The Future is Local

Empowering communities to improve their neighbourhoods

Sustainable Development Commission

Sponsors

Communities and Local Government

Commission for Architecture and the Built Environment

Department of Energy & Climate Change

Energy Efficiency Partnership for Homes

Homes & Communities Agency

Acknowledgements

Drafting team

This report was prepared by Helen Eveleigh with support from Ian Fenn, Lizzie Chatterjee, Shirley Rodrigues and Andrew Lee.

With special thanks to:

Stewart Davies, Bob Knowles, Alison Mathias, Anne Power, Jonathan Davis, Helen Walker, Peter Matthew, Harriet Festing, Tereza Kadlecova & IfS, Andrew Purvis, Maria Arnold, Jayne Ashley, Sue Dibb, James Greenleaf, Tim Jenkins, Duncan Kay, Andy Long, Claire Monkhouse, Alice Owen, Shivani Reddy, Rhian Thomas, Kay West and Becky Willis.

Front cover image: © Buro Happold

Funding for the project was provided by the Homes and Communities Agency (HCA), the Department for Communities and Local Government (CLG), the Department for Energy and Climate Change (DECC) and the Energy Efficiency Partnership for Homes (EEPH). The Commission for Architecture and the Built Environment (CABE) provided support in kind.

The Commission would like to thank funders and all those who have participated in this project. All contributions have been greatly appreciated. This report sets out the Commission's views based on the research and Task Group and Steering Group discussions outlined above. It does not necessarily reflect the views of all project participants or funders.

This report has been informed by the analysis of more than 80 case studies, technical research undertaken by Buro Happold and other external contractors, an extensive literature review, and input from Task Groups and external experts.

The Future is Local

Empowering communities to improve their neighbourhoods

Sustainable
Development Commission

Contents

Foreword

The Sustainable Development Commission brings over 10 years' experience of collaborative working with national and local government, civil society and business organisations, academia and individual experts. This convening role enables us to better understand differing perspectives on critical issues and, more importantly, to arrive at practical and agreed recommendations for government that reflect the complexity and connectedness of real life.

Whilst this approach is not exclusive to the SDC, what is unique is our responsibility to analyse situations, and to devise solutions and make recommendations which will deliver better, more sustainable outcomes for government. Using a sustainable development lens to consider a range of options can help make the best and most efficient use of scarce resources in the short and long term, whilst also ensuring that we enhance fairness and social cohesion, and respect and protect our natural environment.

Importantly, at a time when decisions are being taken to make severe cuts in budgets and services to tackle the deficit, this approach is one which can assist Government to make the difficult decisions that they are embarked on.

This report is an excellent example of what the SDC can do to support government. It builds on the experience of numerous case studies which demonstrate the wide range of sustainability benefits that can be achieved from retrofitting and upgrading our infrastructure. The Commission believes that this necessary process can be done in a way that achieves multiple benefits; generating jobs and skills, reducing our carbon emissions and waste and at the same time engaging with communities in a way that ensures that they are part of the process of achieving a better quality of life for themselves and those around them. It is too good an opportunity to miss.

I look forward to receiving your feedback.

Will Day

Chair, Sustainable Development Commission

Enabling communities to renew their neighbourhood property and infrastructure is the most cost-effective way to ensure our villages, towns and cities are fit for the future and create the conditions for people to thrive. *The Future is Local* points to the UK seeing unprecedented levels of engagement from residents, investors and the businesses in the supply chain in an urgently needed boost to economic activity delivering a long-term benefit for these communities.

Managing upgrade works on a neighbourhood basis can encourage greater participation and cut costs by 20-30%. Releasing this capacity will help deliver the scale and speed of change needed to meet the economic, carbon and resource efficiency targets our future depends on.

In examining individual behaviour change implicit in a shift to sustainable living, the gap between intention and action is well documented. Individuals feel constrained by the physical systems that they live and work within – the existing buildings and streets, utility pipes and wires, and the hardware of provision of local services, from bins to bus stops. This local infrastructure, existing in different forms in every neighbourhood as it was invested for different needs over its history, impairs people's quality of life and ill-equips them for the increasing priority of living sustainably.

The Future is Local presents evidence that there is a major, unrealised opportunity in the UK to unlock this issue by focusing on the optimum scale for addressing these infrastructure reinvestment needs: the neighbourhood.

At neighbourhood scale:

- Engagement of residents can be secured through governance approaches promoting local ownership and high levels of take-up of retrofit measures most appropriate to each community and providing the supply chain and investors with a viable scale of project and structure of partner;
- Technical resource- and carbon-efficiency measures become feasible at whole-street and neighbourhood level that simply don't stack up at individual home scale, including most low-carbon/renewable energy technologies and transport;
- Access to private investment is increased as neighbourhood scale provides 'critical mass', enabling scarce public money to be more effectively leveraged.

This report's recommendations focus on the practical, the 'how' of managing upgrade works on a neighbourhood basis: building capacity at local level, developing and sharing best practice nationally and facilitating engagement by supply chain businesses, funders and policy-makers wishing to see communities successfully taking ownership for changing the place they live.

Dr Stewart Davies

Commissioner

Executive summary

The physical infrastructure in our villages, towns and cities requires significant upgrading and in doing so we have the opportunity to tackle climate change, deliver reliable and efficient transport networks, improve health and well being, secure a healthy natural environment, improve long-term housing supply, maximise employment opportunities and make our communities safer and more cohesive.

Whilst these opportunities are recognised at a national level for major infrastructure projects, they are not realised for local physical infrastructure. By local physical infrastructure we mean buildings (domestic and non-domestic – including derelict buildings), roads, pedestrian routes and cycle paths, public space, green infrastructure (parks, gardens, playing fields, trees etc.), blue infrastructure (canals, lakes, rivers, etc.), underused land, waste and recycling facilities, underground utilities of electricity (including recharging points), gas, water, Information and Communication Technology (including superfast broadband), and heat networks.

At the same time we are facing a scarcity of public funds. In 2009 the UK's budget deficit was the largest it has been in peacetime history. According to the Chancellor,[1] in 2010 the UK's deficit is set to be among the largest in the world. The new Government has made it clear that tackling the deficit will be the most urgent task it faces. As such it has pledged to significantly accelerate the reduction in the deficit, which will mean substantial cuts in public sector funding.

If we are to make the improvements required to tackle climate change alongside delivering those wider economic, environmental and social benefits that will improve the quality of life for everyone we must look at new ways of working. This means looking at ways in which we can make existing resources work harder through efficiencies, and finding new ways to access private finance.

How we deliver these works is as important as the physical changes – working at the local level provides the opportunity to strengthen communities, to build their social capital and their capacity to respond to local challenges. There is potential not only to transform places but to transform society. To achieve this we must consider how we can galvanise, support and empower communities to come together to decide how to improve the long-term wellbeing of their local areas.

It is in this context that the Sustainable Development Commission has produced this timely report. We believe there is a solution to these problems, a way of cutting our carbon emissions, making our places more resilient to the impacts of climate change and creating a better, fairer and healthier society cost effectively. It comes in the form of integrated neighbourhood retrofit programmes, refurbishment works led by local people to improve the places they live in and equip them for a greener, albeit leaner, 21st century.

What is the issue?

Carbon reduction

One of the most urgent drivers for upgrading existing infrastructure is the need to reduce the UK's carbon emissions by 80 per cent by 2050. As the Commission for Architecture and the Built Environment (CABE) and BioRegional concluded from their involvement in the eco-towns programme, a well-designed, well-built place could help residents achieve a 75 per cent reduction in their total carbon emissions and a 78 per cent reduction in their ecological footprint.[2]

The most significant contribution can be made from existing buildings. The UK's 21 million homes are responsible for 27 per cent of our carbon emissions.[3] The 1.8 million non-domestic buildings are responsible for a further 18 per cent of UK carbon emissions.[4] Given that 86 per cent of homes standing today will be around in 2050[5] we need to improve the energy efficiency of these buildings.

A massive programme of works is therefore required to upgrade the existing building stock if we are to meet these targets. How these works are designed, managed and delivered will impact significantly both on the costs and the effectiveness of the programme. Work to achieve 80 per cent carbon reduction from existing buildings is estimated to cost in the range of £200 to over £400 billion for domestic[6] and in the range of £13 to £50 billion for non-domestic.[7] Although these upfront costs can largely be recouped in the long-term through resultant energy savings, they are still a barrier for many householders. Our research indicates that costs could be reduced in the range of 20 to 30 per cent if work is undertaken on an area basis (compared to individual house). It also highlights the potential for greater take-up rates of programmes when delivered on an area basis.

Delivering wider sustainable outcomes

Similarly the design, management and delivery of infrastructure upgrades, and how our renewed places function afterwards, will have a huge impact on how sustainably people live their lives. By looking wider than buildings, neighbourhood retrofit programmes will significantly affect people's quality of life, determining how safe and easy it is to move around, how active and healthy people are, and how happy they are to spend time there.

What this research shows is that as well as addressing climate change, an integrated, area-based retrofit programme can deliver a host of economic, environmental and social co-benefits for the same or similar cost outlay. As detailed in the report these works have the potential to:

- Reduce carbon emissions
- Make efficient use of resources
- Improve energy security
- Make places more resilient to the impacts of climate change
- Improve biodiversity
- Create local jobs
- Strengthen local economies
- Improve the quality and value of existing places
- Reduce fuel poverty
- Improve health and reduce health inequalities
- Strengthen communities and improve community interaction.

Avoiding costs of poor infrastructure

In addition to improving quality of life for the UK's citizens, achieving these wider benefits will help avoid significant future costs of poor infrastructure. In the current economic climate it is critical that we take a long-term view to improve the functioning of our existing places.

