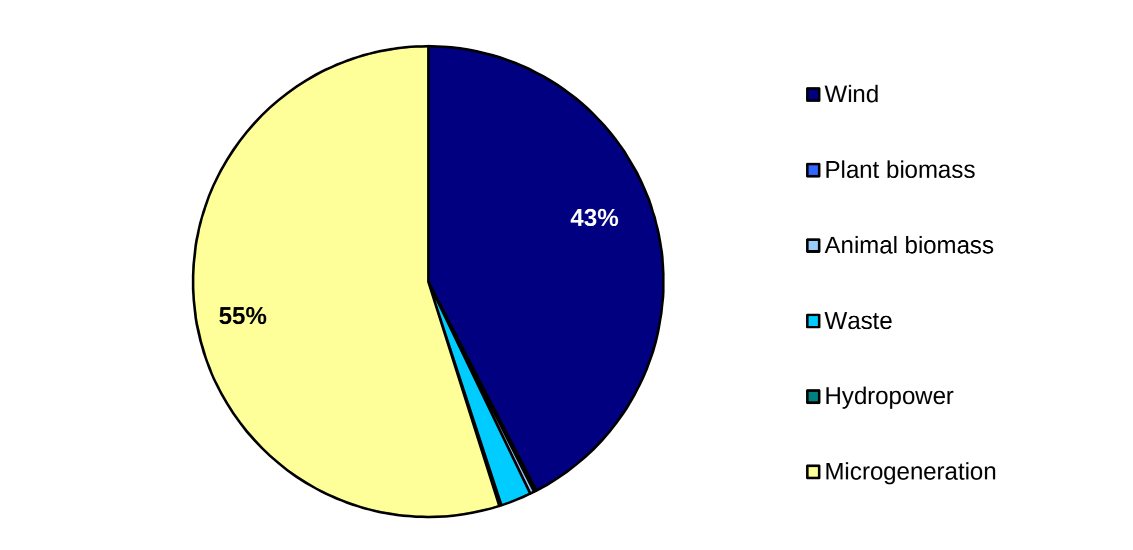
Source: SQW

Hyndburn

Technical potential, 2020 & 2030

C.14 The resource assessment reveals that Hyndburn has a potential renewable energy capacity of **403MW** by 2030 (362MW by 2020), which equates to 3% of the total capacity identified for Lancashire.

Figure C-6: Potential renewable energy sources for Hyndburn by broad technology, 2030



Source: SQW

C.15 The detailed technical resource break down is shown overleaf in Table C-11.

Table C-11: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	170.8	170.8
Small scale wind	0.0	0.0
Plant biomass	0.6	0.6
Animal biomass	1.2	1.2
Energy from waste	7.2	8.6
Small scale hydro	0.6	0.6
Microgeneration - Solar	32.7	35.1
Microgeneration – Heat pumps	149.1	186.0
Total	**362**	**403**

Deployable potential, 2020 and 2030

C.16 The detailed deployable resource break down is provided below in Table C-12.

Table C-12: Hyndburn renewable energy deployment projections, 2020 and 2030:

Technology	Existing deployment at 2011	Total deployment 2020	Total deployment 2030
Commercial wind	24.6	53.3	70.6
Small scale wind	0.0	0.0	0.0
Plant biomass	0.0	0.0	0.0
Animal biomass	0.0	0.1	0.1
Energy from waste	1.2	1.1	0.5
Small scale hydro	0.0	0.0	0.1
Microgeneration - Solar	0.1	3.7	9.2
Microgeneration – Heat pumps	0.0	2.3	5.1
Total	**26**	**61**	**86**

