DEPARTMENT OF ENERGY & CLIMATE CHANGE

Consultation on a Microgeneration Strategy

December 2010

Contents

Ministerial Foreword

A vision for Decentralised Energy

i. A distributed energy economy will not succeed if it is only driven from the top down. The desire for change must come from below. That is why the revolution that we need in our energy system must start locally, in our own homes and communities. If we embrace new technology - with the Green Deal for homes and business, with the roll out of smart meters, with the growth of microgeneration, with community projects coupled with the dynamism of the private sector - a genuine transformation can happen.

ii. The Coalition Government's vision of the new energy economy has a greater role for a wide range of distributed generation technologies. There will be a role for small-scale electricity producers in homes, schools, offices and factories around the country to complement the substantial new investments needed in large-scale Carbon Capture and Storage, nuclear and renewable electricity such as offshore wind; a new supply of locally-produced power that spreads the risk and can help make us all more self-reliant. And there will be a step-change in the use of renewable micro-technologies such as heat pumps, as we tackle the single biggest cause of greenhouse gas emissions, the heating our homes.

iii. In the months running up to the conclusion of the Spending Review, there was understandable concern about the clarity and permanence of the Government's vision for local renewable energy, and whether it would be supported, as promised, with the financial incentives that are needed to make it a reality at the micro, small and medium-sized scales.

iv. On 20th October the Government answered this question with a resounding yes: over £850 million for renewable heat alone over the spending review period, and a strong continued commitment to a Feed-In Tariff. In the current financial climate it is important to understand that this support will be prioritised in the areas where it provides best value for money, and microgeneration will need to establish its value against larger commercial and community-scale installations which are also eligible for support. Costs are coming down, and investment at scale now should bring them down more quickly. As the Feed-In Tariff is already demonstrating, this sort of support can provide a tremendous fillip to the microgeneration sector and we are confident that it will continue to do so.

v. However, while financial support is necessary to grow the sector, it is not sufficient on its own. In their report to Government following a summer of workshops, the key microgeneration stakeholders told us that "*clarity on the Government's long-term vision for the sector is essential to give the industry confidence to invest and grow: consistency and longevity of policy are critical*". Recommendation No1 from the report to Government was therefore to *"provide policy certainty and clarity*". This document aims to do that. There is nothing inconsistent about a bottom-up revolution that needs clear direction from central government. The two things work effectively together.

vi. Decentralised energy is currently an under-developed part of the UK economy, small in size, disparate in nature and immature; it is only just beginning to grow to its full potential. Without the confidence that comes from ambitious declarations of support from government, it could yet wither on the vine. And crucially, the growth will come from consumer demand. So it is vital that the message from Government goes out loud and clear to every household and community in the country: the old days of passive energy consumption are over; this is the time for active energy management and energy production, and we can all get involved.

vii. Why is it so important that we grow the local energy economy? Why do we want to see communities across the UK joining the decentralised energy revolution?

- Because we need to reduce significantly our consumption of fossil fuels to avoid the risks of calamitous climate change;
- Because micro-technologies are low or zero carbon;
- Because we need to increase our use of renewable energy at all scales to meet our carbon budgets and our renewables target - 15% of all energy in the UK has to be renewable by 2020;
- Because diversified energy sources can help reduce our reliance on large-scale imported energy;
- Because we believe it is right to give more power to individuals and communities; home-grown and community-level energy can play an important part in the move to a Big Society; and
- Because sustainable economic growth will require decarbonising the global economy. It is crucial that the UK is at the forefront of this development. Not only can decentralisation create green jobs and more engaged consumers, it can also drive technological innovation and ultimately, improve the overall competitiveness of our economy.

viii. We are confident that the UK can grasp this opportunity and fulfil this vision. The main reason for this confidence is that we know that consumer interest is high and that the industry is ready to rise to the challenge. In its report to Government, the key message is "*The industry is ready to respond, to contribute and deliver on the Government's aspirations*." But there is an important condition attached: "*We need Government to provide the conditions for this to happen…..and create a positive environment in which the industry can thrive*." This document is about how to ensure those conditions are put in place.

ix. The confirmation at the Spending Review of a Renewable Heat Incentive and the continuation of a Feed-In Tariff is an enormous boost. It gives us the hard ammunition to deliver our agenda. The Government will be providing more details about the operation of those funding mechanisms. And having delivered on our promises of significant financial support, it would be tragic if the achievement of our vision was hampered by other, non-financial barriers. This document is about identifying, one by one, these potential barriers to growth, whether they be about technology, about skills, about performance and quality or about information and advice.

x. In each section we sets out the issues, provide supporting evidence, make initial proposals and seek views on specific questions. This document is about Government, industry and local communities working in partnership; it is about a holistic approach that covers whole-house systems, consumer behaviour and smarter networks as well as specific generating technologies, and above all it is about listening to the views of our stakeholders and other partners. That is why each section ends with questions about our proposals. We need to hear from you.

Greg Barker
Minister of State
Department of Energy and Climate Change

Consultation Process

This Consultation was issued on Wednesday 22nd December 2010 and will close on Wednesday, 16 March 2011. When responding, please state whether you are responding as an individual or representing the views of an organisation. Please make it clear in your response who the organisation represents, and where applicable, how the views of members were assembled.

For your ease, you can reply to this consultation online at: http://www.decc.gov.uk/en/content/cms/consultations/microgen_strat/microgen_strat.aspx

A response can also be submitted by post to:

Microgeneration Policy Team
Department of Energy and Climate Change
Area 1E
3 Whitehall Place
London SW1A 2AW

Once consultation responses have been considered, the Government will issue a new microgeneration strategy no later than June 2011.

Additional copies

You may make copies of this document without seeking permission. Further printed copies of the consultation document can be requested by e-mailing www.microgeneration

Other versions of the document in Braille or audiocassette are available on request. This also includes a Welsh version.

Confidentiality and Data Protection

Information provided in response to this Consultation, including personal information, may be subject to publication or release to other parties or to disclosure in accordance with the access to information regimes (these are primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 (DPA) and the Environmental Information Regulations 2004). If you want information, including any personal data that you provide to be treated as confidential, please be aware that, under the FOIA, there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence.

In view of this, it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information, we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, in itself, be regarded as binding on the Department.

Help with queries

Questions about the policy issues raised in this document, and completed response forms, can be addressed to:

Microgeneration Policy Team
Department of Energy and Climate Change
Area 1E
3 Whitehall Place
London SW1A 2AW
E-mail: microgenconsult@decc.gsi.gov.uk

Quality assurance

The Government's Code of Practice on consultation can be found here:
http://www.berr.gov.uk/whatwedo/bre/consultation-guidance/page44420.html
If you have any complaints about the consultation process (as opposed to comments about the issues which are the subject of the consultation) please address them to:

DECC Consultation Co-ordinator
3 Whitehall Place
London SW1A 2AW
consultation.coordinator@decc.gsi.gov.uk

Department of Energy and Climate Change
3 Whitehall Place
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Telephone: 0300 060 4000

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Introduction

Purpose

This Strategy explores a range of non-financial barriers that could prevent the microgeneration sector from realising its full potential. The paper summarises the issues, presents the evidence, makes specific proposals for addressing these barriers, and seeks responses to a range of policy questions. The paper is the result of a collaborative consultation process. The Government first invited a cross-section of those with knowledge and expertise in the field to contribute to the development of this draft strategy. Four working groups were set up to look at key policy areas. The process was facilitated by the Energy Efficiency Partnership for Homes and each working group comprised representatives from trade associations, consumer bodies and other representative groups (rather than individual companies). The four groups covered the following four themes:

- **Quality**: To ensure consumers have confidence that equipment and installation is reliable and adheres to the highest standards;
- **Skills**: To develop the microgeneration supply chain to ensure it is properly equipped with the right people to meet the expected rise in demand, as well as creating and sustaining jobs in the UK;
- **Technology**: To look at market intelligence, a systems approach and performance improvement.
- **Information and Advice**: To provide more accessible advice and information about microgeneration to consumers.

The consultation is structured around these four issues. The final chapter looks at broader issues, with a focus on community – level solutions and decentralised energy more generally.

Context: Secure, Safe, Low Carbon and Affordable Energy

1. This document sits as part of a much wider package of work underway across Government aimed at growing the green economy. Alongside a commitment to this Strategy, the July 2010 Annual Energy Statement set out a further 31 actions to support the transition to a secure, safe, low-carbon and affordable energy system – and significant progress has already been made on key policies such as the Green Deal, Renewable Heat Incentive and the Energy Bill.

2. The 2050 Pathways Analysis[1] shows that some small scale solutions such as heat pumps will make a crucial contribution in helping the UK meet our legal target of an 80% reduction in domestic greenhouse gas emissions by 2050, and all can play some part in hitting our target of 15% renewable energy by 2020.

[1] This analysis is an interactive tool on the web that let s the user try out various low carbon scenarios to 2050. It can be found at: http://2050-calculator-tool.decc.gov.uk/

3. Government committed in the annual energy statement 2010 to roll out of a smart grid. A smarter grid will facilitate management of the two way flows on the local network which come from microgeneration. It will also provide better visibility across the network and the means to integrate distributed low carbon generation into a broader low carbon electricity system. The first step to a smart grid is smart meters, which will be implemented over the next decade. The Low Carbon Network Fund is trialling new ways of operating the network between now and 2015. In 2011, alongside the EMR whitepaper, we will set out a strategy for future network investment and smartening the grid.

4. Fundamental work is also underway looking at what reforms of the electricity market are needed to reach our future goals. There is a link with the microgeneration sector and particularly future technological developments, as efforts to balance supply and demand and to reduce our reliance on imported fossil fuels lead to creation of smarter electricity grids.

5. A suite of incentives and policy measures are supporting this transition to a low-carbon and less centralised energy economy. The Spending Review agreed over £850 million funding for the Renewable Heat Incentive which will be introduced in June next year. This will drive a more than tenfold increase of renewable heat over the coming decade, shifting renewable heat from a fringe industry firmly into the mainstream. Feed-In Tariffs will continue and will be refocused on the most cost-effective technologies saving £40 million in 2014-15. And all of this activity needs to be considered alongside the essential work to create certainty and security for large scale electricity which remains the most important component of meeting our renewables and carbon targets at the national level.

6. The UK is clearly not the only country developing and delivering microgeneration solutions and the Government is therefore actively involved in working with EU Member States and other countries to learn lessons from their experience. As the table below shows, we have thus far been lagging well behind some countries.

Reported PV power capacity in participating IEA PV Power Systems Programme countries as of end 2009

Country	Cumulative installed per capita (W/cap)	PV power installed during 2009 (kW)
Germany	119.6	3,845,000
Denmark	0.8	1,300
Spain	76.1	60,000
Italy	20.3	723,000
Sweden	1.0	854
UK*	0.4	7,077

Source: IEA
Notes: *UK data is for 2008

7. Microgeneration technologies offer benefits at a scale greater than that defined as “microgeneration” by the Green Energy Act 2009, which is why the final chapter of this Consultation considers the issue of decentralisation more broadly. However, the Consultation does not seek to cover all of the inter-related issues which impact upon microgeneration, since this would involve duplication with other policy development and would risk a lack of focus.

8. We recognise that microgeneration is less cost-effective than larger-scale installations in some cases, particularly in respect of electricity generation. The cost-effectiveness of smaller-scale installations needs to be challenged and improved by industry and all those across the supply chain as the market develops.

9. Therefore, this document and the collaborative consultation exercise has tried to focus specifically on the issues and barriers which may prevent microgeneration reaching its full potential even when the financial incentives, the reformed electricity market, the Green Deal, and other relevant policies that are being taken forward as part of Government’s wider green economic growth agenda, are all in place.