We need to adapt our existing places to make them resilient to the impacts of climate change. If we fail to do this, Lord Stern estimates that the economic impact from extreme weather alone could reach two per cent of world GDP by 2050.[8] Manchester undertook its own 'mini-Stern' review and estimated that the city region risks losing £12 billion over the next 12 years if it fails to adapt – and £70 billion for the wider North West region.[9] The floods in the summer of 2007 showed the levels of damage that can be incurred. These cost insurers more than £3 billion.[10]

We also need to improve our existing places if we are to avoid significant cost to the NHS. SDC's report Health, Place and Nature highlighted how improvements to the built environment, particularly to green infrastructure, can improve both physical and mental health more cost effectively. Obesity already costs the NHS £1 billion a year and £2.3 billion to the wider economy.[11] Mental illness (primarily depression) costs the NHS £12 billion a year and £64 billion to the wider economy.[12] In addition substandard housing is estimated to cost the NHS £2.5 billion a year and a further £1.8 billion to the wider economy.[13]

We need to improve how we move around our existing places if we are to avoid significant costs from congestion. If left unchecked it is estimated that congestion will cost England £22 billion by 2025.[14] Improvements to cycling and pedestrian routes provide a benefit to cost ratio of 20:1, compared to a typical ratio of 3:1 for typical road and rail improvements.[15] This does not factor in savings from greenhouse gas (GHG) emissions, which could be significant given that transport accounts for 22 per cent of UK GHG emissions.[16]

What are the benefits of an integrated, area-based approach?

In the current economic climate we need to look at how these measures can be delivered most cost effectively to deliver maximum economic, environmental and social benefits. Our research suggests that we cannot afford to continue with the existing piecemeal approach to upgrading neighbourhood infrastructure elements. In addition we need to look for ways of achieving these benefits at the least cost to communities and individuals in the current harsh economic climate, exploring new ways of financing these projects and delivering them.

The Commission believes there are clear benefits of adopting a rational, integrated and co-operative approach. These are reducing cost and disruption; engaging and enabling communities in determining the shape of their neighbourhoods; and utilising resources for local benefit.

Reducing cost and disruption

Many infrastructure improvements deliver multiple benefits. For example, improving green infrastructure improves the resilience of our places to impacts of climate change such as flooding and overheating; it improves physical and mental health; and it provides options for new and improved pedestrian and cycling routes. An integrated approach to spatial planning on an area basis will help to identify opportunities for upgrades to maximise economic, environmental and social outcomes. Integrated planning and delivery of these works will save money through shared infrastructure, single community engagement processes and integrated delivery. It can also minimise disruption for residents and businesses during construction and maintenance.

As our case studies and research demonstrate, area-based energy efficiency programmes have elicited greater take-up rates, and cost savings of 20 to 30 per cent. The Cardiff Partnering Scheme, which retrofitted 100 homes and five blocks of flats, found that an area-based approach reduced costs to householders by at least 20 per cent, compared with having homes upgraded individually. The council was able to pass on these savings to homeowners which, along with improvements to the quality of visual appearance, encouraged them to have works undertaken.

Engaging and enabling communities

We have found that there is more opportunity for local people to become involved in improving their neighbourhoods through an integrated programme than through one which focuses on a single issue, such as carbon. People want better places. This means places where they feel safe, homes that are affordable to heat, neighbourhoods that are resilient to extreme weather events, well maintained public space and parks to relax and play, convenient pedestrian and cycle routes, and access to public transport.

Our research has identified a variety of different routes in to engage communities. In Todmorden the community initially came together to produce local food. They are now working with a range of bodies including the council, schools, doctors and other bodies to implement their plans. This includes the establishment of a social enterprise to produce fish, vegetables and fruit; a network of people keeping chickens for the sale of eggs; and working with local traders to promote local food.

Most significantly, this approach creates an opportunity for people to work together in communities to build a stronger, more cohesive society and to encourage and enable people to make sustainable choices in their day-to-day living. As this report highlights, long-term shifts in behaviours and habits are most likely to be achieved where communities have a strong role. The commission believes this approach will engender positive long-term change by building the capacity of neighbourhood groups, social enterprises, other third sector bodies and local government to work together and solve local issues. Working through neighbourhood partnerships can empower communities to make decisions about how their areas are managed, and about where the profits from new investment opportunities should be directed to improve long-term well being.

Utilising resources for local benefit

We have found that working in an integrated, area-based way can enable communities to receive greater benefits from local resources. This can be achieved by integrating different elements to achieve a more efficient supply and usage of resources – such as re-using waste heat from a power station to heat buildings, or generating energy from waste material and sewage.

Similarly, some of the elements introduced as part of a neighbourhood retrofit programme may generate income. If an integrated approach is taken there is potential for neighbourhoods to benefit from this income generation, and reinvest surplus profits locally, for example into other

retrofit works. New ways are needed to enable local people to benefit from the development of local infrastructure.

In Fintry, Scotland, a community-owned wind turbine generates 8,000MWh of electricity which is sold, helping to pay off their original loan and meet running costs. Surplus profits of £50,000-£100,000 a year go to the Fintry Development Trust, made up of 150 residents. The money has been used to make homes in the village energy efficient by providing free insulation.

Working at an area basis also increases potential to build capacity in local firms and create local jobs, as well as increasing the viability of some technologies. Area-based delivery through the Kirklees Warm Zone had provided over 127,000 energy assessments, delivering loft insulation to almost 37,000 properties and cavity wall insulation to over 17,000. Through this work the Warm Zone has directly created over 100 jobs per year for three years, and indirectly created an additional 29 jobs per year. In addition, a leading installer of energy conservation systems has built a local depot and training centre nearby. Over 200 fitters have been trained so far.[17]

What is preventing an integrated, area-based approach?

Retrofit programmes focused solely on a single outcome, such as carbon reduction, will limit the potential to deliver the multiplicity of benefits outlined in this executive summary so far. We have reviewed over 80 case studies, worked with almost 50 experts from the fields of community, delivery and finance and commissioned research on scenarios for neighbourhood infrastructure upgrades. From this we have found that the most common barrier preventing the integration and delivery of the wider sustainability benefits in retrofit programmes is the lack of a single body driving and coordinating the planning and delivery of work. The identification and/or development of such bodies was seen as key to unlocking many of these issues, engaging others in the community and bringing together public and private sector stakeholders.

As our case studies demonstrate there are some bodies who are taking on this role. These come in a range of structures, which includes amongst others informal community groups, co-operatives, development trusts, social enterprises, parish councils, local authorities and local strategic partnerships. For the purpose of this report we call these 'neighbourhood partnerships'.

The case studies in the report are the success stories – those that are managing to deliver real improvements in the long-term well being of their local areas. From our discussions with these communities and wider stakeholders however, it is clear that neighbourhood partnerships are too often hindered by a lack of support (mentoring, technical, organisational) and poor access to finance (especially for seed funding and core costs). This lack of technical support and access to finance can hamper their ability to develop schemes which utilise resources effectively to create maximum economic, environmental and social value. There is now an opportunity for Government to address these problems through their recently announced plans to support community organisers and to establish the Big Society Bank.

What are the key principles of an effective neighbourhood partnership?

There is a greater recognition of the need to work in partnership at a local level to improve the functioning of existing places. The past year has seen development of a number of programmes and pilots to encourage greater partnership, particularly between energy companies, local authorities and community groups. These include DECC's Community Energy Saving Programme, CLG's Local Carbon Frameworks, London's Low Carbon Zones and the Low Carbon Communities Challenge. The Strategy for Household Energy Management[18] also sets out a new model of delivery, through partnerships between energy companies, local authorities and other local organisations. Too often however, these pilots focus on single issues such as carbon and do not give an effective role to communities. If they are to maximise use of resources effectively to deliver long-term improvements to the well being of their areas we need neighbourhood partnerships to take a wider focus.

We have found from our research that there are some key principles which make an effective neighbourhood

partnership. These will vary according to local circumstances, but the partnership should ideally:

- Be a *multi-disciplinary* partnership involving communities, local authorities, infrastructure owners and other players, particularly those with finance, decision-making powers and technical expertise
- Take a form *appropriate to local need and resources*, with leadership from either the community or local authority. This should build on existing partnerships and delivery structures where appropriate
- Have a *long-term*, ongoing presence and interest in the neighbourhood.

What does an effective neighbourhood partnership do?

A neighbourhood partnership's role is to drive and coordinate the planning and delivery of sustainability improvements at a local level, which have been identified as priorities by the community. These partnerships should aim to improve infrastructure at a local level so as to deliver carbon reduction and adaptation measures while at the same time achieving wider economic, environmental and social benefits.

Partnerships should gather together a team interested in taking forward the neighbourhood retrofit work, develop a vision and targets, produce spatial neighbourhood retrofit plans, and develop a delivery and funding model.

Who could be involved in neighbourhood partnerships?

Communities

Engaging communities in the development of their neighbourhoods will significantly increase the long-term benefits neighbourhood partnerships deliver. This can be achieved through increasing participation in retrofit programmes through simple word-of-mouth recommendations and inspiration from real-life examples (friends, family and neighbours); encouraging and enabling sustainable behaviour change through structured learning from trusted intermediaries and support groups; or the active involvement of communities in designing and managing programmes of works. Feedback from the New Deal for Communities (NDC) programme found that the critiquing of local services by residents was 'absolutely vital in making more focused, refined and fit-for-purpose local delivery vehicles'. Its report noted that 'some of the most successful projects...are those where we have engaged residents in the design of the process; and some of our least successful projects, including some of the disasters, have been the ones where we haven't.'[19]

Involving the community can also save money. On a £2.2 million housing redevelopment project for the Shoreditch Trust in north London, savings due to community engagement were estimated to be in the region of £500,000. Compared to other projects, there were fewer delays and associated costs caused by responding to residents' complaints, reworking designs at a late stage to meet user needs, and on-site events such as vandalism and crime.[20]

In south London, the award-winning Bellenden Renewal Area benefited from community engagement from the outset. Southwark Council asked residents how they wanted their streets to look and allowed each street to choose designs for its walls, gates, paving and street lighting. More than 60 local artists contributed, including Antony Gormley and Zandra Rhodes, and the once-rundown backstreets are now one of the most desirable neighbourhoods in the area. House prices are estimated to be 15-20 per cent higher than in surrounding streets. Where whole streets have been improved together, properties are estimated to command premiums of up to 25 per cent. Now, Southwark Council is using lessons learnt in Bellenden in its Low Carbon Zone, where residents are being used to spread information via community 'EcoTeams'.