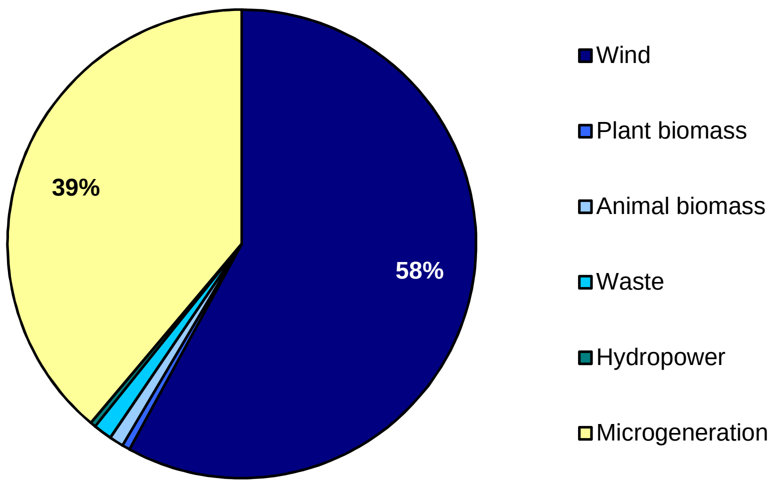
Source: SQW

Lancaster

Technical potential, 2020 and 2030

C.17 The resource assessment reveals that Lancaster has a potential renewable energy capacity of **1095MW** by 2030 (1004MW by 2020), which equates to 9% of the total capacity identified for Lancashire.

Figure C-7: Potential renewable energy sources for Lancaster by broad technology, 2030



Source: SQW

C.18 The detailed technical resource break down is shown below in Table C-13

Table C-13: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	598.4	598.4
Small scale wind	36.3	36.3
Plant biomass	5.6	5.9
Animal biomass	10.6	10.6
Energy from waste	12.3	14.1
Small scale hydro	4.2	4.2
Microgeneration - Solar	62.3	67.5
Microgeneration – Heat pumps	274.5	357.8
Total	**1004**	**1095**

Deployable potential, 2020 and 2030

C.19 The detailed deployable resource break down is provided below in Table C-14.

Table C-14: Lancaster renewable energy deployment projections, 2020 and 2030

Technology	Existing deployment at 2011	Total deployment 2020	Total deployment 2030
Commercial wind	16.0	44.7	59.3
Small scale wind	0.0	3.8	6.5
Plant biomass	0.0	0.3	0.4
Animal biomass	0.0	0.7	0.9
Energy from waste	4.8	4.4	2.5
Small scale hydro	0.0	0.4	0.4
Microgeneration - Solar	0.2	7.1	17.6
Microgeneration – Heat pumps	0.0	4.3	9.3
Total	**21**	**66**	**97**

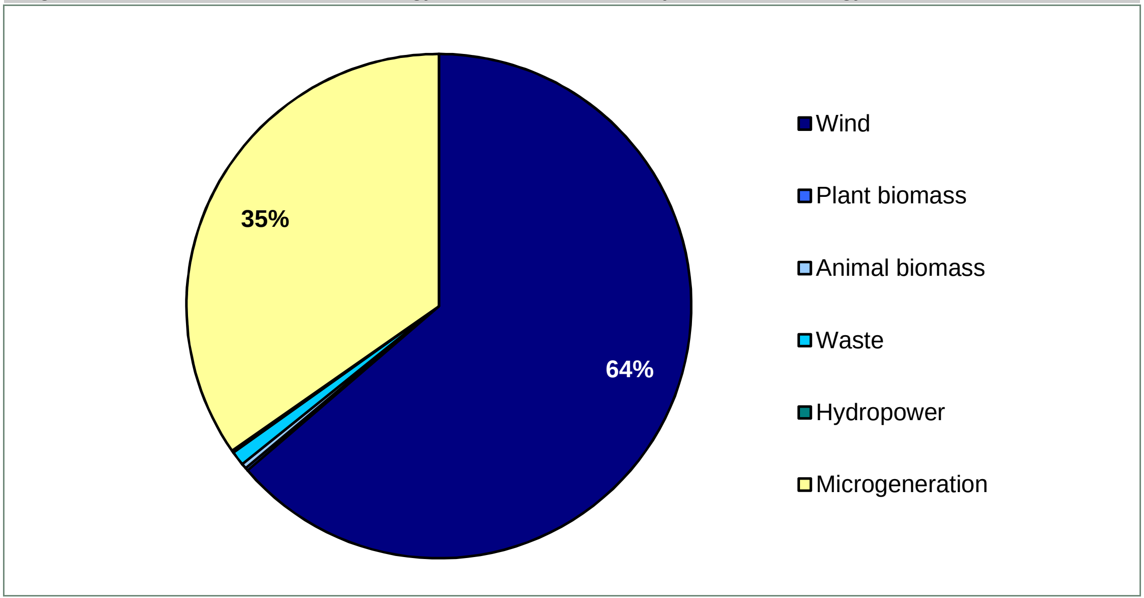
Source: SQW

Pendle

Technical potential, 2020 and 2030

C.20 The resource assessment reveals that Pendle has a potential renewable energy capacity of **706MW** (661MW by 2020), which equates to 6% of the total capacity identified for Lancashire.