Background to the Consultation

10. This Consultation document seeks views on Government proposals for an expansion of microgeneration, including at a community level, based on the issues raised with us during the open consultation stage over the summer and early autumn, by industry representatives and other groups. The aim of both the Government and industry is to support further growth in microgeneration as it moves from a niche market to the mainstream in the UK, and as part of a wider set of energy policies. Responses to this consultation will contribute to a full Strategy which will be launched by June 2011.

11. Following the Energy Act 2004, the then Government brought forward a Microgeneration Strategy in March 2006[2] with the aim of identifying obstacles to creating a sustainable microgeneration market. The Strategy contained 25 actions to tackle the barriers to widespread uptake. A report evaluating the Strategy’s recommendations was produced in June 2008[3].

12. This first Strategy had cross-party support and helped to galvanise support and take-up of microgeneration technologies. However, it also highlighted the need for long-term financial support. Building on the learning of Government-backed funding programmes, including Clear Skies and the Low Carbon Buildings Programme, the Energy Act 2008 introduced powers to develop a Feed-In Tariff for small scale renewable electricity and a Renewable Heat Incentive for renewable heat technologies at all scales.

[2] http://www.decc.gov.uk/assets/decc/what%20we%20do/uk%20energy%20supply/energy%20mix/renewable%20energy/explained/microgen/file27575.pdf

[3] http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file46372.pdf

13. This led to further work on the remaining barriers to the wider roll-out of microgeneration. The Green Energy (Definition and Promotion) Act 2009 was introduced as a private members Bill. The Bill won the support of the then Government, and came into force in January 2010. Central to the purposes of the Act are provisions to promote development, installation and usage of microgeneration. One such provision (Section 2 of the 2009 Act) is a requirement for the Secretary of State to prepare and publish a Strategy for the promotion of microgeneration in England. This consultation document fulfils the first part of that requirement.

14. This Consultation is limited in scope by the definition of microgeneration under the terms of the Green Energy Act 2009 – less than 50kW for electricity and less than 300kWth for heat. This differs slightly from the legal definitions of microgeneration (less than 50kW for electricity and less than 45kWth for heat). This recognises that microgeneration technologies can be installed at scale above domestic - namely community and small commercial sites.

15. The Strategy covers England only. The Devolved Administrations will be taking forward work on microgeneration in the respective regions. For example, The Welsh Assembly will be taking forward activities on information and skills and funding in Wales.

16. There are a range of low carbon and renewable microgeneration technologies available at a domestic or small community and commercial scale. These include:
    - Solar photo-voltaic panels (PV)
    - Solar thermal panels
    - Ground and air source heat pumps
    - Wind turbines
    - Hydro (including water mills)
    - Combined heat and Power (CHP) units
    - Fuel cells
    - Heat and power generation from biomass, bio-liquids and biogas including from anaerobic digestion.

17. The Strategy looks at issues across all these technologies but does not preclude new technologies entering the market. In fact encouraging innovation in the sector will be important to ensure consumers benefit from improvements in performance, efficiency and the introduction of new technologies.

18. Each working group met twice during August and September 2010 to discuss the priority issues for their topic area and to develop options for how these could be addressed. The output of this work[4] forms the industry's vision for microgeneration and sets out the actions that it considers Government and industry should take to make the vision a reality.

4 http://www.decc.gov.uk/assets/decc/Consultations/microgen-strategy/668-energy-generating-democracy-microgen.pdf

19. Regular contact between the Government and industry has been central to the development of this Consultation. The industry has indicated its desire to see the establishment of a Government-Industry Contact Group to continue this close collaboration. The Government warmly welcomes this development and the Energy Efficiency Partnership for Homes is now taking this proposal forward. The Contact Group will play an important role in evaluating the implementation of the final Microgeneration Strategy.

CHAPTER 1 – Quality

Introduction

Advances in technology and the efforts of committed industry participants have delivered significant improvements in the quality of products, equipment and installations. However, until such time as microgeneration technologies become more commonplace and consumers are better aware of their rights and opportunities, there will always be room for improvement. So recognising the negative impact of poor quality on market development and consumer uptake, and on the overall objective of Government in promoting microgeneration, one of the working groups considered issues of quality across the sector. In particular, the group considered the existing procedures for ensuring quality, focussing especially on certification of products and services under the Microgeneration Certification Scheme (MCS), and the consumer code of conduct under REAL Assurance.

Issue 1 – Protecting Consumers and Building Confidence

To create the demand needed for deployment of microgeneration to reach its full potential and long-term sustainability, we need to protect consumers and build confidence in the market.

Evidence and explanation of the need for change

1.1 Building consumer confidence is essential if microgeneration is to develop from a niche market into the mainstream. This places significant emphasis on the quality and reliability of installations and consequently on the role of certification and standards.

1.2 Driven in part by the introduction of the Feed-In Tariff, new product manufacturers and installation businesses are entering the microgeneration sector. As a result, we are seeing new business models with companies offering turnkey solutions - providing access to upfront capital alongside Feed-In Tariff support. It is likely the Renewable Heat Incentive will lead to similar developments.

1.3 This is a positive development, but means that there must be robust quality, safety and reliability guarantees to ensure installations perform as intended.

1.4 MCS has had some success in generating confidence amongst consumers and the wider market. Under the MCS, certificated companies must have procedures and systems in place to deliver installations that continue to meet the required quality standards, on a consistent basis. The certificated company also has responsibility to ensure employees and contractors are competent and have the relevant skills to install microgeneration technologies. The consumer code, which meets the Office of Fair Trading requirements, seeks to address mis-selling and to provide redress for consumers in the case of disputes.

What is the Microgeneration Certification Scheme (MCS)?

MCS is an industry-led scheme but also includes consumer representation. It includes the following 3 elements:

- Product Certification
- Installation Company Certification
- Consumer Code of Practice which meets the Office of Fair Trading requirements. The REAL Assurance Code is currently the only approved code. See http://www.realassurance.org.uk

MCS approves microgeneration products and installation companies against robust standards. An MCS installation company must join an approved consumer code of conduct which seeks to ensure that consumers wishing to install microgeneration units in their homes have the necessary confidence and service standards to help them make an informed choice.

The MCS offers third party certification which gives greater confidence about the quality, durability and safety of installations and a route for complaints. MCS supports installations under the Feed-In Tariffs and is likely to have a role to play in the proposed Renewable Heat Incentive.

MCS standards and the full list of approved installation companies and products are available on the MCS website. Through this, consumers can choose an approved installation company and product to ensure they benefit from the protection the scheme offers.

How can I find an MCS installation company?

Consumers can search online at www.microgenerationcertification.org, or call the MCS helpline (0207 090 1082 between 9am-5pm).

1.5 The MCS installation scheme currently covers installation companies only. This is seen as a barrier to small companies and individual installers becoming certificated as they are required to have quality management systems in place. These installers, primarily from the Building Service Engineering (BSE) sector, are seen as important in driving market growth. However, in an emerging sector, consumers remain potentially vulnerable to mis-selling, inflated claims and poor installation of what are largely unfamiliar technologies.

1.6 In 2009, for example, the Office of Fair Trading received over 1000 complaints about microgeneration technologies. The complaints involved high pressure sales tactics and misleading claims about performance and cost savings to the consumer. So while it is recognised that MCS needs to offer more flexibility to encourage involvement of SMEs, the scheme needs to become more robust. At the same time the MCS also needs to be more responsive to future changes in a fast developing market.

1.7 Standard setting is complex. It requires involvement of a wide interest group with often differing views. Consequently it can become time consuming and costly, with the costs falling on industry and consumers. There is a challenge therefore to strike the right balance between ensuring robust standards for quality products, equipment and services, and avoiding the imposition of unnecessary burden and costs.

1.8 One key area where the need for balance is recognised is the training requirements of microgeneration technology installers. There is a wealth of existing knowledge and expertise amongst heating engineers, plumbers and electricians who are already involved with installation and maintenance of more familiar technologies and systems in our homes. It is vital that we capitalise on this expertise if we are to ensure there are enough installers to meet the increasing demand for microgeneration, to build consumer confidence and to keep cost and burden on the sector to a minimum.

Groundwork for installation of ground source heat pump

1.9 To ensure compliance with Building Regulations, the Department for Communities and Local Government's (DCLG) Competent Person Schemes (CPS) assess installation engineers and technicians to minimum technical standards, based on National Occupational Standards (see Chapter 2).

1.10 There is clearly a need to take into account CPS installers' existing skills, before further training is undertaken to achieve microgeneration certification. So MCS and CPS have been working together with the Sector Skills Council, Summitskills, DECC, and DCLG to develop minimum technical competences for microgeneration technologies, based on National Occupational Standards. This will provide a consistent approach between MCS and CPS on training and assessment, enabling existing installers to access the microgeneration sector.

1.11 MCS operators are being recognised as Building Regulations Competent Person Schemes which will help with compliance of microgeneration installations with Building Regulations and help achieve cost reductions, avoid duplication and reduce complexity between MCS and CPS.

1.12 We need the MCS to have sufficient reach and capabilities to ensure information gained from on-going field trials is captured and used to revise the MCS product and installer standards where needed. It should be recognised that MCS product and installer standards are based wherever possible on international and European standards. Changing international and European standards is a challenging process requiring international negotiation and lobbying, MCS through its experts via British Standards Institution will input into any standards development.

1.13 Work is already underway looking at the governance of MCS with a view to streamlining its executive functions, providing full-time staff support and addressing liability issues. The MCS is also now taking forward work to review installer company requirements. In particular, while not compromising overall robustness, this work is considering various entry routes for installation companies of different sizes and the impact of different business models. This work has particular relevance, for example, to Scotland, where different building regulations apply and the industry consists of predominantly small companies.

1.14 The Working Group felt that MCS needed to be marketed much more widely to the full range of stakeholders including consumers (See Chapter on Information). A key potential area for development is work with the REAL Assurance Scheme, the organisation currently running the only consumer code for the MCS, to provide a one-stop shop for handling complaints. In the longer term, there are plans to consider making MCS a free-standing company in its own right, something that was supported by the Working Group, in particular to help to manage liability issues.

1.15 Gemserv runs the MCS on behalf of the industry on a not-for-profit basis. Currently the MCS scheme is running at a financial loss. MCS was launched in 2006. Development costs for the scheme over the first two years were covered by the forerunner to the Department for Business, Innovation and Skills - BERR. The scheme is now operating on a self-financing basis. Income is generated by registration fees drawn from certification costs and a £5 levy on installer companies for each installation. This helps to cover costs such as the website listing and development and maintenance of the standards.

1.16 The standard setting work has been very time consuming adding significantly to the costs of the scheme. However, it is expected that this cost will reduce as the market matures. The frequency of both installation companies' surveillance and revisions of standards should reduce. As part of the review of MCS, the MCS Steering Group will be considering improvements to the current financial model to ensure it clears its debts and is able to cover ongoing costs[5].

Proposal

1.17 The Government welcomes the industry's efforts to improve the operation and effectiveness of the MCS. However, given the critical role that certification and standards have to play in protecting consumers and developing market confidence, it is vital this work continues at pace and engages all groups operating in the sector. The Government supports plans to offer greater flexibility and access for SMEs and believes it is important that appropriate product and service standards are developed which guard against mis-selling and poor installations.

Consultation Questions	
1.	The Working Groups made clear MCS should continue to be responsible for certification in the microgeneration sector. Do you agree?
2.	Do you agree that MCS governance should be improved and that it should move towards becoming a free-standing company? Please provide evidence to support your views.
3.	How can MCS be put on a more sustainable financial footing without compromising its independence and without the use of public funds?