Local authorities

Local authorities (LAs) deliver, or have some responsibility for, more than 700 different services ranging from education, transport and public health, to environmental stewardship. Given their level of local knowledge, and the fact that they own most of a neighbourhood's public space, the involvement of LAs is essential to any infrastructure upgrades. Research shows that they are trusted by communities – considerably more than energy suppliers. LAs also exert influence over planning and finance, meaning they have a key role to play in the development of neighbourhood partnerships.

Why would local authorities want to become involved? Like central Government, they have environmental targets to meet as outlined in their Sustainable Community Strategies (SCSs) and accompanying action plans. The Sustainable Development Lens, a benchmarking tool for local authorities developed by the Commission and the Improvement and Development Agency (I&DeA), shows that upgrading existing infrastructure has a direct and positive impact on the majority of sustainability measures for their area. The recent announcement by Government to devolve more powers and responsibilities to local government could enable the integrated partnerships to promote action at a local level.

Others

These might include infrastructure owners (utility companies, registered social landlords), potential funders, local businesses or social enterprises, other third sector bodies, Local Strategic Partnerships (LSPs) and those with technical delivery skills.

In south London, Southwark Council has established a Multi Utility Services Company (MUSCo) to integrate the delivery of utilities across 30 hectares of mixed-use development at Elephant and Castle. The MUSCo comprises Dalkia (providing management services), Veolia Water and Independent Fibre Networks Limited, working together with the council and the master developer, Lend Lease, to deliver carbon neutral heating, cooling, electricity, non-potable water and data connectivity services to the area. Having a single body responsible for a range of elements cuts costs and minimises disruption by use of shared ducting and avoiding duplication of works. Other research highlighted in this report indicates that delivering energy efficiency retrofits through partnerships between local authorities and energy companies can deliver £6 billion in benefits over the lifetime of the strategy, compared to £4.2bn for a local authority-led model and -£0.3 billion for an energy company-only model.[21]

The solution: Mainstreaming neighbourhood partnerships and an integrated approach

We need to mainstream this approach if we are to achieve the scale of activity required to meet Government targets on carbon whilst at the same time delivering a wide range of sustainable co-benefits cost effectively. To achieve this we need Government to:

Prepare the ground

There is currently no clear policy support for retrofitting existing places to make them more sustainable. **If we are to avoid substantial costs in future and we are to achieve the multiple benefits of delivering retrofit through an integrated, area-based approach Government must act to give a clear policy lead to support the scale of works required to upgrade our neighbourhood infrastructure.**

If we are to achieve this then Government must end the focus on single issue pilots and programmes and move to capture the benefits of joining up delivery on the ground. For neighbourhood partnerships to be effective Government policies and programmes need to enable and support integration at the local level. This will require action from all departments across Government, not just those with lead responsibilities on communities and climate change.

Coordinate support

Support required by neighbourhood partnerships will vary according to their stage of development and aspirations. Our research and case studies suggest key areas for help are likely to be:

- Handholding support and capability-building for local authorities and community groups on technical, financial and legal issues, and project management
- Seed funding for core costs and research and development projects
- Development of best practice based on feedback, monitoring (including effective data reporting), and research and development projects
- Development of procurement panels.

A number of government and third sector bodies provide support to local authorities and community groups. Whilst some of this is valued, it can be hard to access as it is delivered through a myriad of different organisations, all with differing targets and objectives. Their dispersed nature means it can be difficult for partnerships to know where to go for advice. From talking to our expert colleagues and case study contributors, it would appear there is duplication of resources in some areas (such as web-based tools) whilst there are clear gaps in others (mentoring, capacity-building, opportunities for sharing best practice and financial advice). Existing structures can also make it difficult for communities to develop their own solutions.

There is potential to streamline existing support structures to make it easier for communities and local authorities to access them. To achieve this, it is recommended that a single department coordinates the provision of support, and that users would be able to access the full range of support through a single interface. As well as improving usability, this would provide a portal through which user needs could be monitored, and best practice identified and shared. It could also reduce overall costs of such services by removing duplication, and support communities to develop and share their own solutions. The Government's recent proposal for more powers and support for local communities to shape their neighbourhoods are welcome as they will assist in tackling the barriers identified by the Commission in this report. These policies must be developed in an integrated way, looking at how they can work with and improve existing provision if they are to address the issues raised in this report and deliver maximum benefit on the ground.

Unlock funding

Public sector funds will be very constrained so we need to use what is available more effectively. This means giving a greater capability to neighbourhood partnerships to influence how public sector funding (and that over which the public sector has some influence, such as the new obligation on energy companies) is used in their area. Proposals to give greater financial autonomy to local government and community groups are a welcome addition to this capability. We urge the government to look closely at the neighbourhood level when reviewing ways to devolve power and greater autonomy to local government and community groups.

As detailed in the report some neighbourhood retrofit upgrades can generate profit in the short- and long-term, delivering quick and slow wins to investors. However, it can be difficult for neighbourhood partnerships to access institutional investment. Institutional investors typically require investment scales of circa £50 million for equity investment, and £100 million for debt investment. If neighbourhood partnerships are to attract private sector investment we need to develop mechanisms which make it easier for them to access finance. The proposed Green Investment Bank provides an opportunity for Government to develop such a mechanism. To enable this, the bank must unlock finance for neighbourhood-level projects alongside large-scale strategic infrastructure.

If places are to be truly sustainable in the long-term however, we must move beyond simply attracting institutional investors. We need to enable communities to develop self-sustaining local investment vehicles which retain and re-invest any surplus profits for community benefit. These surplus profits can be used to help to fund those projects which have no direct revenue-generating potential but can deliver a range of community benefits.

To support local investment vehicles we need to be smarter about how we use the limited public sector finance there is available. The early stages of projects (scoping and development) carry the highest risk to investors. Public sector resources could be used to minimise this risk and allow projects to progress. This can be achieved through a variety of methods including public sector underwriting, use of public assets, seed funding for scoping works (potentially provided from the Big Society Bank), research and development, and setting a clear policy framework. When deciding how public money is spent, consideration should be given to how it could provide a return for local re-investment.

Some projects, especially those with no costed benefits, will still require public subsidy. These can be funded by a variety of means including using the surplus profits from quick- and slow-win projects (where there is local investment or a community tariff on private sector development); 'allowable solutions'; section 106/ Community Infrastructure Levy/tariff; and other local green charges.

The Commission calls on the Government to recognise the benefits that can be achieved through upgrading neighbourhood infrastructure in an integrated way, the scale of the challenge, the costs of inaction and the urgency to take action. To achieve this they must encourage, enable and empower neighbourhoods to work together to shape their areas into something bigger and better – to transform the long-term functioning and sustainability of both place and society.

Summary of Recommendations

SDC calls on Government to encourage, enable and empower communities, local government and other bodies to work together to drive, plan and coordinate delivery of *integrated neighbourhood retrofit* programmes to achieve sustainable places. These neighbourhood partnerships should deliver a range of sustainability outcomes *alongside* carbon reduction and adaptation measures in an integrated way which will deliver maximum economic, environmental and social outcomes cost effectively.

If we are to mainstream this integrated, area-based approach Government needs to:

Prepare the ground

1 **Government should support an integrated, area-based approach to upgrading local infrastructure as a cost effective way of achieving maximum sustainable outcomes in an area.**

How This would be supported by: ensuring existing and new polices and delivery programmes (such as the new obligations on energy companies post-2012) are flexible in operation to support integrated delivery; improving the evidence base to assess the economic, environmental and social benefits of this approach; and developing pilot projects which test integrated delivery.

2 **Government should improve the evidence base on the cost-effectiveness and benefits (monetised and non-monetised) of working with communities to deliver sustainable outcomes**.

How This should include a review of current and completed programmes – such as the Low Carbon Communities Challenge, Greener Living Fund, NESTA's Big Green Challenge, the Community Energy Saving Programme (CESP) and Scotland's Climate Challenge Fund. It should also look to learn from previous area-based delivery programmes.

3 **Given the urgency in tackling climate change and the critical role local authorities can play in enabling, encouraging and engaging people to undertake action, the local authorities' role as local leader on climate change mitigation and adaptation measures should be formalised.**

How This could be achieved through a requirement to set mandatory targets on climate change mitigation and adaptation (National Indicators 186 and 188) or by making this a duty on local authorities.

4 **Government should ensure that regulatory frameworks for infrastructure and utility providers enable and support an integrated, area-based approach to achieving sustainable outcomes.**

How A 'fit for purpose' review of existing regulatory structures should be undertaken to identify potential regulatory obstacles preventing an integrated, area-based approach to upgrading local infrastructure.

Coordinate support

5 **The department for Communities and Local Government (CLG) should have responsibility for coordinating cross-governmental support for neighbourhood partnerships.**

How This should be informed by and build upon existing support being provided to both local authority and community-led partnerships. CLG should simplify the process for neighbourhood partnerships to access the advice, through the creation of a single interface. In addition to improving usability this will help ensure that services meet the need of users without duplication of resources.

Likely areas requiring support are:

- long-term enabling advice, technical support (particularly on the use of the Well Being Power) and capacity building for local authorities
- technical, financial and legal advice, mentoring, capacity building, and project management for community groups
- access to funding, particularly for initial investment and core costs.

Unlock finance

6 **Public sector funding mechanisms should promote devolution of funding to neighbourhood partnerships to enable them to influence decisions on how public sector money is spent in their area.**

How Neighbourhoods should be provided with greater information on local public expenditure, potentially by providing neighbourhood level breakdowns as in the Local Spending Report. The Government's review of local government finance should look at the issues raised by the Total Place pilots, Total Capital case studies and Total Capital and Asset pathfinders, and promote ways to devolve greater financial autonomy to neighbourhoods.

7 **A new Green Investment Bank should direct finance to a wide range of low carbon infrastructure projects including energy efficiency at a variety of scales, including neighbourhood.**

How Support could be provided through:

- providing capital or guarantees where private finance is unwilling to take the risk
- bundling small projects to attract wider investment
- providing a brokering service between private, public and third sectors
- raising capital (for example, through Green Bonds) for sustainability projects identified by the partnerships.