Figure C-8: Potential renewable energy sources for Pendle by broad technology, 2030



Source: SQW

C.21 The detailed technical resource break down is shown overleaf in Table C-15.

Table C-15: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	446.0	446.0
Small scale wind	3.9	3.9
Plant biomass	1.2	1.3
Animal biomass	2.3	2.3
Energy from waste	5.4	6.6
Small scale hydro	1.0	1.0
Microgeneration - Solar	36.2	38.7
Microgeneration – Heat pumps	164.9	206.5
Total	**661**	**706**

Deployable potential, 2020 and 2030

C.22 The detailed deployable resource break down is provided below in Table C-16.

Table C-16: Pendle renewable energy deployment projections, 2020 and 2030

Technology	Existing deployment at 2011	Total deployment 2020	Total deployment 2030
Commercial wind	0.0	34.3	45.4
Small scale wind	0.0	0.4	0.7
Plant biomass	0.0	0.1	0.1
Animal biomass	0.0	0.2	0.2
Energy from waste	0.0	0.3	0.4
Small scale hydro	0.0	0.1	0.1
Microgeneration - Solar	0.1	4.1	10.2
Microgeneration – Heat pumps	0.0	2.6	5.6
Total	**0**	**42**	**63**

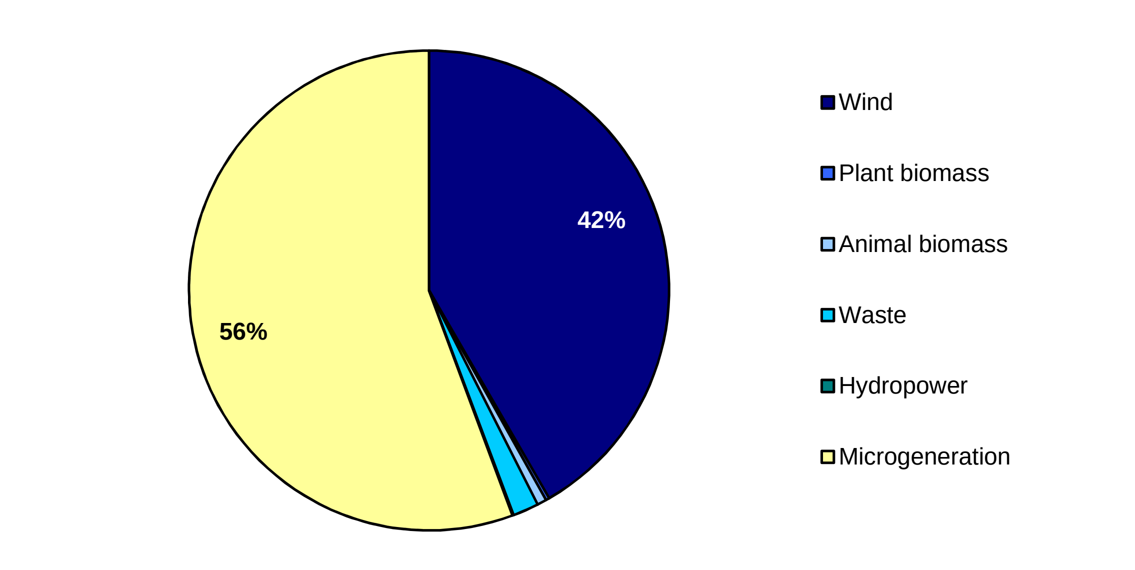
Source: SQW

Preston

Technical potential, 2020 and 2030

C.23 The resource assessment reveals that Preston has a potential renewable energy capacity of **750MW** by 2030 (661MW by 2020), which equates to 7% of the total capacity identified for Lancashire.