Issue 2 – Protection for larger scale installations

The financial incentives of Feed-In Tariffs and the proposed Renewable Heat Incentive are likely to encourage deployment at scales greater than the respective strict 50kWe and 45kWth limits of microgeneration (installations up to 5MWe are eligible for Feed-In Tariffs). There is a question about whether communities and the renewables market at this larger-scale are sufficiently protected.

Evidence and explanation of the need for change

1.18 There is some evidence that large commercial organisations and businesses are able to use commercial contracts and agreements to deliver similar protections to those offered by the MCS, given the value of the contract or size of infrastructure. They also tend to involve a longer supply chain with designers,

[5] http://www.microgenerationcertification.org/MCS+information+events/Steering+and+Working+Groups

installers and commissioning professionals and a different contracting process to that for the domestic sector.

1.19 However, community projects do not have the same commissioning and contracting capacity as commercial organisations. Previous programmes such as the Community Renewables Initiative have demonstrated the need for certification services for community projects. The current Low Carbon Communities Challenge has also highlighted the need for "hand holding" support including assurance about products and installer companies.

Proposal

1.20 We therefore propose that the MCS should be extended to provide certification for installations larger than the strict microgeneration limit as set out in the Energy Act 2004. This is primarily to support projects at a community scale, but we also need to consider implications for the commercial sector, particularly given the much larger capacities eligible for the Feed-In tariff and potential uncapped limit for the Renewable Heat Incentive.

Consultation Questions	
4.	Do you agree that MCS should be extended to support technology limits over the strict microgeneration limit (<50kWe for electricity and <45kWth for heat)?
5.	What size, in terms of the upper limit for each technology, should MCS cover? Please provide evidence to support your views.

Issue 3 – Maintenance requirements

There are uncertainties about maintenance requirements for microgeneration technologies which, unless addressed, could damage consumer confidence.

Evidence and explanation of the need for change

1.21 With the promise of long-term revenue return as a result of the introduction of the Feed-In Tariff and the forthcoming Renewable Heat Incentive, consumers will expect (and will be promised by retailers) a certain level of longevity from their chosen technologies. Poor maintenance could reduce installation lifetimes, and lead to a reduction in consumer and market confidence. Currently manufacturers offer product warranties for differing lengths length of validity but there is an element of confusion about consumer rights in this area. For example, typically solar panel warranties are valid for ten years, while inverter warranties are valid for five years. Warranties for other components, for example wind turbines motors, are typically valid for two years.

1.22 The high value of installations and the fact that loans and other financing services will be closely linked to performance and long-term generating capacity mean effective maintenance is vital. There is also the wider challenge that without adequate maintenance, in some cases, installations could result in environmental damage.

1.23 It is a common feature in field trials and assessments that there is a significant gap between expected and actual performance. Poor maintenance exacerbates this. In addition, components may need to be replaced at the homeowner's expense during the lifetime of the system as a whole.). Consumers must be informed about these periodic and on-going requirements before they sign the contract.

How are maintenance services delivered in the microgeneration sector?

Maintenance services differ across the technologies. However, under the REAL Assurance Scheme Consumer Code, which all MCS installer companies must comply with, the MCS installer company must tell the householder if there is any requirement for regular servicing. Where servicing contracts are in place, in the case of a change of ownership to the property, the servicing arrangements must be transferable to the new owner.

It is not clear whether consumers fully understand the maintenance requirements, especially in cases where a failure to regularly service an installation could invalidate the manufacturer's warranty. There is also some uncertainty about whether MCS installer companies are meeting their obligations in this area and the degree to which householders are missing out on options to sign up to extended maintenance contracts.

1.24 It appears that many existing systems may have been installed without long-term maintenance contracts. Homeowners and communities need access to local companies that can maintain their microgeneration systems for the life of the financial incentives. This raises a number of additional challenges. MCS installer companies are not necessarily offering maintenance services and there are opportunities for market development in this area. Maintenance information needs to be displayed prominently in the marketplace and consumers made aware that this exists. Currently consumers tend to consult sources of information only once they have a problem.

1.25 We are beginning to learn more about the life cycle of the technologies through various field trials and from previous Government grant programmes. However, more information is needed in order to set clear maintenance standards for the full range of technologies. This would ensure consumers fully understand the on-going maintenance requirements and help maintenance companies develop schedules, skills and capacities accordingly.

1.26 At present, there are a number of routes for consumer complaints and the Working Groups have recommended that this should be simplified. The industry has explained that more needs to be understood about the product manufacturer's liability and the installer's liability to establish a fair and effective redress mechanism for consumers. A related issue is workmanship warranties. This gives rise to two consumer protection issues. The first is who will honour the company's workmanship warranty and the second is what should be the consumer's route into the manufacturer should there be a problem with the product.

1.27 The REAL Consumer Code obliges companies to insure their workmanship warranties (http://www.realassurance.org.uk/scheme/consumer-code). The insurance lasts the same length of time as the original workmanship warranty. The issue with workmanship warranties is that they typically last for two years, whereas the life of the system can be 25 years. However, issues with the installation should usually become apparent within two years. There are companies offering 'lifetime warranties' but more needs to be understood about the coverage of such schemes.

Proposal

1.28 Government and industry will undertake work to clarify and develop better understanding of the maintenance requirements of different microgeneration technologies.

1.29 We will also consider options for a scheme to insure consumers for financial loss as a result of poor maintenance or an installer company going out of business. This would need to be financed by the industry as there is no scope for Government funding. Any scheme would also need to take account of existing schemes, for example the one offered under the REAL Assurance Scheme. Under that Scheme, consumers are given the opportunity to insure the workmanship warranty with an insurance provider, Guarantee Protection Insurance Ltd. Typically the premium, paid by the consumer, costs £35 for two years' cover. Other companies in the market also offer such cover. This is not an extended warranty. It may be possible to purchase extended warranties for manufacturers' product warranties.

1.30 Working with industry, we will also seek to gain a better understanding of the relationship between the product manufacturer and installation company's liability.

Consultation Questions	
6.	What type of insurance schemes should the industry consider?

Issue 4 – Standard Assessment Procedure (SAP)

SAP is not sufficiently transparent and flexible to meet the needs of a developing microgeneration sector.

The Domestic Energy Performance Assessment tools are:

- The Standard Assessment Procedure (SAP) – published in 1992, it is Government's methodology for assessing the energy and environmental performance of new and existing dwellings;
- The Reduced Data SAP (RDSAP) – published in 2005, it was developed specifically to assess existing dwellings in a cost-effective way, to minimise the cost of providing Energy Performance Certificates; and
- The British Research Establishment Domestic Energy Model (BREDEM) – it is the model on which SAP and RDSAP is based. It provides a framework for calculating the energy consumption of dwellings.

The purpose of the tools is to provide accurate and reliable assessments of dwelling energy performance to support energy efficiency and environmental policy initiatives across Government and more widely. They underpin the delivery of a number of key energy efficiency and environmental measures, including:

- Buildings Regulations for England and the Devolved Administrations
- HM Treasury's Stamp Duty exemption for zero carbon homes
- Energy Performance of Buildings Directive6 (EPBD)
- Code for Sustainable Homes, where SAP is used to determine compliance against the stated CO2 emissions levels

The tools will be further developed to support the delivery of the Green Deal and Renewable Heat Incentive.

Evidence and explanation of the need for change

1.31 SAP revisions are timed to coincide with amendments to Part L of the Building Regulations (currently scheduled for October 2010, 2013 and 2016). However, outside of this timetable SAP needs to take account of changes and developments in technologies and products that are used in the construction of homes.

1.32 Appendix Q was introduced into the SAP 2005 document. This enables SAP assessors to access product performance and other information that was not available at the time of publication of the SAP document. To underpin the development of microgeneration, products manufacturers will be required to provide reliable product performance information; assessed against an agreed test specification and verified by an independent third party.

[6] Directive 2002/91/EC on the energy performance of buildings: OJ L1/65 of 4.1.2003.

1.33 The Working Group suggested changes in the governance of SAP to facilitate engagement with the industry and other uses of the tool. The tool is managed, under contract, by BRE Global on behalf of DECC. It was also felt that SAP is not sufficiently transparent and flexible to respond to changes taking place in the industry.

1.34 The Zero Carbon Hub's report on "Carbon Compliance for Tomorrow's New Homes" has made some recommendations on how SAP may be developed to deliver zero and low carbon homes. These recommendations will be considered as part of the next review.

Proposal

1.35 We will consider comments about governance, transparency and flexibility in the next review of SAP.

Consultation Question	
7.	What are the specific concerns about the governance, transparency and flexibility of SAP?

Issue 5 – Reduced Data Standard Assessment Procedure

Reduced Data SAP (RDSAP) in some cases, fails to account properly for microgeneration technologies and can in fact penalise them.

Evidence and explanation of the need for change

1.36 The current version of RDSAP is based on SAP 2005. It is able to assess the impact of all the microgeneration technologies listed in SAP 2005, except for micro-CHP as there were no products on the market when it was last updated. RDSAP will be amended in 2011 to reflect the changes introduced in SAP 2009. This will enable RDSAP to assess all microgeneration technologies, including micro-CHP.

1.37 Whilst RDSAP can be used to assess the majority of dwellings it is not suitable in certain situations, such as where multiple technologies are deployed. Where RDSAP is not suitable a full SAP assessment is usually required.

1.38 There have been a number of instances where RDSAP has been inappropriately used as part of the Energy Performance Certificate (EPCs) assessments. This is believed to be primarily a failure of assessor competence and the competitive market in which they work. It is therefore proposed to review the way EPCs are delivered, particularly as they are expected to be used to deliver the Green Deal and the Renewable Heat Incentive.

Proposal

1.39 We will consider the further development of RDSAP in light of responses to this consultation.

Consultation Question	
8.	Do you agree that once RDSAP is aligned with SAP 2009 in 2011 it will be effective in assessing microgeneration technologies? If not, please identify other areas of concern that should be considered as part of future reviews.

CHAPTER 2 – Skills

Our low carbon future will need an economy with a workforce with the skills and capacity to deliver this transformational change, to sustain and adapt and develop it, and to compete internationally. The Coalition Government has made skills development a priority in its programme. On 16 November, Vince Cable, Secretary of State for Business, Innovation and Skills launched the Government's '*Investing in Skills for Sustainable Growth Strategy*', saying:

"If we are to achieve sustainable growth, nothing is more important than addressing current failings in skills training, and this strategy reflects this Government's determination to do both.

"We are not in a position to throw money at the problem, but even against the backdrop of reductions, resource will be found to expand the apprenticeship programme for adults and support more people undertaking an increasingly respected form of vocational training."

http://www.bis.gov.uk/news/topstories/2010/Nov/skills-for-sustainable-growth

Introduction

Any significant growth in the microgeneration industry will require the support of a skilled workforce. This applies across the building and products sector, not simply to installation engineers and technicians. This is a significant challenge if the supply side is to meet the projected growth in the take-up of new technologies. The investment by individuals and companies will only happen if they have confidence in the technologies, their design and installation and their maintenance. Recognised, effective, accessible training needs to be developed, accredited and publicised to ensure market confidence. To achieve this at speed we need to build on existing, flexible, training channels and learn the lessons from other countries with more mature microgeneration sectors to ensure this investment in skills development happens in step with market growth.

Issue 1 – Installation and maintenance skills and capacity

How can we ensure the installer workforce has the capacity and skills to meet the anticipated future demand growth for these technologies? And how do we ensure that installer training meets national occupational standards with the ability to respond to new technologies and innovations in installation techniques?