8 **Government should minimise development risk through provision of clear policy support for neighbourhood retrofit.**

How The standards and timeline for introduction should be defined now but phased in as mandatory over a period to enable building owners to prepare for these works. All homes should meet minimum energy efficiency standards. The UK Government should also equalise VAT for repairs and refurbishment works in domestic properties, with new build.

9 **Local authorities should be enabled to borrow against Feed-in-Tariff and Renewable Heat Incentive income streams.**

How The Treasury should implement this as a matter of urgency now that Feed-In-Tariff is operational.

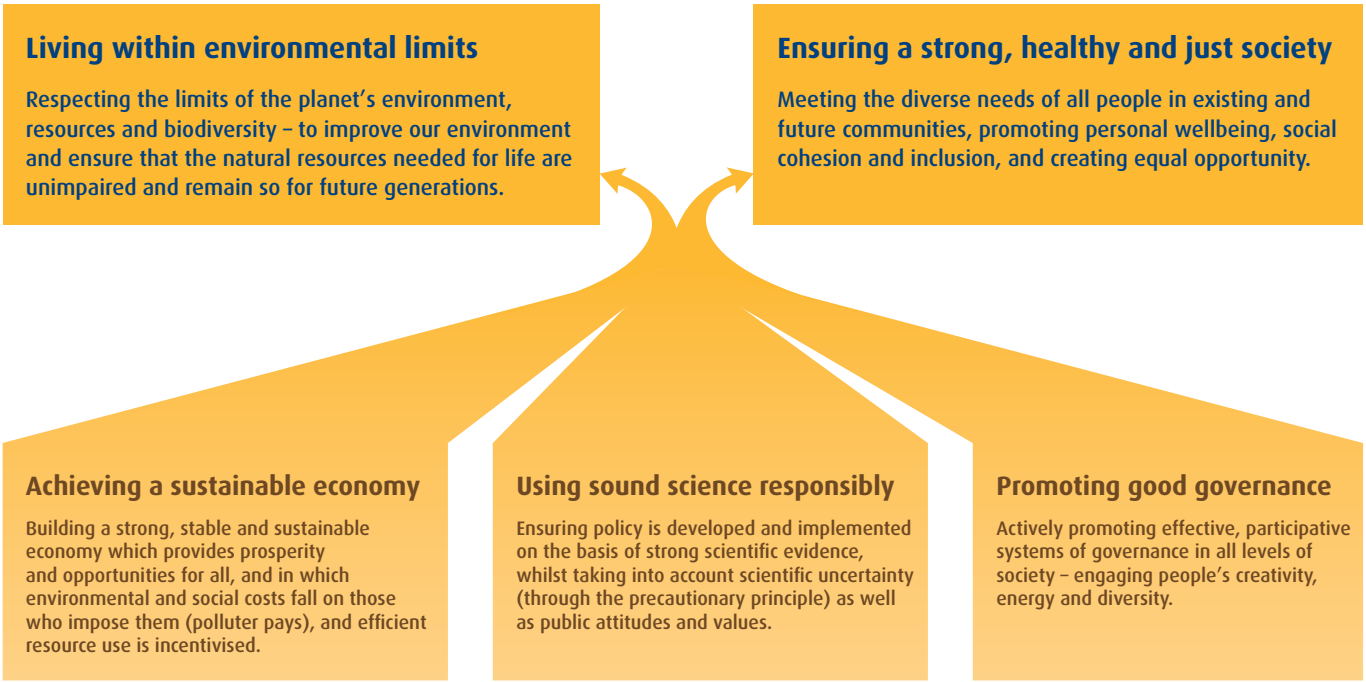
10 **Government should create ways in which local communities are able to derive long-term benefits from the siting of low carbon energy infrastructure, such as new housing or wind turbines, in their area.**

How This could include enabling communities to purchase a share in the development, providing them with an ongoing share of the increase in business rates or a community tariff. In addition, 'allowable solutions' (i.e. offset payments for new homes unable to meet zero carbon levels onsite) could be paid to the local authority and used to fund low carbon projects identified in neighbourhood partnerships' delivery plans..

Introduction

The Sustainable Development Commission is the Government's independent adviser on sustainable development, reporting to the Prime Minister, the First Ministers of Scotland and Wales and the First Minister and Deputy First Minister of Northern Ireland. Through advocacy, advice and appraisal, we help put sustainable development at the heart of Government policy.

In 2005, the Government published its Sustainable Development Strategy Securing the Future and outlined the five principles of sustainable development, within which government policy is to be developed and implemented. The five principles show that the goals are to live within environmental limits and to ensure a strong, healthy and just society. The means of achieving these goals are through achieving a sustainable economy; using sound science responsibly and promoting good governance.



Background to the project

This project was developed from discussions within the Commission around how these principles could be applied to improving the sustainability of our existing places.

Living within environmental limits

A well-designed, well-built place can directly assist residents in achieving a 75 per cent reduction in their carbon emissions. It can also help them achieve a 78 per cent reduction in their ecological footprint.[22] In 2008, there was an elevated level of debate on the potential to deliver a wide range of sustainability benefits through the development of the eco-towns programme. However, there was no equivalent debate about the existing built environment. Given the Commission's work on the existing housing stock[23] – which highlighted, among other things, that 86 per cent of homes standing today would be present in 2050 – we were keen to explore what would be required to deliver these environmental sustainability benefits in existing neighbourhoods. We wanted to understand whether and how making these neighbourhoods more resource-efficient could also improve quality of life for residents.

Ensuring a strong, healthy and just society

A well designed, well built place can also improve the health and wellbeing of those who live and work there. Improving the energy efficiency of existing homes improves heart and respiratory illness, lowers the number of cold-related deaths, lifts poor people out of fuel poverty and improves wellbeing. As we detailed in *Sustainable Development: The key to tackling health inequalities*[24] and *Health, Place and Nature*[25] improving the built environment can deliver significant physical and mental health benefits. People who have easy access to facilities for physical activity are more likely to be active than those who do not. Access to green spaces will directly and indirectly benefit health and wellbeing, especially for lower socio-economic groups. Accessible local facilities can provide opportunities for social interaction, help create a sense of community and provide employment, all factors in health inequalities.

Achieving a sustainable economy

Given the scarcity of public funds and the potential for infrastructure upgrades to generate revenue, we were keen to explore the mechanisms required to attract private sector investment to this area. As we set out in *Prosperity Without Growth?,*[26] we need to develop an economic model that minimises resource use and maximises sustainable outcomes if we are to achieve fair and lasting prosperity. We need to look for different ways of working which allow people to participate more fully in society and develop a sense of shared wealth and wellbeing. We wanted this report to consider the potential to develop sustainable delivery and finance mechanisms, enabling local investment to generate income streams for re-investment in further projects.

Using sound science responsibly

The Commission's previous projects have led us to believe that the scale of the challenge facing our existing places is much greater than was been accepted by the previous Government. Any proposals to upgrade existing communities should be based on a rigorous analysis of all aspects of infrastructure that require upgrading and long-term projections of environmental and social requirements. Proposals for new upgrade programmes should learn lessons from the long history of area-based interventions in existing areas by Government programmes.

Promoting good governance

The past few years have seen an explosion in the number of local interest groups wanting to improve the sustainability of the places in which they live and work. From Transition Towns to Carbon Reduction Action Groups and a wealth of local initiatives, communities across the UK are coming together to ask how they can improve their neighbourhoods. It is estimated that there may be up to 12,000 local organisations working on sustainability issues. Since the Quirk review,[27] which in 2007 highlighted the benefits of communities managing and owning local assets, the previous Government has been looking at how it can give people more control over the way their local areas operate. The new Government has made it clear that they will look at ways to shift power from Westminster to the people. In this project we wanted to investigate what is needed from Government to support these groups, enabling them to be a fundamental part of the solution in making real, positive changes to the way our existing places function and are managed.

Recent initiatives

Since the project was conceived, there has been extensive interest in many of these key issues, with some advances in policy. These include:

- The Strategy for Household Energy Management[28] announced the intention to require energy companies to consult with local authorities to deliver area-based programmes from 2012, as part of a new energy company obligation. The launch of Local Carbon Frameworks (LCFs) also provides opportunities for new forms of partnership working to reduce carbon emissions
- The introduction of Feed-in-Tariffs (FITs) in April 2010 and the Renewable Heat Incentive (RHI) planned for April 2011. Both provide potential new funding streams which could be utilised to generate income for local communities
- The roll-out of pilot programmes including the Community Energy Saving Programme (CESP), the Low Carbon Communities Challenge (LCCC) and London's Low Carbon Zones (LCZs), which will facilitate learning on many of the aspects covered in this report
- The exploration of a new approach to service delivery, focused on improving outcomes through the Total Place pilots and Total Capital and Asset pathfinders, all of which are explained later in this report. This has the potential to drive a more holistic approach by looking at the most effective ways to deliver a range of outcomes in an area – especially if consideration is given to the role communities can play in agreeing local outcomes.

Several studies have called for area-based approaches to upgrading existing buildings and for the integrated delivery of local infrastructure upgrades. In addition, a

number of reports have looked at the potential to expand the community role in supporting and delivering climate change initiatives. These include the Report of the Joint Ministerial and *Third-sector Task Force on Climate Change, the Environment and Sustainable Development*[29] which recognised the crucial role of the third sector. There have also been calls for new mechanisms to mobilise private sector finance to assist the above.

These programmes and reports are all to be welcomed as evidence of growing support for and understanding of the need to work at local level and to engage communities in improving the sustainability of our existing places. We are also pleased to see cross-party consensus on the need for action and the potential for working locally to develop solutions.

In this report, we set out how the programmes of work being developed must go beyond single issues, such as carbon, if we are to engage communities and maximise efficient use (and re-use) of existing resources and finance. By taking an integrated, area-based approach and working with the people who live there, it is possible not only to reduce carbon emissions but to provide solutions that deliver a wide range of economic, environmental and social benefits, thereby improving quality of life in the long-term.

Who is the audience for this report?