Figure C-9: Potential renewable energy sources for Pendle by broad technology, 2030



Source: SQW

C.24 The detailed technical resource break down is shown below in Table C-17

Table C-17: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	285.0	285.0
Small scale wind	27.4	27.4
Plant biomass	1.7	1.8
Animal biomass	4.8	4.8
Energy from waste	11.7	13.0
Small scale hydro	0.6	0.6
Microgeneration - Solar	61.5	67.7
Microgeneration – Heat pumps	268.0	349.6
Total	**661**	**750**

Deployable potential, 2020 and 2030

C.25 The detailed deployable resource break down is provided below in Table C-18

Table C-18: Preston renewable energy deployment projections, 2020 and 2030

Technology	Existing deployment at 2011	Total deployment 2020	Total deployment 2030
Commercial wind	0.0	21.9	29.0
Small scale wind	0.0	2.9	4.9
Plant biomass	0.0	0.1	0.1
Animal biomass	0.0	0.3	0.4
Energy from waste	0.0	0.7	0.7
Small scale hydro	0.0	0.0	0.1
Microgeneration - Solar	0.1	7.0	17.4
Microgeneration – Heat pumps	0.0	4.2	9.1
Total	**0**	**37**	**62**

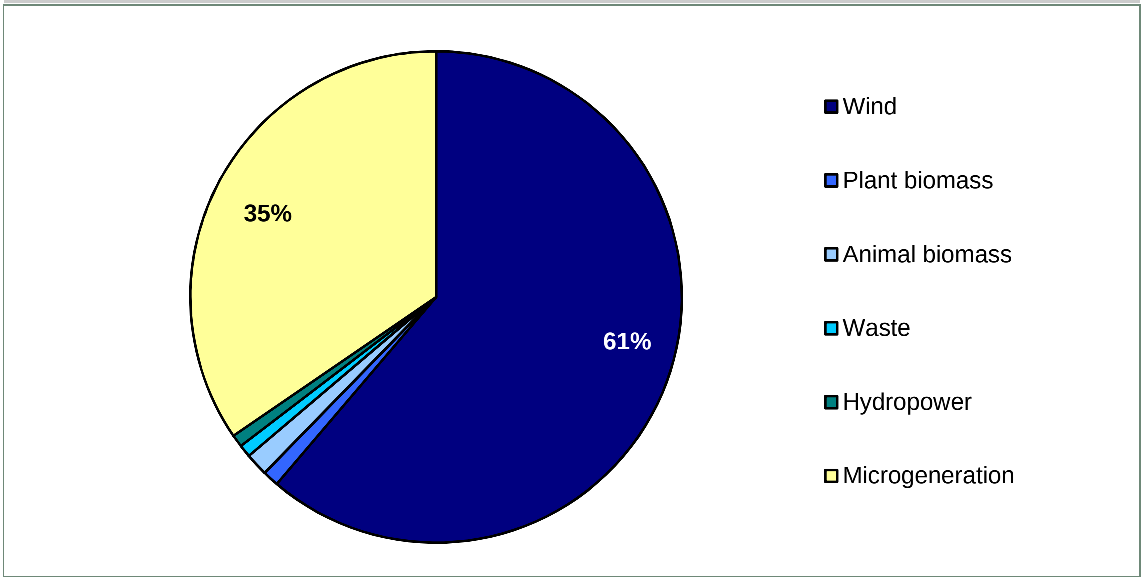
Source: SQW

Ribble Valley

Technical potential, 2020 and 2030

C.26 The resource assessment reveals that Ribble Valley has a potential renewable energy capacity of **609MW** by 2030 (557MW by 2020), which equates to 5% of the total capacity identified for Lancashire.

Figure C-10: Potential renewable energy sources for Ribble Valley by broad technology, 2030



Source: SQW

C.27 The detailed technical resource break down is shown below in Table C-19.

Table C-19: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	361.2	361.2
Small scale wind	11.7	11.7
Plant biomass	6.1	6.5
Animal biomass	9.2	9.2
Energy from waste	3.8	5.0
Small scale hydro	5.0	5.0
Microgeneration - Solar	30.8	33.0
Microgeneration – Heat pumps	129.3	177.4
Total	**557**	**609**

Deployable potential, 2020 and 2030

C.28 The detailed deployable resource break down is provided below in Table C-20.