Evidence and explanation of the need for change

2.1. As a starting point there are over 300,000 heating, plumbing and electrical engineers who could potentially install microgeneration technologies in the UK. Currently under MCS there are over 1450 registered installer companies which equate to over 10,000 qualified installers available to work on microgeneration technologies.

2.2. Ofgem has revealed that more than 11,000 generators registered for Feed-In Tariffs during the first six months of the incentive scheme, confirming that the policy has led to a surge in renewable energy installations.

2.3. About 44MWe of renewable capacity was added after the tariffs came into force in April this year, as 11,352 systems were installed – enough to power about 35,000 homes. Of course, installations are being newly accredited for Feed-In Tariffs all the time. The most up to date information on the number and capacity of installations is available from Ofgem's website[7].

[7] https://www.renewablesandchp.ofgem.gov.uk/Public/ReportManager.aspx?ReportVisibility=1&ReportCategory=0

2.4. The transformation of this sector is demonstrated by the difference in the number of installations since the introduction of Feed-In Tariffs. As a broad comparison there have been around 1,400 small-scale Solar PV installations in the period from April to July 2010 under the Feed-In Tariffs. On average there were around 310 Solar PV household installations per quarter under the Low Carbon Buildings Programme, the previous financial incentive scheme for microgeneration.

2.5. We anticipate workforce capacity will have to grow significantly to meet the continued increased uptake of new microgeneration technologies, including heat technologies once the Renewable Heat Incentive (RHI) is in place.

2.6. We need to recognise that certain installer training is already available. However, this is currently not standardised to the National Occupational Standards (NOS) , or mapped to the new industry recognised qualification and credit framework units for environmental technologies (QCF). MCS installer companies have the responsibility to demonstrate the competence of their installers. The work on developing a national competence framework for the range of technologies is helping to bring standardisation to the market. An important piece of work that needs to be finalised is the mapping of the training courses that currently exist and new provision against the new QCF competences. Significant work has been done on this by the alliance of Sector Skills Councils (SSCs) covering the renewable energy sector. This will help those installers who complete training to sign off against the National Occupational Competences.

2.7. The sole traders and small businesses in the sector are flexible and responsive. They will make informal alliances (for example electricians with roofers) to bring together all the skills required.

2.8. This work is vital to ensure ongoing training in environmental technologies meets the new industry accepted competences of the NOS and QCF units. This also helps to give clarity to the installer on the standard of training received. There is a need to reinforce the training and standard-setting given the particularly high value of these installations and the greater complexity of installation, system integration and on-going maintenance and repair of such equipment. We know from research by the SSCs that system designers and project managers are key areas where skills are in short supply. Emerging evidence from various assessments of existing installations highlight that many performance issues result from shortcomings in the interaction between different parts of the system, installed by different contractors who may not possess the skills to understand the way the system as a whole needs to operate.

2.9. Of these, designers will carry more professional risk than others in the supply chain and it will be necessary to ensure their competence and indemnity against liabilities.

2.10. Summitskills (the Sector Skills Council for Building Services Engineering), is leading on the establishment of the National Skills Academy for Environmental Technologies. The National Skills Academy has a unique opportunity to support

the developments that are required to create a skilled workforce for the microgeneration sector. Summitskills was granted funds by the Skills Funding Agency (SFA) and the Department for Business Innovation and Skills (BIS), matched by employers, to develop a Business Plan that will underpin its delivery. The Business Plan has been submitted for approval.

2.11. Both the industry and stakeholders have agreed that upskilling the existing Building Services Engineering workforce is the best approach for increasing the skills around environmental technologies.

2.12. The National Skills Academy has the opportunity to bring clarity to a confused marketplace. Installers, designers and the broader supply chain require easy access to a range of learning options. The Working Group identified the need to build an infrastructure of qualified trainers and approved training courses. There are promising signs of change and the National Skills Academy has a part to play in helping to bring the different strands together building on existing industry participation. The National Skills Academy has recently announced the first set of training hubs, which range from Further Education Colleges in the North West to the South West.

2.13. The profile of training needs will need to change with time as the demand for the servicing of existing installations grows.

Proposal

2.14. Training should be available to all those who are interested, and delivered and assessed to consistent standards. The skills required to deliver microgeneration in its widest context must also be considered. SummitSkills will work with industry and the National Skills Academy to bring greater co-ordination for the microgeneration industry through the current groups such as the MCS/CPS Build Services Engineering Group and the Government Industry Contact Group (see Chapter 1)

2.15. The SummitSkills business plan should:

- Provide coordination;
- Support development of skills for the microgeneration sector by providing leadership to the building services engineering sector to stimulate rapid engagement with environmental technologies; and
- Facilitate engagement between the existing building services engineering sectors and the microgeneration sector by highlighting the opportunities and promoting access to relevant training to bridge the skills gap.

Consultation Question	
9.	How do we ensure that sector skills are in-step with sector growth? This will be about improving skills of the existing workforce as well as modified apprentice training - how will this be cascaded to companies and individuals most effectively?

10.	What role could manufacturers play in training provision?
11.	How can the marketing of, and accessibility to, training reach smaller companies and individuals?
12.	Are there enough people who can be trained – given the increasingly high uptake of solar PV, for example? How can we ensure that training gives sufficient weight to repair and maintenance?
13.	How can we ensure that we capture the training needs of those installing these technologies in the commercial sector?

Issue 2- Ensuring good design

How do we ensure that the right professional advice and service chain is established to ensure customers receive the best, objective advice to achieve the optimal solution for their household/community project? (See also Chapter 4 on Information)

Evidence and explanation of the need for change

2.16. Excellent design and commissioning of microgeneration installations is essential; without it there is no guarantee that the systems will perform as intended, as demonstrated in recent heat pump trials. Responsibility for design and commission depends on the scale of the installation, but whichever part of the supply chain delivers it must be of the very highest standard.

2.17. The Working Group set out a three stage process. It envisaged three different professions to take the customer from initial advice to installation:

- Initial scoping advice on the likely feasibility of microgeneration options for a household or commercial property;
- A design survey which will lay out the technical needs of a particular system or combination of systems for that particular property; and
- The actual installation.

2.18. The initial advice will form part of the Green Deal advice service (See Information chapter) but the design survey will be potentially a significant challenge if householders are to be assured that they are receiving advice on the optimal technology systems. It is unlikely that general advice will be able to go as far as considering the particular design challenge of specific houses. Having a sufficient number of 'designers' with the expertise to design installations and provide whole house systems approaches, where appropriate, will be crucial to the effective development and performance of the sector. Field trials have demonstrated that poor design undermines the performance of microgeneration and, in some cases, produced higher levels of carbon emissions, than the technologies they were replacing.

Proposal

2.19. Industry should consider business models that recognise the important difference between design/commissioning skills and end installation/maintenance to ensure optimal solutions for households. The development and training of design specialists is a particularly urgent need and the SummitSkills will explore options with industry and training providers. Demonstration of competencies in these fields should be embedded within MCS.

Consultation Question	
14.	How can we ensure that design advice capacity is in place to meet demand projections?
15.	What are the interim solutions to ensure householders are given the right advice now?
16.	How should this approach be modified for the commercial sector?

Issue 3 - The Supply Chain

How do we ensure that all those with a role - either direct or indirect - in the growth of the microgeneration sector are made aware and, where necessary, trained to ensure there are no bottlenecks or missed opportunities in the supply chain?

Evidence and explanation of the need for change

2.20. The supply side is more complex than simply end installers and covers the entire building services and products industry. The Working Group identified that the planners, building control officers, and local authority officers all have a key role to play in the microgeneration sector with a wide range of skills and therefore training requirements. If they have a limited understanding of microgeneration technologies then it could affect the advice and support they can provide and the approach they adopt. This could be a potential barrier to take up.

2.21. In addition, downstream skills are required to provide objective advice, aside from the specific design and installation advice set out above. Manufacturers and other contact groups in the sector will have a role to play in the way technologies and information are marketed.

2.22. The Sector Skills Councils (SSCs) are independent, employer-led, UK–wide organisations designed to build a skills system that is driven by employer demand. The consultation to date has highlighted the need for the Sector Skills Councils to work collaboratively especially where there is an overlapping interest in microgeneration. For example, Construction Skills, Asset Skills and Energy

and Utilities Skills may all have an interest in developments in the microgeneration sector.

2.23. The Building Service Engineering sector has the potential to make a significant impact on delivering microgeneration installations on a large scale. Some of the Sector Skills Council covers the Building Service Engineering sectors where existing installers may wish to upskill to install microgeneration technologies.

Proposal

2.24. The National Skills Academy should ensure that the Sector Skills Councils with an interest in microgeneration are involved in the work of the Academy and continue to share information to provide a coherent package to all the relevant industry sectors.

Consultation Question	
17.	What further steps should be taken to ensure that appropriate training and knowledge-sharing reaches all those working on wider energy, construction and environmental issues?

EU Renewable Energy Directive

Under the EU Renewable Directive 2009/28/EC Member States are required to put in place certification schemes for microgeneration installers by 2012. The skills work (along with the Microgeneration Certification Scheme and the Competent Person Schemes) is integral to meeting the UK's requirements under Annex 4 of EU Renewable Directive 2009/28/EC.

The Microgeneration Certification Scheme and the Competent Person Forum are working, with support from Summitskills, to develop the minimum technical competence requirements for microgeneration technologies. Once developed and agreed, the competence requirements will provide a benchmark against which training and qualifications for microgeneration technologies can be measured, mapped and delivered.

CHAPTER 3 – Technology

Introduction

There are a range of technologies that can operate at small-scale to supply low carbon and renewable onsite heat and electricity. The technologies are at different stages of the product life cycle and face different challenges. As already mentioned, there is a body of evidence from the previous grant programmes, such as the Low Carbon Buildings Programme, field trials and experience in other countries that is now helping to inform market development. Feed-In Tariffs are transforming the microgeneration market. Bigger players are entering the market leading to a variety of business models and a degree of consolidation. This chapter examines some of the priorities that need to be tackled to ensure that each technology can play its part in local heat production and electricity generation.

Issue 1 – Market development

Significant changes are taking place in the market and we need better market intelligence to understand and assess these developments.

3.1 Microgeneration is a nascent industry in the UK although the technologies are not new – they have been used extensively in other countries for many years. However, the performance of microgeneration technologies in the UK will differ to other countries based on a range of factors including our climate, carbon intensity of the electricity supply, consumer understanding and acceptance, and the knowledge and skills of industry, and our building stock.

3.2 Information on the numbers and types of installations taking place is patchy. It would be useful to know what types of systems are being installed and where. Is there a geographical spread in terms of the coverage of certain types of technologies and, if so, why? For specific technologies, such as solar thermal, it may be useful to know the difference between the numbers of flat plates and evacuated tube systems being installed and the size of the collectors.

3.3 For biomass systems it may be useful to learn more about the number of stoves being installed in comparison to more technical systems with controls. Information about the supply of feedstock and opportunities for localised supply would helpfully inform discussions on sustainability.

3.4 For each of the technologies there is useful information that could be sought to help future development of the market. At present information on installations is shared at various levels but the database for Feed-In Tariffs and whatever system is used for Renewable Heat Incentive should be a good source of market information.

3.5 There needs to be some clarification about the information that should be gathered and how to do it using existing networks.

Consultation Question	
18.	What sort of market intelligence should industry and Government be collecting?
19.	How should this market intelligence be collected using existing networks and relationships such as trade bodies, MCS and Certification Bodies?

Issue 2 – Technology specific issues

Microgeneration technologies are at various stages of the product life cycle and therefore face different issues.