Local authorities and communities will be at the heart of delivering much of the work to upgrade local infrastructure. However, without the support of all those with an interest in our neighbourhoods, this will not happen on the scale or at the pace required to achieve our carbon-reduction targets and wider sustainability benefits. Nor is it likely that the most efficient use of resources can be achieved without the support of UK central Government.

Although this report is focused on policies affecting England, much of the information is relevant to government and delivery bodies in Wales, Scotland and Northern Ireland.

The key audiences for this report are, therefore, those UK central Government departments and delivery bodies – including the private sector – that can support local-level delivery by developing policies, freeing up funding streams and providing support structures. This includes those with responsibility for spatial planning, climate change (both mitigation and adaptation), energy, heat, transport, housing, green spaces, regeneration, health and crime.

From our research, we are aware that a number of community groups and local authorities are committed to improving the sustainability of their existing places. We hope this report will be used by those bodies to support their ongoing and future work.

This work builds on previous work and reports[30] by the SDC which include:

- *Stock take: Delivering improvements in existing housing* (2006)
- *I will if you will – Towards sustainable consumption* (2006)
- *Every Child's Future Matters* (2007)
- *Building Houses or Creating Communities?* (2007)
- *Financing Local Futures: Sustainability in practice* (2007)
- *Local Sustainable Development Lens: Final Proposal* (2009)
- *What makes places resilient? Are resilient places sustainable places?* (2009)
- *Prosperity without Growth? – The transition to a sustainable economy* (2009)
- *Breakthroughs for the twenty-first century* (2009)
- *Low Carbon Wales: Regional Priorities For Action* (2009)
- *Sustainable Development: The key to tackling health inequalities* (2010)
- *Smarter Moves: How Information Communications Technology can promote Sustainable Mobility* (2010).

Methodology and contributors

Methodology

This report has been informed by the analysis of more than 80 case studies, technical research undertaken by Buro Happold and other external contractors, an extensive literature review, and input from Task Groups and external experts.

Case study research

A call for case studies was issued by both the Sustainable Development Commission (SDC) and the Commission for Architecture and the Built Environment (CABE), through existing networks and at a range of forums. We wanted to know about projects that had achieved, or were working to achieve, one or more of the following criteria:

- A high level of carbon reduction through area-based retrofit projects
- A high level of wider economic, environmental or social benefits through similar projects.

We also asked to hear about projects that had trialled innovative support or funding mechanisms. From a long list of more than 80, we have included over 30 of these in the report.

Key lessons from the case studies:

- A number of bodies are undertaking work to improve existing places. These function at a range of scales, from tower blocks to cities and sub-regions. Despite this range of scales, delivery is usually undertaken on a small scale (i.e. at block, street or ward level)
- Motivations behind the projects vary. They include reducing carbon emissions (Sanford); promoting regeneration, job creation and economic investment (Arbed, Bellenden and Greater Manchester); conserving natural resources (Toronto); wanting to bring communities together (Incredible Edible Todmorden); and making streets safer (20's Plenty)
- Projects coordinating more than one type of infrastructure upgrade are usually led by public sector organisations (often the local authority) and/or community bodies. There is good evidence of these groups working together effectively
- Funding was usually sourced from a range of public sector grants, although there is growing interest in how public sector and community finance can be used to establish revolving funds.

External and desk-based research

- We appointed Buro Happold to map existing neighbourhood infrastructure in three particular places, and to investigate how this infrastructure could be reconfigured to deliver sustainable outcomes. A summary of Buro Happold's report is included at Annex D
- An independent consultant was appointed to review existing community financing vehicles which has helped to inform Chapter 7
- The Commission undertook a desk-based review of more than 100 research reports to analyse the benefits of upgrading existing infrastructure (included at Annex B), the benefits of an area-based approach to delivery (included at Annex C), and wider operational issues.

Steering Group, Task Groups and wider contributors

The project's Steering Group provided advice on the report content, structure, key messages and recommendations. Members of the Steering Group were:

Stewart Davies *SDC Commissioner – Chair*

Anne Power *London School of Economics (LSE)*

Alison Mathias *Homes and Communities Agency (HCA)*

David Green *UK Business Council for Sustainable Energy*

Peter Matthew *Department for Communities and Local Government*

Mark Johnson *Greater London Authority (GLA)/ Osborne Energy*

Gavin Purchas *Department of Energy and Climate Change*

Bob Knowles *Empower Community Fund*

Ross Mitchell/Mark Brown *Energy Efficiency Partnership for Homes*

Chris Jofeh *Arup*

Mike Reardon *Greater Manchester Environment Commission*

Dennis Moynihan *Thames Gateway Institute for Sustainability (IfS)*

Jonathan Davis *Commission for Architecture and the Built Environment (CABE)/The Transition Studio*

Task Groups

The project was also informed by three Task Groups which provided invaluable expertise in the following areas:

- **Task Group 1**: Practical delivery of infrastructure at neighbourhood level
- **Task Group 2**: Business and funding models for delivering neighbourhood retrofit
- **Task Group 3**: Engaging communities in neighbourhood retrofit.

Task Group members were:

Task Group 1

Anne Power, *LSE (Chair)*

Tessa Barraclough, *Peabody*

Rory Bergin, *HTA*

Bruce Collinson, *HCA*

Hen Cooke, *Buro Happold*

Jonathan Davis, *CABE/The Transition Studio*

Andrew Day, *Countryside Properties*

Stephen Hilton, *Connecting Bristol*

Ed Hobson, *CABE*

Andy Howe, *Environment Agency*

Sarah Jeffcote, *UK Green Building Council*

Chris Jofeh, *Arup*

Lesley Seymour, *Buro Happold*

Rob Shaw, *AECOM*

Andrew Tucker, *Energy Saving Trust (EST)*

Helen Walker, *Helen Walker Associates*

Task Group 2

Bob Knowles, *Empower Community Fund (Chair)*

Chris Brown, *Igloo Regeneration*

Abigail Burridge, *Local Government Association*

Andreas Crede, *Serco*

Jonathan Davis, *CABE/The Transition Studio*

Nicholas Doyle, *Places for People*

Nick Gibbins, *Upstream/ Jones Lang Lasalle*

Sean Hanafin, *Citi*

Michael King, *Combined Heat & Power Association*

John Mason, *EDF Energy*

Chris Morrison, *Transition Town Brixton*

Dennis Moynihan, *IfS*

Michael Newell, *Norton Rose*

Olivia Powis, *National Housing Federation*

Rob Shaw, *AECOM/LDA Design*

Darren Shirley, *National Energy Action*

Helen Wildsmith, *CCLA Investment*

Task Group 3

Alison Mathias, *HCA (Chair)*

Alexandra Allen, *Sustrans*

Graham Ayling, *EST*

Matthew Bennett, *Soho Community Environment Fund*

Erik Bichard, *University of Salford*

Liz Cox, *new economics foundation*

Jonathan Davis, *CABE/The Transition Studio*

Charles Drury, *Sense International*

Anna Eagar, *Community Energy Direct*

Nicky Gavron, *London Assembly/GLA*

Alex Grayson, *Empower Community Fund*

Anna Minton, *Writer/Journalist*

Annemarie Naylor, *Development Trusts Association*

Olivia Powis, *NHF*

Helen Walker, *Helen Walker Associates*

Welcome to our sustainable neighbourhood

"When the council put a leaflet through the door about having the loft lagged at a discount, it still looked pretty expensive. I mentioned this to a friend, who said it might be cheaper to have two or three houses done at the same time. A neighbour then told me how much he'd saved by having an energy efficient boiler fitted – and it wasn't long before we were talking about energy-saving windows, water butts and 'hippos' in the cistern. It would make sense, we joked, if we clubbed together to have the whole street done.

Out of that chance conversation, our sustainable neighbourhood was born. We spoke to the local council, to see if there was money and help available to make a whole area greener, not just individual homes. A project was under way, they said, to 'retrofit' (or upgrade) a cul-de-sac in the area as part of a pilot scheme – but there hadn't been much progress because the residents weren't that bothered.

While not everyone in our neighbourhood was interested in loft lagging, we found that most people had at least one idea about how the neighbourhood could work better. A handful of us set up a community action group to find out what improvements people wanted. There was talk of traffic calming to make the street safer, a cycle path to the park, allotments for food growing, a wildlife meadow by the river and a farmer's market. People seemed more interested in these than they were in cutting their carbon emissions.

Nevertheless, it was a good way of involving everyone, and we knew we had enough support to go back to the council. They helped us set up a 'neighbourhood partnership', made up of community members, council staff, project managers, architects, a local building firm and the utility companies supplying our area. In the community we also had a few people with financial understanding and management skills and plenty more with bags of local knowledge and enthusiasm.

Initially, it was hard to work out where we could get the money from. Through the government's website for neighbourhood partnerships we were able to make contacts both with other groups who had already undertaken similar projects and the neighbourhood department in the Green Investment Bank. From these discussions we were able to identify what money we needed to get the initial projects up and running and a number of potential sources. These enabled us to access the relevant grants and money from energy and water companies. We also found out about where we could get loans to help us to cover upfront costs for elements which would earn money in the long-term – such as photovoltaic panels where we would be paid for the spare energy generated.

With that, we achieved our first priority: insulating every home in our street, upgrading them for energy and water efficiency. By doing it all at once, the contractor saved on time, transport and materials and was able to offer us a 30 per cent discount compared to having a property done individually. When neighbours in other streets heard how cheap it was and saw how well it had been done, they all wanted retrofits too. We also obtained funding to fit photovoltaic panels on some roofs – both of houses and our local community centre to create a long-term income stream for the partnership.

Encouraged, we invested in some technical kit to turn food waste into biogas and established a local car club. These enabled us to realise more income which we put towards improvements to the local park. These improvements make our area less prone to flood damage. They have also created a new lake where we can sit and watch the wildlife play and the gardening club hard at work.

When the neighbourhood was fitted with superfast broadband we worked together to find cost effective ways for all households to get online and ensure those without computers were able to access its benefits. Working together also enabled us to achieve a 20mph speed limit for cars, new and improved cycle ways that actually connect up with others across the town, improved children's play facilities, allotments and a farmer's market – which is what most people really wanted in the first place."