Table C-20: Ribble Valley renewable energy deployment projections, 2020 and 2030

Technology	Existing deployment at 2011	Total deployment 2020	Total deployment 2030
Commercial wind	0.0	27.7	36.8
Small scale wind	0.0	1.2	2.1
Plant biomass	0.0	0.3	0.4
Animal biomass	0.0	0.6	0.7
Energy from waste	0.0	0.2	0.2
Small scale hydro	0.0	0.4	0.5
Microgeneration - Solar	0.1	3.5	8.7
Microgeneration – Heat pumps	0.0	2.0	4.4
Total	**0**	**36**	**54**

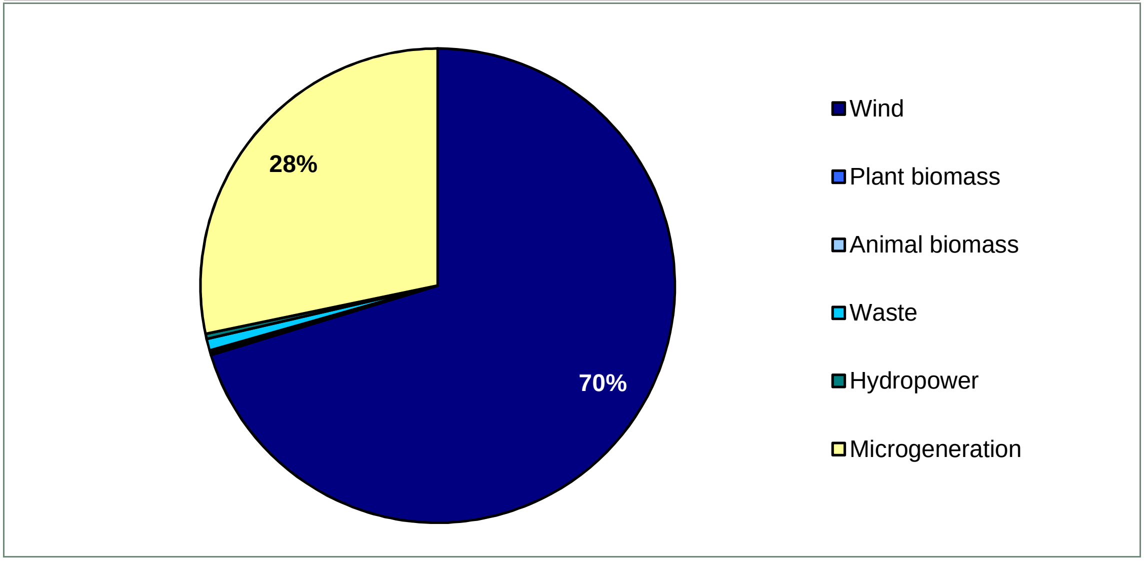
Source: SQW

Rossendale

Technical potential, 2020 and 2030

C.29 The resource assessment reveals that Rossendale has a potential renewable energy capacity of **735MW** by 2030 (691MW by 2020), which equates to 6% of the total capacity identified for Lancashire.

Figure C-11: Potential renewable energy sources for Rossendale by broad technology, 2030



Source: SQW

C.30 The detailed technical resource break down is shown below in Table C-21.

Table C-21: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	516.4	516.4
Small scale wind	0.0	0.0
Plant biomass	1.1	1.2
Animal biomass	1.1	1.1
Energy from waste	4.6	5.8
Small scale hydro	2.5	2.5
Microgeneration - Solar	30.7	33.5
Microgeneration – Heat pumps	134.9	174.2
Total	**691**	**735**

Deployable potential, 2020 and 2030

C.31 The detailed deployable resource break down is provided below in Table C-22

Table C-22: Rossendale renewable energy deployment projections, 2020 and 2030

Technology	Existing deployment at 2011	Total deployment 2020	Total deployment 2030
Commercial wind	31.5	68.2	90.4
Small scale wind	0.1	0.1	0.1
Plant biomass	0.0	0.1	0.1
Animal biomass	0.0	0.1	0.1
Energy from waste	1.6	1.4	0.6
Small scale hydro	0.0	0.2	0.3
Microgeneration - Solar	0.1	3.5	8.7
Microgeneration – Heat pumps	0.0	2.1	4.6
Total	**33**	**76**	**105**