Evidence and explanations

3.6 A wide range of microgeneration technologies are used in the small scale generation of heat and power. We have learnt many lessons from installations over the last few years. That experience, as well as field trials, confirms that differing housing, building types and environmental conditions are best served by deploying a wide range of technologies.

3.7 The various technologies face different obstacles to becoming widely accepted consumer products. The Government is not seeking to 'pick winners' but aims to provide a framework, including financial incentives, which creates an environment in which the technologies can compete to meet market demand.

3.8 The new financial incentives have highlighted the need to develop the supply chain for microgeneration technologies. The strength of the installer base for each technology differs. For some technologies we have a high number of installers with a good geographical spread across the UK. However, for other technologies the installer market is developing more slowly. A key factor has been the early introduction of installer standards. Where these are in place including effective routes to certification, the installer base has grown relatively quickly on the back of the financial incentives. For those technologies where it has taken longer to agree installation standards, development has been slower and confused presenting a challenge in particular to companies that are new entrants to the market, (see Chapter 2)

3.9 In terms of increasing manufacturing capabilities in the UK, initial signs are promising. In a fast moving sector there is room for both UK start-ups and foreign direct investment from overseas companies, as well as exports. The UK is attracting enquiries about potential inward investment projects, primarily for inverters and solar panels assembly. Sharp UK recently announced plans to double production to 500MWe at its Wrexham plant. This will create an additional 300 – 350 jobs. The expansion will be complete by the end of March 2011.

3.10 It is unlikely we will see any more large scale hydro projects in the UK but micro-hydro is a growth sector. We are fortunate in the UK to have over 20,000 potential sites such as weirs, locks and old watermills which could be used to generate electricity. However, only a fraction of these can be developed because of environmental and other constraints, but there are still a large number of sites where developing a sustainable hydropower scheme might be suitable provided they meet environmental requirements.

3.11 The UK currently has 1.6 GW of conventional installed hydropower capacity. Recent studies indicate that in England and Wales there might be potential for a further 250MW, and 650MW of financially viable hydro schemes to exploit in Scotland.

3.12 The small-scale wind industry is reporting increased numbers of enquiries and testing and certification is making good progress. In addition, we see the first signs of commercial products entering the market for micro-combined heat and power. It is an eligible technology under the Feed-In Tariff, which will support the first 30,000 installations. Initial figures (taken from Ofgem's online database – 16 Nov 2010) shows that 12 installations are registered onto the scheme with a total capacity of 12kWe.

Mini-CHP system

3.13 We would expect to see a similar positive reaction for heat technologies as the Renewable Heat Incentive becomes established.

3.14 Implementation of the previous Microgeneration Strategy included the development of route maps for each technology. The route maps were developed with industry and the wider stakeholder group and looked at the issues that needed to be tackled to develop the technologies. Although that work highlighted different challenges for each technology there was agreement on the need for financial incentives. With the new financial incentives in place or imminent it is right that we should re-visit these route maps.

3.15 This work would consider the research and development issues facing each technology. The UK industry needs to continue research and development to find the technologies of tomorrow and to take advantage of overseas market growth. The research and development challenges will differ across the technologies but new innovations will be important to realise efficiency improvements and drive down costs. It is also possible that new technologies could emerge which could transform areas of the market. Learning from existing installations should lead to further innovations but this will require industry investment in research and development.

3.16 The UK will continue to play an active part in energy technology development opportunities within the EU, via our engagement with the EU's Framework Programme 7 Energy grant funding initiative and the EU's Strategic Energy Technology Plan. We continue to encourage UK companies and research organisations to engage with this EU work and to explore the opportunities it represents, both in terms of funding and collaborative research with partners from other Member States[8].

Proposal

3.17 Industry working in partnership with Government should update each technology route map. The route maps should focus on supply chain development. The Government is not proposing to fund actions that may arise as a result of this work but to help facilitate the process through the Industry Contact Group.

Consultation Question	
20.	Do you agree that industry working with Government should update route maps and use them as a tool to support technology development?

[8] (further information can be obtained from http://www.energiehelpline.co.uk/).

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Issue 3 – Integration with the broader electricity system

Ensuring the electricity grid can support 'micro electric' technologies and establishing the impact on electricity demand of those 'micro heat' technologies that use electricity.

Evidence and explanation

3.18 We need to understand the extent to which the current infrastructure presents a limit to the number of installations that can be delivered over the next few years, in addition to learning lessons for wider roll-out in the longer term. A widespread roll-out of microgeneration, in particular of heat technologies, may require adjustments to the existing electricity grid to:

- Increase capacity;
- Improve access to three phase electricity, (which is often beneficial for heat pump technology); and
- Facilitate the management of demand around available capacity.

3.19 Whilst the issue in terms of grid integration for most microgeneration is around managing two way flows on the local network, in the case of heat pumps the challenge to be managed is in the form of significant new electricity demand. Relative to a conventional household, installation of a heat pump could mean a doubling of annual electricity demand. Given heat demand coincides with peak electricity demand, this is likely to put additional load on the network when it is most strained. Clearly roll out of heat pumps at scale will have significant impacts on our electricity network. If we are to manage these impacts in a cost-effective way, without having an oversized network and generation portfolio, and in order to integrate demand with inflexible low carbon generation, then heat pumps will need to offer some flexibility. This flexibility could be achieved, for example, through demand management or combining heat pumps with heat storage. It will be important that heat pump technologies are developed whilst considering cost-effective integration with a wider low carbon electricity system.

Connection of microgeneration to the network

3.20 Consumers and generators are obliged to inform the Distribution Network Operator (DNO) when making any significant change to their consumption or generation which could affect their connection and the surrounding network. This would apply to the installation of microgeneration. Occasionally, usually for larger installations, some network or connection reinforcement may be necessary to allow the installation to export to the local network. Whilst many small installations will not require any reinforcement to take place, the Distribution Network Operator will seek to recover the costs of any work that is necessary from those making the installation.

3.21 As the independent regulator for gas and electricity markets, the Gas and Electricity Markets Authority (GEMA), supported by Ofgem, is responsible for arrangements relating to grid connection. GEMA approves changes to charging methodologies, i.e. the method by which the DNO will charge. However it does not approve DNO individual estimates. Ofgem have carried out work recently to improve competition in the provision of new connections and to increase transparency of providing estimates of costs. DNOs can make charges for connection reflective of “expenses reasonably incurred.”

3.22 These charges can be passed on to the “person requesting the connection to such extent as is reasonable in all the circumstances” (section 19(1) of the Electricity Act 1989). If a party considers that an estimate of costs provided by a DNO is unreasonable they should, in the first instance, discuss this with the DNO using the DNO’s formal complaints procedure. If it is not possible to resolve the dispute with the DNO it is usually possible to refer the dispute to the Energy Ombudsman. In addition, Ofgem have powers of determination to assess whether the grid connection costs quoted are reasonable or not. Where a dispute cannot be resolved through other means parties can request a formal determination by Ofgem.

Proposal

3.23 The Government will work with industry to consider how microgeneration technologies will affect the grid, so that the grid can support take up.

Consultation Question	
21.	What could Government and other parties do to ensure that the grid is ready to cope with impacts of an increase in microgeneration technologies, in particular heat pumps?
22.	How can DNOs and the microgeneration industry work better together so that both sectors understand the relevant technologies, their impacts, and how to manage these impacts in a cost-effective manner?
23	How can heat pumps be rolled out at scale and integrated into a low carbon electricity system – what are the best ways of achieving this?

Issue 4 - Systems Approach

The scale of the challenge facing the UK to meet carbon dioxide reduction and renewable energy targets mean that it is important to support development of the full range of microgeneration technologies, where it is cost effective to do so. This is particularly true of heat, where home heating is the single biggest sector contributing to carbon emissions in the UK, and where few solutions at the “macro” level exist. A systems approach is important to ensure each technology is not considered in isolation but technology integration is considered on a cost basis to improve performance and efficiency.

The European Commission recognise there is considerable scope to improve the efficiency of heating systems across Europe. They have published proposals for an Implementing Measure (IM) on heating systems under the ‘Eco-design for Energy Related Products’ and ‘Energy Labelling’ Directives, which would set Minimum Efficiency Performance standards (MEPs) for heating systems, and introduce energy labelling requirements. The setting of such MEPs should remove the least efficient technologies from the market place.

The Commission have developed, in consultation with the European heating industry, a methodology to determine the efficiency of heating systems, and discussions are underway about how best to introduce MEPs and labelling requirements based on this methodology. The IM applies to hydronic (water-based) central heating systems, including gas and oil boilers, air or ground source heat pumps and micro-CHP units. The IM also takes account, to some extent, of the controls included with the system and gives a bonus for the use of technologies fired by renewable fuels, such as solar thermal.

Evidence and explanation

3.24 A systems approach is defined as installations which include multiple small scale energy generating technologies, controls, energy storage. A systems approach also factors in consumer behaviour. This approach is crucial to optimising the performance of microgeneration technologies. The implications at the small and larger scale for a systems approach will differ and these differences need to be explored in more detail. Reducing heat demand in the first instance remains the guiding principle.

3.25 It will be important to consider space cooling solutions alongside heat. The Zero Carbon Hub's recent report (Carbon Compliance for Tomorrow's New Homes) highlights the vulnerability of homes to overheating[9]. This increases over the longer-term with climate change projections and as buildings are better insulated.

3.26 Although Government grant programmes have encouraged combining technologies and energy efficiency to optimise carbon dioxide reductions in homes, anecdotal evidence suggest the focus remains on single technology solutions. People tend to take a 'technology' approach to microgeneration when this may not be the right solution to optimise the onsite energy generation potential for their situation. To encourage a whole house approach that takes account of energy efficiency, controls and multiple technologies requires a different approach to the way the market currently works and possibly a different skills set (see Chapter 2). The working group for technology development supported the need to do more to develop understanding of integrating technologies and to encourage use where appropriate.

3.27 In the case of using multiple technologies, the different products and consumer behaviour, and controls become integral parts of the system. Financial incentives could encourage home owners to install more than one technology, where it is appropriate to do so. In developing a 'whole system' approach to installation of microgeneration technologies it is important to understand which technologies complement each other and provide the most effective approach to energy generation for both electricity and heat and how these work alongside efficiency measures taken under the Green Deal.

3.28 A system approach raises interesting questions and challenges for the industry and for microgeneration advisers. Consumers want impartial advice (see Chapter 4). Evidence to date shows that consumer behaviour can be instrumental in the delivering high performing systems although further work is required.

3.29 The Working Group pointed to the potential to design controls and settings of microgeneration technologies to maximise performance outcomes. Time and temperature interface can control hot water and space heating but need to be designed in a way that is easy for consumers to use. Intelligent controls are also under development and these controls "learn" typical consumer behaviour and so

[9] http://www.zerocarbonhub.org/resourcefiles/CARBON_COMPLIANCE_GREEN_OVERVIEW_18Aug.pdf

can optimise heating system times to minimise energy consumption.

3.30 In addition, it is worth noting other factors which affect consumers. This include the appearance and acceptability of the technologies and the disruptive nature of installations. For some technologies, noise and vibration could potentially present challenges. These issues have implications for industry in terms of the way technologies are designed, installed and marketed. Environmental issues such as air quality could also affect consumers' perceptions of microgeneration technologies.

3.31 Smart meters may also play a role in providing consumers with greater visibility of, and control over, their energy use, helping them reduce their energy consumption. The Government's Smart Metering Prospectus, published for consultation earlier this year, proposed a set of functional requirements for smart meters[10]. These include the capacity to communicate with microgeneration measurement devices and a home area network which could enable other devices to link to the meter system.