1 Sustainable neighbourhoods for 21st century living

Chapter 1 examines:

- What is the vision for sustainable neighbourhoods
- What do we mean by neighbourhood infrastructure?
- Who benefits by the upgrading of infrastructure in our existing neighbourhoods?
- How does this help the Government deliver its objectives?
- Can these outcomes be achieved in every neighbourhood retrofit programme?

A vision for sustainable neighbourhoods

The physical infrastructure in our villages, towns and cities requires continual maintenance and repair, and significant upgrading to achieve our carbon reduction targets. In doing so, we have the opportunity to address climate change adaptation, deliver reliable and efficient transport networks, improve health and well being, secure a healthy natural environment, improve long-term housing supply, maximise employment opportunities and make our communities safer and more cohesive.

Based on the findings from our research, and input from Buro Happold and our Task Group members, we developed a framework of potential outcomes for any programme of infrastructure upgrade works seeking to improve the sustainability of a local area. It uses the key sustainable development principles set out in the UK's Sustainable Development Strategy, *Securing the Future*.[31]

Table 1 **Potential outcomes for neighbourhood retrofit**

Living within environmental limits

- Minimum use of virgin resources
- Maximum use of renewable and recycled/ waste resources
- Maximum linkages between resource use in a neighbourhood to deliver sustainable outcomes
- Reduced carbon emissions and improved resilience to the impacts of climate change
- Enhanced and preserved biodiversity
- Better air and water quality
- Sustainable transport options as people's preferred choice.

Promoting good governance

- Encouragement and support for local leadership in delivering sustainability.

Ensuring a strong, healthy and just society

- Better quality of place and service provision
- Enhanced health and wellbeing for all
- Improved community cohesion, interaction and civic pride
- Better access to clear information and resources, allowing people to live sustainable lives.

Achieving a sustainable economy

- Lower running costs for buildings and elimination of fuel poverty
- Support for local employment and local working
- Local investment in/ownership of assets
- New income streams for re-investment by the community.

While it may not be possible to achieve all these outcomes in every location, they should all be considered at the outset of any project, in the same way as Building for Life[32] criteria are used to review projects at design stage (see box below).

Case study – **Building for Life: using a simple checklist to improve outcomes**

Originally developed as a scoring system for housing design quality awards, the *Building for Life* checklist comprises 20 questions which can be used as a simple design tool. The breadth and simplicity of the questions, coupled with the clarity of accompanying guidance, enables the criteria to be used at initial visioning stages to improve design outcomes. While not all criteria are appropriate for every development, there is usually scope to consider and apply most of them. Projects funded by the Homes and Communities Agency are required to demonstrate, at the design stage, that they will achieve at least 'silver standard'.

What do we mean by neighbourhood infrastructure?

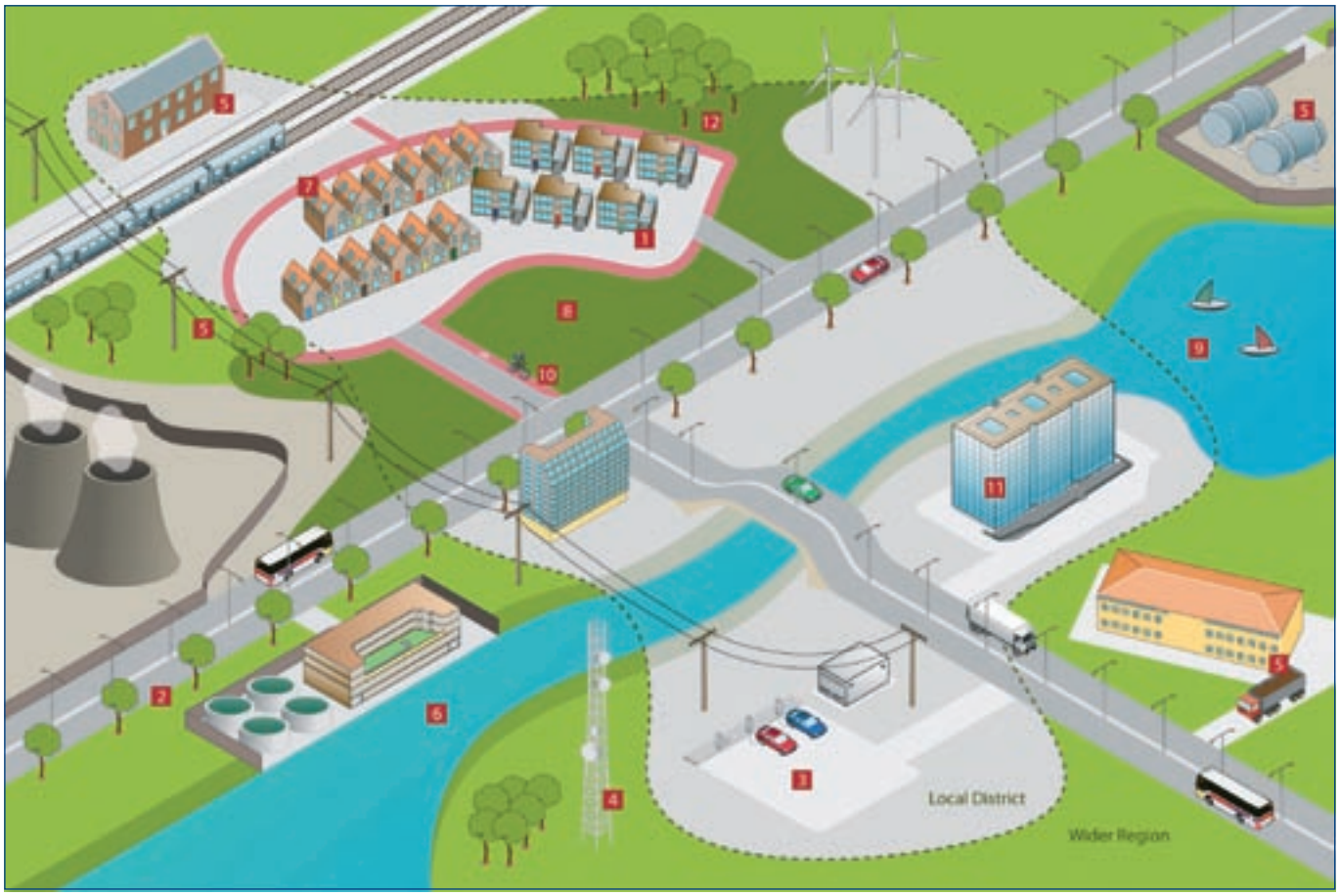
In this report we propose a broad definition of neighbourhood infrastructure, covering all buildings (domestic and non-domestic – including derelict buildings), roads, pedestrian routes and cycle paths, public space, green infrastructure (parks, gardens, playing fields, etc.), blue infrastructure (canals, ponds, rivers, streams, etc.), underused land, waste and recycling facilities and other utility-owned infrastructure; underground utilities of electricity, gas, water, Information and Communication Technology (including superfast broadband), waste and heat networks.

What do we mean by 'neighbourhood retrofit'

Neighbourhood infrastructure needs continual maintenance, repair and upgrading to avoid falling into disrepair which causes economic, environmental and social costs. By planning an integrated programme of infrastructure upgrades to deliver the framework of outcomes in Table 1, existing places can be transformed to be fit for the 21st century. The exact package of infrastructure upgrades would differ according to location, but common elements might include:

- Energy/water efficiency upgrades to buildings
- Increased local energy generation (both community-level and micro-generation)
- District heat generation and supply
- Improved sustainable transport routes across the neighbourhood (walking, cycling)
- Green infrastructure improvements including Sustainable Urban Drainage Systems (SUDs) to minimise surface water run-off and flooding, green roofs, spaces for food growing, street trees, etc.
- Improved systems for waste collection and processing at neighbourhood level
- Improved ICT links and superfast broadband access
- Charging points for electric vehicles.

Figure 1 **Schematic of integrated infrastructure upgrades** (Image: Buro Happold)



1. Coordinated supply of utility services to end consumers so there is a single point of contact; bulk purchasing of of utilities by end consumers to benefit from economies of scale.
2. Potential for coordinated planning of maintenance and replacement regimes between utilities and road authorities.
3. Electricity (from the grid or generated locally) can be use to power electric vehicles thereby reducing direct emissions associated with road transport. Vehicle to grid can be developed to balance intermittency
4. Telecoms infrastructure can be used to provide smart metering thereby assisting with demand management. Good telecoms increases the potential to work from home thereby reducing commuting. Telecoms infrastructure can support community initiatives and social enterprise.
5. Improved resource efficiency can be achieved by treating the waste output from one form of infrastructure as a useful input for another (industrial ecology). For example, waste heat from power stations used as useful heat; sewage and material waste can generate power; woodland waste used as a biofuel can generate heat; recycling turns waste into a useful resource and generates local employment.
6. Water ways can be used for transport of people or goods; water infrastructure links to flood protection and surface water management.
7. Buildings can provide space for microgeneration; retrofit can improve energy and water management through improved controls and efficiency; introduction of green roofs and rainwater harvesting can contribute to surface water management. Buildings require space to support waste recycling. In addition gardens can be used for composting and food growing.
8. Co-ordinated local planning can bring together planned adaptation works (such as surface water drainage) with works to reduce carbon emissions. It can also improve the functioning and quality of other infrastructure elements (such as transport improvements or green infrastructure strategies) to deliver projects with multiple outcomes.
9. Facilities owned by water companies can be used for leisure purposes eg. reservoirs used for sailing and fishing. They can also help with ecological enhancement.
10. Cycle and pedestrian routes can ensure key areas of interest (homes, workplaces, schools, shops etc) are well connected to public transport hubs.
11. Waste can be converted to useful resources through recycling; can also support local employment and income generation.
12. Composted food waste can be used for local food production and enhancement of green spaces.

Who benefits?