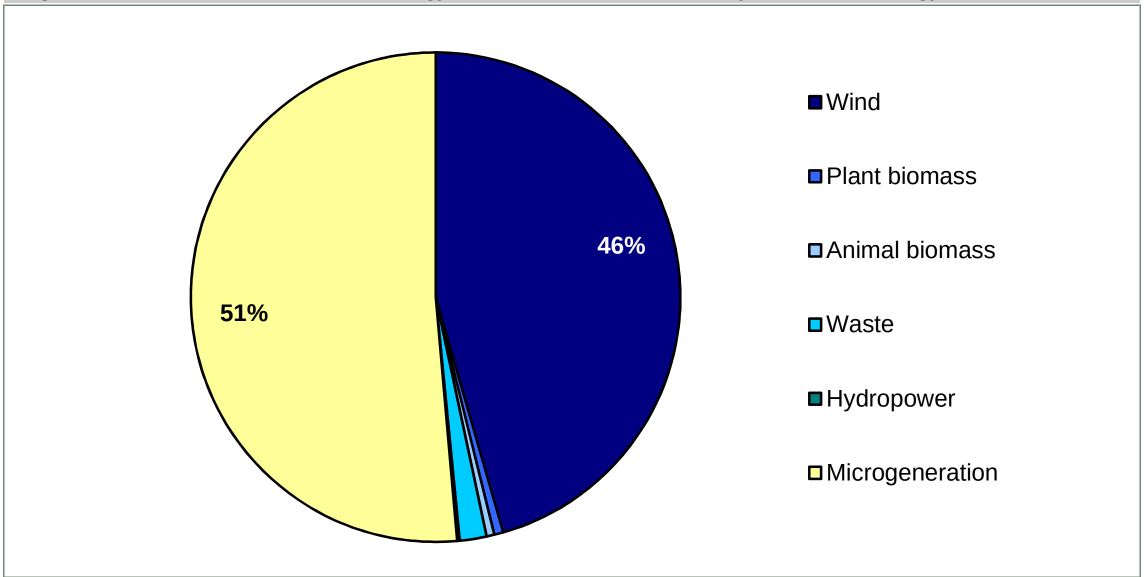
Source: SQW

South Ribble

Technical potential, 2020 and 2030

C.32 The resource assessment reveals that South Ribble has a potential renewable energy capacity of **589MW** by 2030 (529MW by 2020), which equates to 5% of the total capacity identified for Lancashire.

Figure C-12: Potential renewable energy sources for South Ribble by broad technology, 2030



Source: SQW

C.33 The detailed technical resource break down is shown below in Table C-23

Table C-23: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	257.5	257.5
Small scale wind	10.6	10.6
Plant biomass	3.1	3.4
Animal biomass	3.1	3.1
Energy from waste	9.0	10.3
Small scale hydro	1.1	1.1
Microgeneration - Solar	44.5	49.3
Microgeneration – Heat pumps	199.8	253.2
Total	**529**	**589**

Deployable potential, 2020 and 2030

C.34 The detailed deployable resource break down is provided below in Table C-24

Table C-24: South Ribble renewable energy deployment projections, 2020 and 2030

Technology	Existing deployment at 2011	Total deployment 2020	Total deployment 2030
Commercial wind	0.0	19.8	26.2
Small scale wind	0.0	1.1	1.9
Plant biomass	0.0	0.2	0.2
Animal biomass	0.0	0.2	0.2
Energy from waste	1.2	2.1	2.8
Small scale hydro	0.0	0.1	0.1
Microgeneration - Solar	0.1	5.1	12.6
Microgeneration – Heat pumps	0.0	3.1	6.8
Total	**1**	**32**	**51**