Proposal

3.32 There should be greater integration between the controls and microgeneration products. The aim should be to focus on what the consumer needs in a user-friendly and cost-effective way.

Consultation Question	
24.	How can the controls and microgeneration industries work closer together to ensure that a systems approach becomes a reality?
25.	How should the industry, other stakeholders and Government tackle the need to raise consumers awareness of how heating systems can work more effectively?

Issue 5 – Storage Technology

There is a degree of uncertainty about the performance of microgeneration technologies due to the intermittent nature of the (renewable) fuel supply and the operational characteristics of the technologies. Potential developments in storage technology could significantly support the use of microgeneration technologies.

Evidence and explanation

3.33 Energy storage solutions could help to address the intermittent nature of renewable electricity generation and allow people to store the energy they generate until they are ready to use it. Some microgeneration technologies operate more effectively when they run for continuous periods of time, so energy

[10] http://www.decc.gov.uk/en/content/cms/consultations/smart_mtr_imp/smart_mtr_imp.aspx

storage would facilitate this type of operational strategy. Energy storage might also offer interesting opportunities for demand and supply management arrangements, particularly with smart grids offering the potential for remote operation.

3.34 Many energy storage technologies are not yet ready for widespread adoption: nonetheless, it will be important that the UK is at the centre of these developments. Phase change, absorption and thermo-chemical heat storage technologies are all currently under development. The electrical sector has an even wider range of storage technologies under development. However, by comparison, the storage of heat has been reasonably well tested.

3.35 One example of an integrated system, which is often used in central Europe, is the combination of solar thermal, heat pump and heat store technologies. If well designed and installed, this arrangement maximises the solar fraction from both technologies to provide more of the total heat load. Other such arrangements could enable the storage in the ground of summer solar heat, thus replenishing the heat taken from the ground during winter. Research and development projects on this type of heat storage are taking place in the UK and other European countries.

UTES Snapshot for Microgeneration Strategy Consultation

Nic Wincott pp Neoenergy (Sweden) Ltd.

An Underground Thermal Energy Storage (UTES) installation in Sweden paid back the additional installation cost (over Oil) in under 4 years and continues to save money, energy and carbon year on year.

At Näsby Park in Slott, a predominantly residential complex of 18,000M^2 near Stockholm, by storing heat from the relatively warm water from the Baltic Sea underground during the summer months, the overall efficiency of a heat pump system was improved significantly and at the same time installation costs were reduced.

Computer-aided simulation techniques were used to model the heat flows and, with careful design and recharging, the Borehole Heat Exchanger was reduced in size from 80 boreholes (to depths of 180m) to only 48, making considerable savings.

The additional investment cost over the alternative oil system was approximately €750,000 and the projected reduction in operational cost €180,000 per year. This was expected to give a payback of 4.2 years. The system has been operational since June 2004, payback was achieved in just over 3 years and the system continues to save carbon, energy and money to this day.

In this case the recharge (storage) was from a convenient body of water but waste or excess heat from industrial processes, refrigeration or building ventilation may also be used. It can be particularly effective to create energy clusters where excess heat from buildings with a net cooling load can be utilised as a source of heat for others nearby with a net heating load to save carbon and reduce energy consumption.

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Work is ongoing between Sweden and the UK to use similar underground thermal energy storage techniques on a domestic scale.

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3.36 In the domestic sector there is scope to store hot water generated by renewable energy through the wider deployment of hot water cylinders. However, 74% of the circa 1.5 million boilers fitted annually are 'combination' boilers, so the opportunity to future proof homes for renewable heating technologies, through the provision of hot water cylinders, is limited.

3.37 There are no plans to set mandatory requirements for the provision of hot water cylinders - there is a trade-off between the benefits of large water volumes needed to bank/smooth renewable energy supplies and the higher standing losses from large volumes at elevated temperatures. There are also design issues to consider. Larger cylinders weigh more and take up more space and there is a greater risk of stratification. There may also be an increased threat of legionella from water storage facilities, unless the appropriate elimination steps are taken.

Proposals

3.38 The microgeneration industry should consider their requirements for energy storage and encourage their development.

3.39 The wider heating industry should encourage the installation of heating systems that require the deployment of hot water cylinders, in both retrofit and new build developments.

3.40 The heating and microgeneration industries need to work together to provide impartial advice to consumers on the options, benefits and potential problems when upgrading heating systems.

Consultation Question	
26.	As a means of future proofing buildings for microgeneration technologies, how can heating solutions that provide for hot water storage be encouraged?
27.	What should the microgeneration industry do to take forward the development of storage technologies?

Issue 6 – Improving the efficiency of non renewable technologies

There are a small number of micro-technologies which improve efficiency but are not renewable. For example micro-combined heat and power and flue gas heat recovery systems have the potential to improve the energy efficiency of boilers. As highlighted above, we are beginning to see interesting developments in micro combined heat and power systems. Flue gas heat recovery systems are not currently widely used and it would be useful to better understand why this is the case.

Evidence and explanation

3.41 Flue gas heat recovery systems use the energy in the exhaust gases to preheat the incoming cold water supply to a combination boiler (combination boilers supply domestic hot water directly to the outlets, such as taps, shower heads and baths). Raising the temperature of the cold water supply by a few degrees in this way can save energy and reduce CO_2 emissions.

3.42 Flue gas heat recovery has potential if it can be installed cost effectively. Whilst this would be challenging to achieve in retro-fitting to an existing boiler, the costs could be minimised where the device is installed as an integrated unit with a new boiler. As an efficiency measure, flue gas heat recovery could in theory be used be installed under the Green Deal, although it would need to show it met the payback criteria.

Proposal

3.43 Industry to consider the role that Flue Gas Recovery Systems could play, given combination boilers will continue to be installed in large numbers for the foreseeable future.

Consultation Question	
28.	What more should the industry be doing to promote Flue Gas Recovery Systems to increase take up?

CHAPTER 4 – Advice and Information

Introduction

A recurrent theme in all the stakeholder workshops was the importance of consumers being able to access reliable information and advice on microgeneration.

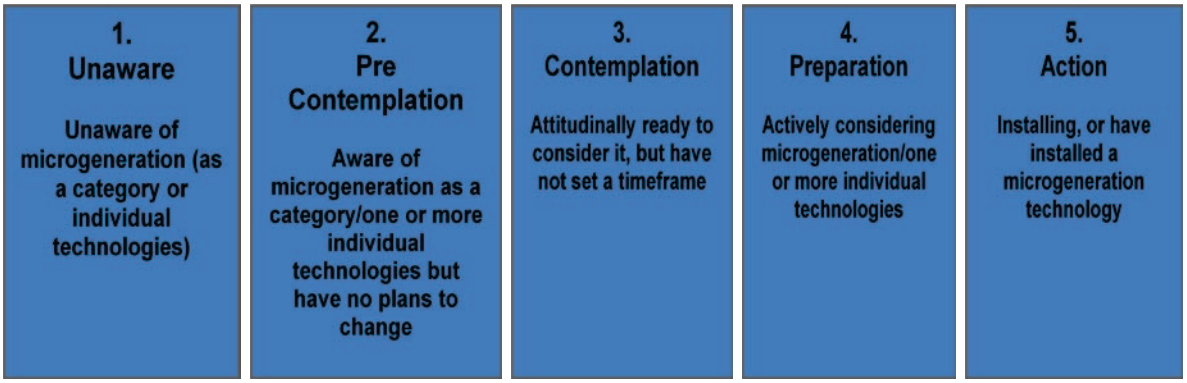
The purchase of a microgeneration system is a significant decision for a consumer. It requires a significant financial commitment. Consumers also need information to align day-to-day use and system controls with the anticipated outputs. A lack of good quality information and advice from the start the decision process can lead to a potential consumer deciding against an appropriate microgeneration option. The provision of information is therefore key to the development of the microgeneration industry. Consumers need access to objective advice from the outset.

The provision of advice for householders, communities, the public sector and business will be different and may be delivered through a variety of channels.

Another important theme emerging from the workshops was the importance of bringing together microgeneration advice with energy efficiency to provide a whole-house approach. It is clear that consumers will benefit from considering a whole-house approach when making decisions about the purchase of equipment to generate their own energy.

What does the customer journey for microgeneration look like?

Using a traditional behaviour change model, it is possible to map the consumer journey and identify the informational needs of individuals to move through the process.



In order to move from a state of being “unaware” to a state of “action” there are a number of different points when information will need to be provided - the information format, content and even media may need to differ for each of these. At step 1, the Working Group suggested a general awareness raising campaign should be delivered via a broad spectrum of media as individuals will not be seeking information on this. Information on installing a specific technology for the ‘Action’ stage, on the other hand, could be provided by suppliers since the target audience in many cases will already be far enough down the information journey to engage on the particulars of that technology.

Issue 1 – Overall awareness, knowledge and confidence

Response to the workshops suggested the majority of energy consumers do not know enough about microgeneration to consider it a valid option for their homes, or have heard things which deter them from considering it.

Evidence and explanation of the need for change

4.1 One key barrier to the widespread roll-out of microgeneration is a lack of public understanding of the technologies. A recent EST Survey[11] showed that 48% of respondents would like to know whether their home might be suitable for microgeneration installations. Demonstrating what the various microgeneration technologies look like and showing how they operate was one of the aims of the previous Government’s “Low Carbon Buildings Programme” - for example, by offering grants to install solar PV or small wind turbines on schools and public buildings. We are currently assessing the results of a number of projects under the programme. We believe that sharing this experience will help market awareness and provide a better understanding of the performance of various technologies in different circumstances.

4.2 There are a range of case studies and practical demonstrations of microgeneration which the Government and industry can learn from. It is important that this information is used effectively to build awareness and understanding of technologies - their benefits and challenges - to inform consumers and build confidence in the market.

4.3 However, time-limited schemes reliant on direct Government grants are not sustainable in the long term. Despite large amounts of grant funding from schemes now closed, there still appears to be a widespread lack of familiarity, particularly among urban populations. Many consumers may have experienced or heard about failures or under-performance of technologies while others have no real clarity over prices, pay-back times or installation needs.

[11] http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/energy/sources/sustainable/microgeneration/research/page38208.html

4.4 Instead of stop-start grants, the Government has now established clear and long term financial incentives in the form of the Feed-In Tariffs and the forthcoming Renewable Heat Incentive. We can assume that product advertising will improve public awareness of the technologies, as is already happening, for example, in the case of solar PV.

Proposal

4.5 DECC will review existing evidence on consumer attitudes and behaviours towards microgeneration, drawing on research and assessments of existing schemes and support programmes by the Carbon Trust, the Energy Saving Trust and others, including the evidence from initiatives such as the Low Carbon Buildings Programme.

4.6 There are also opportunities to use local demonstration projects so that potential consumers can see and understand how the technology is already being used.

4.7 The Government will disseminate the results of programmes such as the Low Carbon Buildings Programme to provide case studies and exemplar demonstrations to householders and local communities.

Consultation Question	
29.	How can you help Government disseminate the results from best practice and exemplar projects?

Issue 2 – Availability of product advice and information and links to the Green Deal

Consumers are not sure where to get advice and information about microgeneration technologies.

Evidence and explanation of the need for change

4.8 The Working Group identified that the risks and challenges in selecting and installing a technology should not be downplayed for consumers, particularly for vulnerable consumers. In particular, it is crucial that the ability of a heat technology to supply affordable heat throughout the winter is made a priority.

4.9 Experience of MCS shows that consumers are concerned about poor quality advice and that this coupled with an inadequate complaints procedure could be costly and damaging to the sector's reputation (see Chapter 1). The Working Group suggested that mis-selling under the MCS banner could be policed and tackled by the public listing of MCS installers which have lost MCS certification for reasons of poor quality work (and the names of subsequent companies they put in place). This could be done through use of the MCS directory of installation companies.