Recent years have seen much debate about sustainable neighbourhoods and how they can be created through the provision of sustainable infrastructure in new developments such as Millennium Communities, Carbon Challenge sites and eco-towns. Whilst it is likely that these schemes will provide invaluable lessons about sustainable living, we need to focus on how we can improve sustainability and quality of life in our existing places – especially given that at least 86 per cent of the buildings standing today will be with us in 2050.[33] Wherever it takes place, upgrading of existing infrastructure must have at its core the mitigation of, and adaptation to, climate change. However, such programmes can deliver a wide range of economic, environmental and social co-benefits, including better health, safer streets, more active citizens, better places for children to grow up, and reduced impact from extreme

weather events. Our existing places can be transformed into environments that make better use of resources, have stronger, more resilient and more cohesive communities, and competitive, robust low carbon economies.

The Commission is pleased there is growing understanding, in government and industry, of the need to address the energy efficiency of existing building stock. Whilst this is strongly welcomed, there is a need to look further than the energy efficiency of individual buildings if we are to transform our existing places into sustainable neighbourhoods fit for the 21st century.

As detailed in Annex B, there is a wealth of evidence showing that improvements to the physical infrastructure in a neighbourhood can deliver a long list of benefits. Our review of more than 70 research reports found these to be far-reaching; they ranged from carbon savings through energy efficiency building upgrades and reduced vehicular journeys, to increased value of existing assets and the creation of local jobs. Table 2 summarises the findings of the evidence reviewed. A more detailed breakdown of the benefits of each infrastructure element can also be found in Buro Happold's study in Annex D.

Table 2 Key benefits of infrastructure elements

Infrastructure element	Key benefits
Buildings (improved energy efficiency)	reducing carbon emissions making places more resilient to the impacts of climate change creating local jobs strengthening local economies making efficient use of resources improving the quality and value of existing places reducing fuel poverty improving health and reducing health inequalities reducing running costs.
Energy generation	reducing carbon emissions improving energy security through increasing generation of renewable energy creating local jobs strengthening local economies making efficient use of resources reducing fuel poverty.
Waste	reducing carbon emissions making efficient use of resources.
Transport (including streets and walking and cycling routes)	reducing carbon emissions making efficient use of resources improving the quality and value of existing places avoiding costs of poor infrastructure improving health and reducing health inequalities reducing crime/fear of crime improving community interaction.
Water efficiency and blue infrastructure	reducing carbon emissions making places more resilient to the impacts of climate change improving biodiversity making efficient use of resources.

Infrastructure element	Key benefits
Green Infrastructure	reducing carbon emissions improving energy security through increasing generation of renewable energy making places more resilient to the impacts of climate change improving biodiversity making efficient use of resources improving the quality and value of existing places avoiding costs of poor infrastructure improving health and reducing health inequalities improving community interaction.
Information Communications and Technology (ICT)	making efficient use of resources informing and enabling sustainable choices improving community interaction.

As Table 2 indicates, upgrading a single infrastructure element can have multiple benefits. This is especially true of energy efficiency, green infrastructure and transport upgrades. There is also potential to combine upgrades of more than one element (for example, delivery of both water- and energy-efficiency measures to households, or planning green infrastructure upgrades along with water recycling to alleviate flood risk).

How does this help Government deliver its objectives?

As well as improving quality of life for people in sustainable neighbourhoods, upgrades to existing infrastructure could help the Government meet a number of its key objectives and aspirations:

- **Climate change** – the UK has targets to reduce greenhouse gas (GHG) emissions by 80 per cent by 2050 and at least 34 per cent by 2020, compared to 1990 levels. Lord Stern estimated that the costs of not taking action on climate change could be equivalent to losing between 5 and 20 per cent of global GDP each year, now and forever.[34] As detailed in Annex B, through upgrades to our existing infrastructure and the way people use this, it is possible to achieve high levels of carbon emission reductions
- **Energy security** – to maintain supply, minimise costs and guard against geopolitical uncertainties as domestic and international supplies are depleted, the way we generate and distribute energy will need to be made more efficient and low-carbon. The Government has EU and national targets to promote renewable energy, and a range of supporting policies to achieve this relate to low-carbon energy production, energy efficiency and networks both at national level and on more local community scales
- **Fuel poverty** – despite a commitment by the previous Government to eliminate fuel poverty by 2016, it remains a substantial and growing problem. National Energy Action (NEA) estimates that 20 per cent of UK households were in fuel poverty in 2009.[35] The Institute for Public Policy Research (IPPR) reports that unaffordable fuel costs contributed to 36,000 deaths last year, a 49 per cent increase over 2007/08. It concluded that current schemes and initiatives are not sufficient to deal with the issue.[36] The number of people in fuel poverty is expected to rise dramatically if, as Ofgem predicts, domestic energy bills increase by as much as 60 per cent by 2020[37]
- **The economy** – the recession has had a major impact on the construction sector, with many proposals for new-build developments coming to a halt. With youth unemployment now at its highest level since records began,[38] retrofitting work can provide an excellent opportunity to safeguard and create jobs. If managed properly, there is great potential to train workers in the skills needed to make our places more sustainable and develop new business opportunities. An integrated approach is essential to enable local businesses to capitalise on this opportunity. The UK Low Carbon Transition Plan[39] sets out proposals for creating 200,000 jobs in renewable energy by 2015 and a million across the 'low-carbon' industry by 2020. From analysing existing studies, the Commission suggests that a green recovery package of up to £30 billion a year for three years could create at least 800,000 jobs[40]

- Health – whilst the health of the UK population has improved significantly over the past 150 years, this is not enjoyed equally across society. Despite the previous Government's pledge to reduce health inequalities by 10 per cent by 2010, people in the UK's most deprived areas still have a shorter life expectancy and experience higher levels of circulatory disease, cancer and obesity.[41] Obesity is an increasing problem, particularly among children. Between 1995 and 2007, its prevalence in two- to 10-year-olds increased from 10 to 15 per cent.[42] The previous Government vowed that the UK will become the first major country to reverse the rising tide of obesity and overweight in the population, by ensuring that all individuals are able to maintain a healthy weight. The aim was to reduce the proportion of overweight and obese children to 2000 levels by 2020. Evidence[43] shows that a sustainable built environment can have significant positive impacts on both health and health equity.

As Annex A shows, this work will help to deliver a range of EU, national and local government targets. These include Public Service Agreement (PSA) targets on climate change; securing a healthy, natural environment; delivering reliable and efficient transport networks; improving children's safety; improving long-term housing supply; tackling poverty (child and elderly); improving health and wellbeing; raising the productivity of the UK economy; maximising employment opportunities; and making communities safer and more cohesive. It will also help to deliver the legally binding target to eradicate fuel poverty.

Case study – **Heads of the Valleys Low Carbon Zones, Wales**

The Heads of the Valleys Low Carbon Programme is a regeneration strategy which has developed a 'low carbon zone' model that is now being replicated across Wales to deliver jobs through upgrading existing housing.

The programme has been developed in partnership between five local authorities (Rhondda Cyon Taf, Merthyr Tydfil, Caerphilly, Blaenau-Gwent and Torfaen) and is delivering large-scale home energy assessment, energy efficiency improvements, and renewable energy technologies through a rolling programme of neighbourhood-scale, area-based delivery.

To date the programme has delivered over 1,500 micro-generation renewable energy systems such as solar PV and solar hot water systems to social housing schemes. External wall insulation has also been installed to suitable properties, and a rolling programme of cavity and loft insulation is underway. Additionally the programme is gaining community integration through a project which aims to improve the energy efficiency of local rugby clubs and sports facilities.

Funding has been provided for retrofitting social housing. However, many private sector residents have shown an interest in participating – especially given the financial savings (costs are estimated to be 20-30 per cent lower when work is undertaken as part of the scheme) and improvement in visual quality. The social housing providers managing the delivery are looking into the possibility of providing loans to private households, to cover the upfront costs of these measures.

The Heads of the Valleys model is being replicated across Strategic Regeneration Areas in Wales, through the 'Arbed' (Welsh for 'to save') scheme, which was launched in May. The scheme has a total value of £30m and will target approximately 6,000 across Wales. Specifically the scheme aims to benefit people in fuel poverty through insulation measures and renewable energy.

This guaranteed demand encouraged British Gas to open the UK's first dedicated Green Skills Training Centre in the area. The centre is intended to train more than 1,300 people each year. This will include specialist help to enable local long-term unemployed people find work in the green economy. British Gas will also use the centre to train its own staff in renewable technologies.

Case study – **Creating jobs through energy efficiency works in Kirklees**

Kirklees Council's environment department has developed a number of projects largely aimed at improving the energy efficiency of the existing building stock. A key project has been the Kirklees Council Warm Zone. This council initiative recently won the Ashden Award for the best local authority sustainable energy scheme in the UK.

It is the largest local authority home insulation scheme in the UK and offers free loft and cavity wall insulation to every suitable household in Kirklees, irrespective of household income. It aims to improve the thermal comfort and energy efficiency of every suitable home in Kirklees in order to tackle fuel poverty and reduce district carbon emissions.

Kirklees Council views this programme of works as the most effective regeneration initiative possible for the area. This is because of both the savings on energy bills and the creation of local employment. Kirklees Warm Zone has estimated that for every £1 invested through the scheme £5 is returned into the local economy. This gives a total economic impact of over £80 million from a combination of direct funding, job creation, household fuel savings and increased benefits uptake.

The works are estimated to have directly created over 100 jobs per year for three years, and a further 29 indirectly. In addition Miller Pattison (the UK's leading installer of energy conservation systems) has built a local depot and training centre nearby. Over 200 fitters have been trained so far.

The council has worked in conjunction with a local college to support the training of local people to install solar thermal systems. The Yorkshire and Humber Microgeneration Partnership has been set up by the local Energy Efficiency Advice Centre to lobby for training, joint procurement, etc. Air source heat pumps being installed are manufactured locally. It is estimated that this work will help to replace the gap in employment opportunities left by the Decent Homes programme.

Other Kirklees Council projects that address carbon reduction and domestic energy efficiency include:

- **Sun cities** – an EC-funded project, running 2000-05, installed 350 KWp solar photovoltaic (PV) systems and 63 solar thermal units in a programme involving 518 households. Upon completion in 2005, Kirklees had installed almost five per cent of the UK's total solar electricity
- **Simply Solar** – provided a top-up grant to the national Clear Skies grant to enable households to install solar thermal. This fund came to an end in March 2004
- **REcharge** – a pilot scheme to provide private-sector households with an interest free loan of up to £10,000 to meet the upfront costs of renewable energy installations, such as PV.