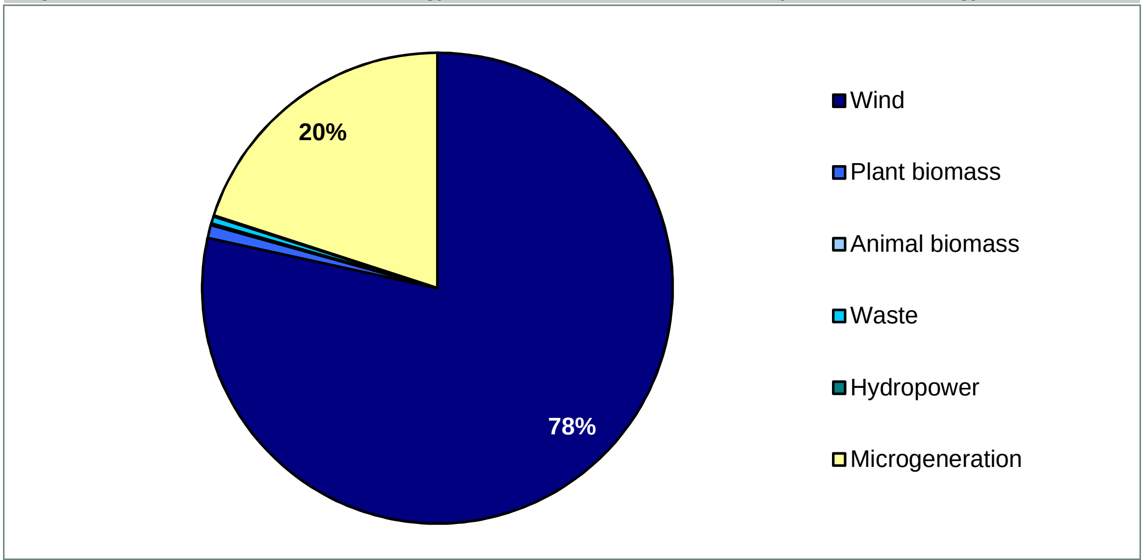
Source: SQW

West Lancashire

Technical potential, 2020 and 2030

C.35 The resource assessment reveals that West Lancashire has a potential renewable energy capacity of **1703MW** by 2030 (1630MW by 2020), which equates to 15% of the total capacity identified for Lancashire.

Figure C-13: Potential renewable energy sources for West Lancashire by broad technology, 2030



Source: SQW

C.36 The detailed technical resource break down is shown below in Table C-25

Table C-25: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	1,291.6	1,291.6
Small scale wind	43.9	43.9
Plant biomass	13.9	15.1
Animal biomass	2.3	2.3
Energy from waste	7.1	8.3
Small scale hydro	1.1	1.1
Microgeneration - Solar	49.6	53.5
Microgeneration – Heat pumps	220.1	287.1
Total	**1630**	**1703**

Deployable potential, 2020 and 2030

C.37 The detailed deployable resource break down is provided below in Table C-26.

Table C-26: West Lancashire renewable energy deployment projections, 2020 and 2030

Technology	**Existing deployment at 2011**	**Total deployment 2020**	**Total deployment 2030**
Commercial wind	0.0	99.2	131.5
Small scale wind	0.0	4.6	7.9
Plant biomass	0.0	0.6	0.8
Animal biomass	0.0	0.1	0.2
Energy from waste	4.5	3.7	1.4
Small scale hydro	0.0	0.1	0.1
Microgeneration - Solar	0.1	5.7	14.0
Microgeneration – Heat pumps	0.0	3.5	7.5
Total	**5**	**118**	**163**

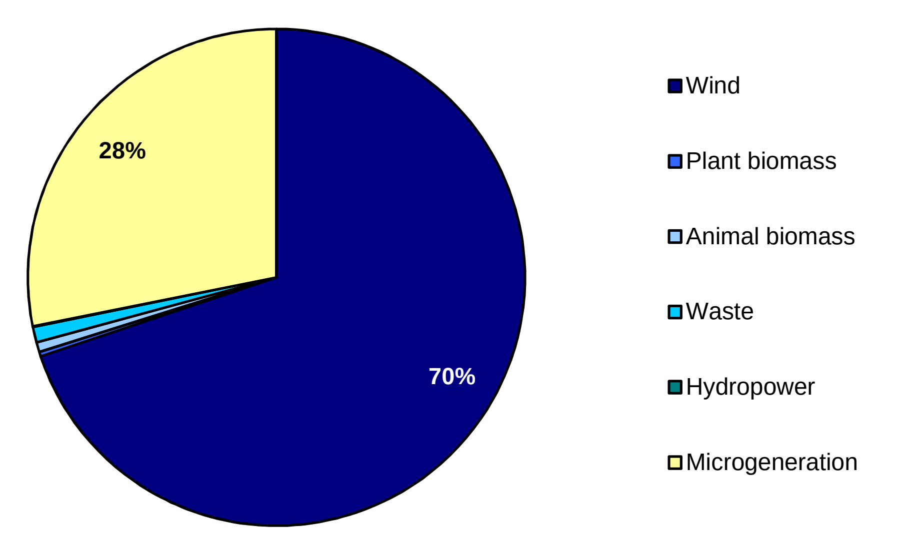
Source: SQW

Wyre

Technical potential, 2020 and 2030

C.38 The resource assessment reveals that Wyre has a potential renewable energy capacity of **1227MW** by 2030 (1155MW by 2020), which equates to 11% of the total capacity identified for Lancashire.