4.10 There is an opportunity for synergies with similar issues which may arise through the Green Deal and where the provision of advice is a key part of the offer. The Government is currently working through the practical questions of how Green Deal assessments will take place and who will carry them out. It is proposed that such assessments could also include information and advice on microgeneration where this is appropriate or requested by the consumer.

Proposal

4.11 The MCS directory of certificated installation companies should be linked to key organisations such as councils and trade associations in order to be as accessible as possible to consumers.

4.12 DECC will work up its proposals for Green Deal advice and assessment so that it can also cover advice on microgeneration where appropriate.

Consultation Question	
30.	Do you agree that MCS is the best route for providing a directory of installation companies? If not what alternative do you suggest?
31.	Do you agree that installation companies removed from the MCS scheme for malpractice should be clearly reflected in the directory of installation companies? Please provide evidence to support your answer.
32.	What is the best way of making sure that microgeneration and Green Deal advice provision work together?

Issue 3 – Property specific advice on microgeneration

Consumers do not know where to go for advice specific to their property with many advice services tailored for particular technology. There appears to be few providers offering solutions covering the whole house or multiple technologies.

Evidence and explanation of the need for change

4.13 Consumers are aware that most of the market is still in the early stages of development. They cannot easily differentiate between mature technologies and those still developing. Feedback from the Big Energy Shift (2009)[12] clarified that the majority of consumers will only consider installing microgeneration technologies if they are confident that they can access objective advice on:

- Likely quality, performance and durability;
- Who to go to if anything goes wrong, and
- Which technology to install, what cost to expect and who should install it.

[12] http://www.ipsos-mori.com/researchpublications/publications/publication.aspx?oItemId=1363

4.14 And yet, in an EST Survey into attitudes, 46% found it hard to find out about renewable energy from a single objective source. Conventional heating engineers, technicians and plumbers are often the first point of contact when consumers are thinking of changing their heating system. We are seeing increased interest from these groups to improve their skills building on transferable skills, to install microgeneration technologies (see Chapter 2).

4.15 In practice therefore the retailer or installer will be the first point of contact for many consumers. The Renewable Heat Incentive and Feed-In Tariffs is leading to companies promoting microgeneration technologies and offering services to secure finance and install. In many cases these companies will be selling a limited range of products. This creates a challenge to ensure that consumers are given objective advice without the self-interested promotion of any particular product or technology. To a limited extent MCS can help to manage this situation through the MCS consumer code. The MCS consumer code has strict requirements to protect consumers from mis-selling and pressure sales, and includes routes for redress. However, most consumers are not aware of MCS (see Chapter 1), partly because it has not been advertised except to those who contact the Energy Saving Trust for advice.

4.16 The Working Group suggested that consumers would benefit from wider advertising of MCS as well as a national advertising campaign to include an online information service which provides useful, non-technical information. Potential consumers may also want to read about reliable case studies or visit a retro-fitted 'demonstration' home locally, to evaluate for themselves how effective the technologies are, in practice.

4.17 There are diverse views on whether using MCS installers as the first point of contact or as a "sift" for consumer enquiries will deliver the widespread roll-out that is required. The most frequent issues raised are:

- Consumers may not view the MCS installer as sufficiently impartial, since installers may favour the technologies that they are qualified to install; and
- MCS installers are not certified or trained to offer whole-house advice, or advice about relative cost-effectiveness and financing options.

Proposal

4.18 The Government and industry work together to raise the profile and credentials of MCS installation companies as the main source of technical advice on specific installations. This could be done through an online directory building on the MCS installer database.

4.19 Trade bodies should offer a simple technology advice service to consumers in the form of information on their respective technologies. This should include a brief synopsis of where and when the technology is most appropriate for use and advice on design of systems. This could be in the form of a one page leaflet or online information. The trade associations could also provide an audit of the information and advice their respective members provide to the public.

Consultation Question	
33.	What role should MCS installation companies play in providing objective advice on which technology to install?
34.	Do you agree trade bodies should collate information on the advice their respective members are providing? If not, what alternative do you suggest?

Issue 4 – Consumer knowledge about the proper running of the system

Consumers do not understand the maintenance and operational requirements of the new technologies or know where to get technical support for fitting, running and maintaining them, resulting in lower than advertised (or expected) financial and carbon savings.

Evidence and explanation of the need for change

4.20 The single biggest problem with microgeneration is the issue of over-promising and under-delivering. This can be a problem even once reliable advice on the right technology and correct installation has been received. For the system to operate as designed, it needs to be properly maintained. It is important to note that microgenerated energy may:

- Be lower grade energy than fossil fuel energy and require improved insulation or larger radiators;
- Be intermittent, or seasonal;
- Be more time-intensive - requiring more forward planning and attention to operate and regulate it to make savings; and
- Require a more active approach to managing household energy.

4.21 A house may take longer to reach ambient heat levels, or fuelling the boiler may require more work, when using renewable technologies. For example, a poorly maintained heat pump in a poorly insulated barn conversion might increase a consumer's energy bills or not provide sufficient heat in very cold weather. An automated biomass boiler, which will regulate outputs, may have to be cleaned and fuelled by hand, once a day. A sustainable wood pellet supplier may not be available locally. However, there is evidence that people do modify their behaviours. For example, those with wind turbines report operating some high energy electrical equipment when the wind is blowing. More user-friendly designs should appear on the market as a result of normal competitive pressures.

Proposal

4.22 Manuals and first hand explanations by installers are standard parts of the installation process. However, most consumers need further advice once up and running. Industry should develop clear, one page guides to system use. Simplified versions of highly technical manuals which remind users of key points and key controls will help improve operation. These information sheets should also be made available online both through trade associations, installers and through the MCS scheme.

4.23 The industry should also provide training for installers to ensure that the onsite customer care is done in an easily accessible and understandable way. There is some anecdotal evidence that engineers do not give adequate weight to helping consumers master the new technology once installed.

Consultation Question	
35.	Do you agree that such information sheets would be valuable? Please provide evidence to support your view.
36.	Who do you think is best placed to write and disseminate them? Please provide evidence to support your view.

CHAPTER 5 – Decentralisation and cross-cutting issues

Introduction

Microgeneration is generally associated with the supply of energy to individual homes and businesses. However, we also need to encourage communities to move to a new low carbon future by developing larger energy projects that meet the needs of local people and maximise local opportunities. The demand and enthusiasm is there, and this is an opportunity to think beyond pure microgeneration to a whole decentralised system of energy production. An EST survey into consumer attitudes to microgeneration revealed that 47% of respondents would sign up to a scheme where their heat and power was provided from a local community source.

Community scale energy infrastructure could be, for example, the same solar thermal panels that we use on our homes – simply more of them used together to form a solar thermal array, providing hot water for a whole building. Alternatively it could be the same technology, but on a bigger scale – like larger heat pumps or biomass boilers used for blocks of flats, or combined heat and power plants used for hospitals.

Using these community or “decentralised” energy technologies, like district heating networks, can open up new opportunities. But they also present new barriers and challenges including knowledge and expertise of delivering projects at a larger scale, and ensuring we have the skills and supply chain to support this developing market.

Developing community energy can be as simple as a group of residents clubbing together to bulk buy loft insulation (an essential first step to making our homes as energy efficient as possible) or solar PV panels for their houses. Economies of scale like this can spread costs and help those least able to contribute access the benefits of low carbon and renewable energy.

However, working together can also take on more complex models where the community is involved either partially or completely in the design development and delivery of energy projects serving a much wider local area. This could be the provision of heat or power to homes, businesses or buildings which provide education, health or local services to the community. In this way communities can make choices about their society, will be better able to leverage finance, and through ownership, have a direct stake and profit from those decisions.

This chapter therefore considers the cross-cutting issues and barriers which particularly apply to community-scale solutions.

Evidence and explanation of the barriers to community energy

5.1 The Coalition made clear in its manifesto that it is committed to finding solutions that will 'enable and support community ownership of renewable energy'. Through work on this and wider efforts to embed the concept of localism across the UK, we have identified a number of specific barriers and a number of key issues that require consideration if we are to make the move to a truly low carbon economy.

5.2 As with individual consumers, many communities remain unaware of the opportunities both in terms of the technologies available to them and also of owning and developing projects. Communities, most notably via the Transition Towns movement[13], are developing energy strategies to reduce dependence on fossil fuels and maximise local resources – with many others looking for options to tackle fuel poverty. Financial incentives can play a part, but more is needed to overcome barriers relating to inertia or consumer behaviour, or to counter misconceptions about complexity and quality of products and installations.

5.3 Planning, and especially forward planning policy, has also been highlighted by many communities as a significant barrier, with communities unsure of, both what technologies their local authorities are willing to consider or support and, more importantly, where they would consider them. This variance between local aspiration and 'official' opportunity makes the process of reaching planning agreement longer and more complex than necessary and often requires resources the community cannot provide.

5.4 There is also a significant issue around skills. Developing community energy schemes requires a range of skills within the community, their local authority and also in the private sector. There are often limited in availability and result in premium prices being paid. Mentoring and training schemes, industry standards and the mainstreaming of core skills needs to happen for community energy to expand.

Current developments in community energy

Communities and Climate Action is a grouping of community networks representing over 6000 community groups around UK. These groups are interested in, or are already developing local solutions to climate challenges including local renewable energy and energy efficiency. This shows the existing appetite for community scale schemes, though we still need more information as to the extent of latent demand and opportunity to deliver through community groups.

[13] http://www.transitionnetwork.org

Proposals and actions to support community energy

Financial incentives

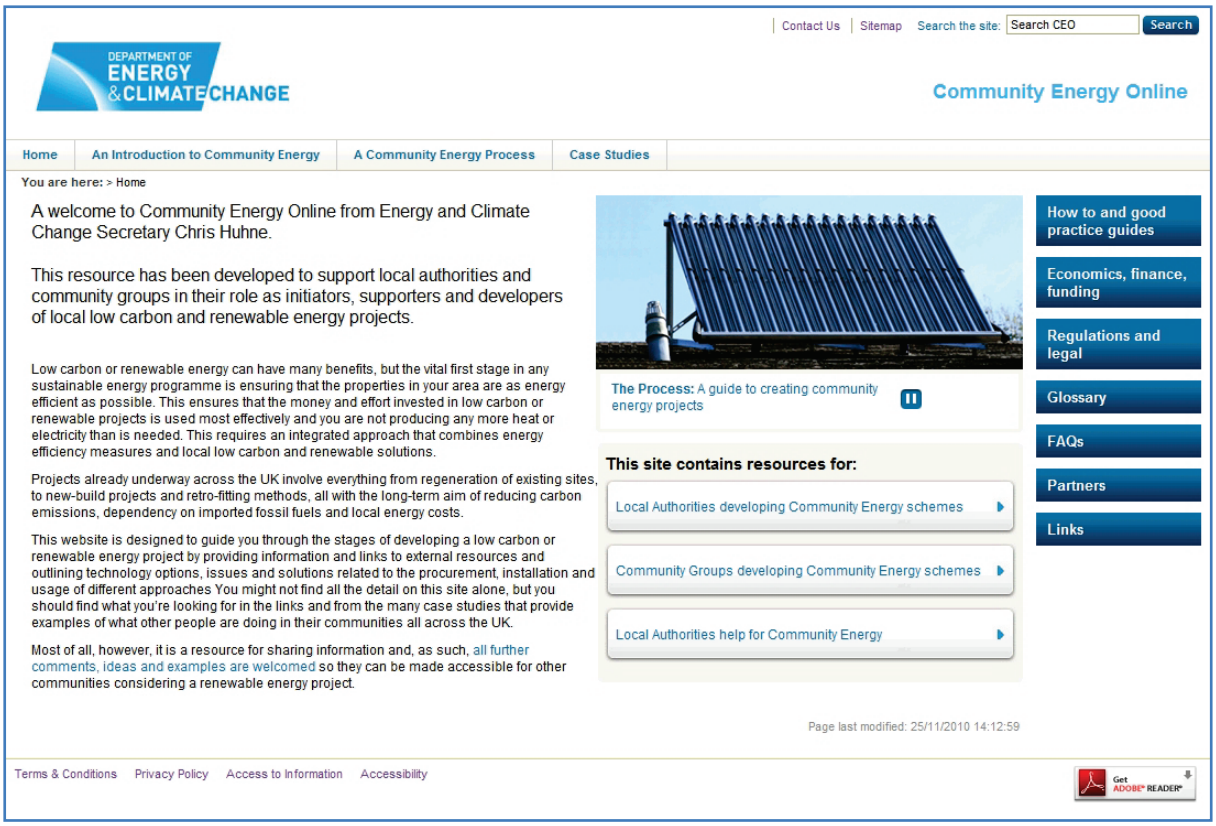
5.5 We are already developing the financial incentives regime to support deployment at a community scale. In April 2010, the Government introduced a system of Feed-In Tariffs to incentivise small scale (less than 5MWe) low carbon electricity generation. Above this the existing Renewables Obligation applies. Through the use of Feed-In Tariffs we hope to encourage deployment of additional low carbon electricity generation, particularly by organisations, businesses, communities and individuals who are not traditionally engaged in the electricity market. The tariffs will allow many people to invest in small scale low carbon electricity, in return for a guaranteed payment both for the electricity they generate and export. The recent Spending Review set out the Government's continued commitment to Feed-In Tariffs, requiring a 10% saving in 2014-15, and making clear that the program will be refocused on the most cost-effective technologies. The changes will be implemented at the first scheduled review of tariffs unless higher than expected deployment requires an early review.

5.6 The Spending Review also confirmed the Government's objective to move from 1% to 12% of all heat being generated from renewables source by 2020 with over £850 million funding for the Renewable Heat Incentive. This will drive a more than tenfold increase of renewable heat at all scales over the coming decade, shifting renewable heat from a fringe industry firmly into the mainstream. The Government will not be taking forward the previous administration's plans of funding this scheme through an overly complex Renewable Heat Levy but will fund the scheme through normal Government spending.

5.7 The Renewable Heat Incentive will introduce payments calculated on the annual amount of renewable heat produced in a year, with tariff levels dependent on the technology chosen. At the small and medium-scale, the amount of heat generated by the equipment is proposed to be estimated (or "deemed") when installed in most cases. There will be an announcement on the detailed design of the scheme, including its operation and tariff levels, in due course.

Community Energy Online

5.8 In response to concerns about difficulties in assessing information and support available for communities, and in particular Local Authorities, seeking to develop their own energy projects the Government launched 'Community Energy Online' in November. This web portal brings together best practice advice and case studies, with information about funding opportunities, links to accredited installer schemes and advise on the best people to contact for help and support.



Sample page from Community Energy Online - see http://ceo.decc.gov.uk/

Local Authority opportunities

5.9 Local authorities have a vital role in shaping their communities to support delivery of the UK's long-term energy and climate change objectives, and this includes preparing for, and where appropriate supporting development of community energy solutions. The Energy Savings Trust survey into consumer attitudes showed 63% would like their council to be more active in encouraging renewable energy.

5.10 This Government has already provided local authorities with the opportunity to sell electricity. We are also working to ensure that our pledge to allow communities to keep the business rates from local renewable energy schemes is in place. These initiatives are only the start of changes which will enable local authorities to develop strategies for their communities and deliver low carbon energy solutions.

5.11 Changes to make the planning system more responsive to local demands will be introduced in the forthcoming 'localism' bill. This will include opportunities for all new development to play a role in reducing carbon emissions both on site and across the wider community. Neighbourhood Planning is a key element of the Bill, and gives communities and neighbourhoods the ability to make it easier for specified development to navigate the planning process. This will make it easier for communities to install energy infrastructure in their area, and ultimately, gives

local people more control over how their neighbourhood works and where the energy comes from.

5.12 The Government has already made clear its continued commitment to the national planning system. In support of this and the new provisions for Neighbourhood Planning, a revised and streamlined National Planning Policy Framework is in development that will give local authorities the flexibility and tools they need to create confidence and certainty, and to shape their areas in a way that meets the needs of local people.

5.13 The development of most decentralised energy technologies will at some point require the involvement of the local authority. It should be noted, however, that this does not necessarily need to translate into a sizeable resource burden. Work undertaken on barrier removal for district heating, for example, found that the most important role for a local authority is heat mapping and energy master planning – from which they could identify and publicise opportunities, direct development through planning policy and manage procurement issues associated with larger energy projects. It can also be seen that private sector developer will need to undertake their own economic feasibility checks – removing additional cost and burden for the local authority,

5.14 A key issue for local authorities, and which will significantly affect the deployment and success of community energy, is being able to take decisions on long term energy use which affect their communities, businesses and residents. Many pioneering authorities are already leading the way: building evidence bases to support long-term strategic planning, supporting and participating in the creation of Energy Service Companies, and driving forward development of area-wide energy projects. However, local priorities vary significantly between local authorities and some communities will not be suited to the economic development of decentralised energy. This highlights the criticality of clear evidence to support decisions taken in local areas.

5.15 Community Energy Online will provide advice on developing the appropriate evidence base, and work done on behalf of the Government will also ensure that most local authorities have access to resource maps for renewables. Heat maps are an integral part of this, and will enable decisions to be made based on technical opportunity and information, and not just on political desire.

5.16 Local authorities also have a key role in brokering relationships to ease contractual issues over access and land rights. They can also help co-ordinate sales of heat or electricity to the wider public sector locally, for example where this relates to rail and road networks, hospitals, universities or schools. They can also help communities realise their aspirations for community energy projects, by supporting neighbourhood plans and projects.

Case Study – London Waste Authority

In 2009, the West London Waste Authority set up a 3 year partnership with BiogenGreenfinch to take 11,000 tonnes of food waste a year, collected from 250,000 homes in Ealing, Hounslow and Richmond, for processing in an anaerobic digestion plant in Northamptonshire.

By diverting the waste from landfill, Ealing Council reduced their carbon emissions by 3,700 tonnes and saved £163,440 during 2009. The West London Waste Authority contract provides a quarter of the feedstock needed to run BiogenGreenfinch's Anaerobic Digestion plant, which generates enough electricity for 2,700 homes.

Private sector opportunities

5.17 Developing small scale energy projects in communities also offers new opportunities for private sector businesses to engage with the community. There will be new opportunities for products and services, and new synergies with other developments in the energy market such as the introduction of smart meters and the Green Deal.

Best practice and research to support communities

5.18 The Low Carbon Communities Challenge is a three year research programme designed to test community-level delivery options for achieving ambitious cuts in carbon emissions. DECC is providing financial support, advice and guidance to 22 test bed communities. The learning process will involve working with local people who are looking to make real carbon savings. It will help to challenge and shape government policy, and to galvanise and support local action.

5.19 On behalf of DECC and the Department for Communities and Local Government, the Homes and Communities Agency are administering a £20.96m grant programme providing support to 13 exemplar district heating project across England. Case studies and evidence from the programme will be available on Community Energy Online, along with a full report detailing key experiences of communities and developers. We are also assessing the evidence from the Low Carbon Building Programme which provided opportunities for over 5000 community groups to develop solutions for community buildings, and will be disseminating this over the coming months.

5.20 It is important that the successful business models which have enabled communities to develop and own renewable energy schemes are replicated widely. This Government wishes to see decentralised energy solutions emerging all over the country and not just restricted to certain exemplars dependent on direct Government funding.

5.21 While Community Energy Online provides part of the solution to this, social enterprise/co-operative models such as those of CORE, Water Power Enterprises and Energy4All are key. These organisations will provide technical expertise as well as business models for the different technologies that communities will be able to replicate.

Case Study – Torrs Hydro

Torrs Hydro is a community-owned hydropower scheme located at an existing weir at Torr Mill in New Mills, Derbyshire. 230 people formed an Industrial and Provident Society, raised £125,000 towards the scheme, with loans covering the remaining £205,000 required. It was developed with the support of the Co-operative, with help from the Environment Agency and other groups supporting community hydropower (Water Power Enterprises). The scheme invites visitors, including school trips.

Torrs Hydro is powered through a 63 kWe reverse Archimedes screw and has so far generated around 320,000 KWh of renewable electricity which it exports to the local Co-operative supermarket. The community worked closely with the Environment Agency on developing the environmental quality of the scheme and continue to help with maintenance.

Supplied by Community Energy Scotland photo library. Community Energy Scotland is Scotland's national energy development charity. "We build confidence, resilience and wealth at community level across Scotland through sustainable energy"

Cross-cutting and future issues for community energy

Green Deal

5.22 The Green Deal will help reduce energy demand and carbon emissions in homes and non-domestic properties by providing the opportunity for people to benefit from energy efficiency measures and improvements at no up-front cost. Alongside the significant business and employment opportunities generated, the Green Deal will mean homes are warmer and consumers will save money on their energy bills. Green Deal Finance will provide households and businesses with energy efficiency improvements, with bill-payers repaying through the savings they make on their energy bills. An Energy Company Obligation to meet carbon reduction targets through energy efficiency measures will run in parallel with and serve to underpin the Green Deal programme. The obligation will focus particularly on the poorest, and hard to treat properties which cannot achieve financial savings without a measure of support. Under the Green Deal, consumers will be entitled to an independent assessment of the energy performance of their property, identifying the best opportunities for energy efficiency improvements. The improvements themselves will be carried out by certified installers. Measures such as these will provide the quality assurance needed to support consumer confidence.

5.23 Similar to the microgeneration framework, the Green Deal will be consumer-led and driven by the innovative dynamism of the private sector. Local authorities may also choose to take the opportunity to act as Green Deal providers themselves or form partnerships with the private sector, helping to facilitate local or community-based solutions and create hubs for the new green economy.

5.24 The legal framework for the Green Deal will be set out in the Energy Bill framework, with secondary legislation setting out in more detail how the scheme will operate.

Consultation Question	
37.	What aspects of the Green Deal Framework will need to closely align with the microgeneration framework set out in this consultation document?”

Future energy networks and smart grids

5.25 As highlighted in Chapter 3 on Technology, there are potentially significant benefits to combining different microgeneration technologies together, including alternative community solutions. In particular, when electric heat options such as heat pumps are combined with heat storage, there are significant opportunities for supply and demand management.

5.26 More information is needed on the interplay between technologies, particularly at different scales and especially in relation to heat – the demand for which already accounts for more than half the UK’s carbon emissions.

5.27 Further work is also needed on the impact that significant uptake of microgeneration technologies will have on the UK electricity grid. The Government has indicated its intention to support development of smart electricity grids, including an action to reduce the impact of peak electricity on our reliance on fossil fuels. This is not only important for larger-scale energy supply technologies, but also for microgeneration and community energy infrastructure, with potentially significant impact on controls and product standards. We will need to take account of this work in thinking about development of MCS and training for installers and operatives.

Consultation Question	
38.	Can you illustrate with examples the potential opportunity that the 'community energy' sector presents?
39.	What do you feel are the non-financial barriers to developing community energy?

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