Figure C-14: Potential renewable energy sources for Wyre by broad technology, 2030



Source: SQW

C.39 The detailed technical resource break down is shown overleaf in Table C-27.

Table C-27: Technical potential by resource at 2020 and 2030

Technology	Technical capacity at 2020	Technical capacity at 2030
Commercial wind	828.4	828.4
Small scale wind	28.6	28.6
Plant biomass	3.4	3.6
Animal biomass	7.9	7.9
Energy from waste	10.6	12.3
Small scale hydro	0.6	0.6
Microgeneration - Solar	50.7	53.7
Microgeneration – Heat pumps	224.5	291.9
Total	**1155**	**1227**

Deployable potential, 2020 and 2030

C.40 The detailed deployable resource break down is provided below in Table C-28.

Table C-28: Wyre renewable energy deployment projections, 2020 and 2030

Technology	**Existing deployment at 2011**	**Total deployment 2020**	**Total deployment 2030**
Commercial wind	6.0	63.2	83.7
Small scale wind	0.6	3.5	6.0
Plant biomass	6.0	6.1	6.2
Animal biomass	3.0	4.1	4.7
Energy from waste	5.9	4.7	1.6
Small scale hydro	0.0	0.1	0.1
Microgeneration - Solar	0.1	5.8	14.3
Microgeneration – Heat pumps	0.0	3.5	7.6
Total	**22**	**91**	**124**

Source: SQW

Annex D: Stakeholders consulted in the course of the Study

D.1 The following stakeholders were consulted in the course of the Study either through bilateral consultations or through participation at the Workshop held in January 2012.

Table D-1: Stakeholders consulted

Name	Organisation
Laura Gorst and Rea Psillidou	Blackburn with Darwen Borough Council
Keriji Shermer	Blackpool Council
Mark Mullany and Margaret Whewell	Burnley
Michael Briggs	Energie Kontour
James Anderson-Bickley	Forestry Commission
Fiona Riley	Fylde Borough Council
Simon Prideaux	Hyndburn
Paul Bullimore, Richard Camp, Paul Johnson, Debbie King, Jan McDonald and Christina Marginson	Lancashire County Council
Rebecca Richards	Lancaster City Council
Anthony Hatton	Peel Renewables
Shelley Coffey and Jonathan Dicken	Pendle Borough Council
Mike Molyneux and Tamar Reay	Preston
Adrian Smith and James Dalgliesh	Rossendale Borough Council
Rachel Peckham	South Ribble
Mark Worcestor	Turley Associates
Gillian Whitheid	West Lancashire
Philippa Clarke and David Shepherd	Wyre

Annex E: Targets and Policy Development Workshop Programme

Lancashire Sustainable Energy Study Workshop

Gujarat Hindu Society, South Meadow Lane, Preston

20 January 2012

AGENDA

10:00 Arrival & Coffee

10:15 Welcome & Introductions – Lancashire County Council/SQW

10:20 Renewable Energy Technical and Deployable Capacity: Updated to 2030 - SQW

10:40 Demand Considerations - SQW

10:50 Potential Development of Targets - SQW

11:15 Targets in use – Rossendale Borough Council

11:30 Target Development – general discussion

12:00 Good Practice in Policy Development – break out into two groups and discuss the following questions:

- What difference does including a target make to the implementation of planning policies?
- Variety of topics to cover – which should be left to a detailed SPD?
- How can planning policy be used to encourage CHP/district heat networks?
- What are the implications of Localism, the NPPF & neighbourhood planning policy development?
- How can planning policy be used to encourage more community renewable energy schemes?
- How should the Community Infrastructure Levy be used to encourage support for community schemes?

12:50 Feedback & Next Steps

13:00 Lunch & Close.