Can these outcomes be achieved in every neighbourhood retrofit programme?

Figure 1 illustrates some of the potential infrastructure upgrades that could deliver the benefits listed above. It is unlikely that all neighbourhoods could upgrade all the elements listed, as these will differ from place to place according to local priorities, needs, aspirations, opportunities and barriers. In dense urban areas, a community energy and heat network delivered alongside improvements to public realm and cycling routes might deliver the most effective carbon and cost savings. In others, there may be a focus on community renewables, alongside improvements to the performance of the building fabric and sustainable urban drainage systems (SUDS).

The SDC commissioned Buro Happold to analyse and review three real locations (Blacon, Southville and Armley) to highlight the potential infrastructure upgrades for neighbourhoods with different housing densities, land uses and building types. As detailed in Annex D, the review found that measures would depend on the opportunities available. Combined Heat and Power (CHP) could be

delivered as part of the redevelopment of a mixed-use block in Blacon, to tower blocks in Southville, or using a sports and leisure centre as an anchor load in Armley. While there were opportunities for local food production and improving biodiversity in Blacon, limited public green space in Southville and Armley meant the key opportunities were semi-public land around the tower block, private gardens, railway sidings and nearby parkland.

The study also highlighted the fact that the way in which upgrades were delivered would have an impact on their effectiveness. Providing guidance and support on behaviour change can increase the effectiveness of infrastructure upgrades, particularly where this is achieved through existing networks such as schools. For example, use of new cycle routes can be encouraged through cycle training, repair and travel planning (see case study below).

Case study – **Combining sustainable transport infrastructure upgrades with softer measures**

Bike It is one of the UK's most successful projects in bringing about travel behaviour change among young people. In its 2009 annual review of the project, Sustrans found that the number of children involved in the project who cycled to school every day had doubled from four per cent to eight per cent. More encouragingly, the number who never cycled to school dropped from 75 per cent to 55 per cent.

The review found that the scheme had greatest impact where behaviour change work was coupled with improvements to the physical infrastructure. RJ Mitchell School in Havering provided new cycle storage, improved links through a local park and other Sustrans networks, and a priority system for walkers and cyclists arriving at the school. Pupils who took up walking and cycling were praised by teachers and peers, and rewarded. Other initiatives included regular 'Bike to School Days' and a 'Bikeability' training scheme. Following these improvements, the number of pupils cycling once or more per week increased from 2 per cent to 51 per cent. Across all Bike It schools, most of which focus on behaviour change only, the number went from 10 per cent to just 18 per cent.

In Bristol, too, Sustrans found that combining hard and soft measures was an effective way to change travel behaviour. A TravelSmart® Individualised Travel Marketing (ITM) programme was conducted in the Bishopsworth and Hartcliffe areas from 2002-04, as part of the city's VIVALDI integrated transport project, supported by EC CIVITAS. TravelSmart programmes give people tailor-made information and the support they need to walk, cycle and use public transport more often. The initiative sought to examine the effectiveness of ITM as a tool for changing behaviour among a local population.

Analysis showed that both TravelSmart campaigns resulted in substantial increases in walking and public transport trips, leading to relative reductions in car trips of nine per cent in Bishopsworth and 12 per cent in Hartcliffe. These behaviour changes, measured across the total target population in each area, led to reductions in car distances travelled of eight per cent in Bishopsworth, and 11 per cent in Hartcliffe (a net saving of 600,000 and 900,000 car kilometres per year respectively).

Improvements were also made to the bus corridor in Hartcliffe during this period. The effects of both interventions were measured by travel surveys conducted five to six months after implementation. The bus service improvements resulted in an 11 per cent increase in public transport trips at the expense of walking, with a small increase in car use. However, TravelSmart offset this decline in walking and doubled the increase in public transport use to produce a 10 per cent reduction in car trips overall.

Chapter 1 summary

- Upgrades to existing infrastructure elements can deliver a wide range of benefits. These include one or more of the following:
  - carbon emission reductions
  - adaptation to make places more resilient to the impacts of climate change
  - reduction in fuel poverty
  - improved energy security
  - making more efficient use of natural resources
  - improved biodiversity
  - improved health
  - creation of local jobs
  - stronger local economies
  - improved quality and value of existing places
  - reduced crime/fear of crime
  - improved community interaction.
- There is potential for these works to transform our existing neighbourhoods into places which offer better quality of life, make better use of resources, are more resilient to climate change and have strong low-carbon economies and improve civic pride
- As well as improving quality of life for residents, work to upgrade infrastructure elements will help to deliver a range of Government objectives
- A neighbourhood retrofit programme must be developed for a locality based upon its needs, aspirations, opportunities and constraints. A common framework of outcomes (as detailed in Table 1) can provide a useful starting point to ensure that all potential benefits are considered and opportunities are taken to maximise linkages.

2 Why an integrated, area-based approach works better

Chapter 2 examines:

- Support for an area-based approach
- The benefits of an area-based approach
- The benefits of an integrated approach
- How to enable integration through an area-based approach
- What we can learn from past area-based programmes
- The most appropriate scale for delivering neighbourhood retrofit.

Many infrastructure upgrades are planned and delivered as standalone projects, with limited integration between different infrastructure elements, or their providers. This is starting to change as the benefits from delivering area-based schemes are more widely understood.

Support for area-based approaches

Over the past couple of years, there has been particular interest in the potential to retrofit existing buildings on an area basis to deliver carbon reductions. This interest comes from those within Government, its advisors and other expert bodies.[44]

- In its 2009 annual update[45] the **Committee on Climate Change** noted that targets for reducing emissions from buildings were unlikely to be achieved under the existing policy framework. The committee recommended that, to achieve these targets, a neighbourhood approach should be adopted, led by government and aimed at transforming social attitudes
- **EFRA's Energy Efficiency and Fuel Poverty Select Committee**[46] cited calls from a range of bodies – including the Local Government Association (LGA), the Environmental Change Institute and energy supply companies (including Centrica) for an area-based programme to deliver energy efficiency measures. The committee called for the Department for Energy and Climate Change (DECC) to 'undertake an assessment within the next six months of the costs and benefits of realigning existing programmes into a comprehensive, area-based programme, examining the potential benefits to be had from more efficient targeting and delivery, with improved customer awareness and uptake'
- The **Government Office for Science**'s report into Sustainable Energy Management and the Built Environment[47] provided an independent review of how the UK built environment could help manage, over the next five decades, the transition to sustainable and secure low carbon energy systems. The report noted that area-based approaches may offer advantages in terms of economies of scale, building capacity in local retrofitting firms and making the benefits of retrofitting visible [through enhancements to building quality]. The report recommended that local government create area-based schemes which promote community involvement in upgrades, and share the costs of investment
- In their comprehensive retrofit scheme for energy efficiency and low carbon generation **National Energy Action (NEA)** [48] called for area-based programmes on a street by street basis. This approach was also recommended by the **LGA** in their manifesto for building low carbon communities.[49] Both organisations believe this approach will reduce costs and galvanise community action.

There has also been growing interest in the potential for neighbourhood-scale retrofit to deliver wider sustainability benefits and improve quality of place through an integrated approach. For example:

- The UK Green Building Council (UKGBC)'s report into Sustainable Community Infrastructure found that 'conceiving and delivering infrastructure at a neighbourhood scale as an integrated package represents a very significant opportunity to deliver environmental, social and economic objectives'[50]
- Last year, CABE called for the Department for Communities and Local Government (CLG) and DECC to create a sustainable neighbourhoods scheme. They argued that taking a neighbourhood approach to climate change would save time and money, stimulate renewable energy markets, create jobs and engage communities as well as improving quality of place.[51]

The finance community, too, has called for neighbourhood 'opt-out' schemes to upgrade the energy efficiency of buildings. Under this proposal, local authorities would enrol people in bulk purchase schemes to help them improve the energy efficiency of their buildings. People would be free to opt out of the scheme; however, it would enable them to have the work undertaken, often at a discounted cost, with no effort other than letting contractors into their home.[52] The finance community argues that this would reduce the high transaction costs of marketing and disaggregated solutions, improve take-up rates, and deliver economies of scale, making it one of the keys to unlocking private sector investment in energy efficiency.

What are the benefits of an area-based approach?

From our literature review and case study research, we concluded that an effective area-based approach will:

- **Encourage sustainable behaviour change** – communities are able to create new social norms. Provision of advice through trusted sources, peer-to-peer learning and peer pressure are also more likely to change long-term behaviour
- **Increase uptake of works** – area-based schemes have greater potential for engagement through intensive marketing, which creates heightened community awareness. Recommendation by trusted sources and peers can also increase uptake
- **Reduce costs** – economies of scale from bulk purchase of materials and shared external costs and information will bring savings compared to works on individual homes. These are estimated to be in the region of 20 to 30 per cent. Reduced delivery costs (travel, parking, marketing, etc.) and increased uptake of measures will further reduce costs for those delivering the scheme (particularly for programmes targeting private sector or mixed tenure properties)
- **Build capacity in local firms and create local jobs** – coordinated delivery of area-based programmes can support local businesses, which can also benefit from offering additional services (kitchen refit or garden landscaping) as part of the works
- **Make the benefits of retrofit visible** – coordinated improvements can improve streetscape, particularly where works extend beyond buildings to incorporate improvements to public realm and green infrastructure
- **Reach target groups** – area-based programmes have proved more effective than means-tested programmes in targeting those in fuel poverty
- **Overcome barriers for householders** – delivery through a coordinated programme can remove or minimise many of the 'hassle' factors by arranging works, finding suppliers and developing shared solutions for issues such as loft clearance and the potential need to move out while work is undertaken
- **Improve the viability and effectiveness of some technologies** – working at scale will enable the use of technologies which are not viable for individual homes. These include community-scale heat and energy networks (which have significant potential to reduce emissions from the built environment) and local renewable energy
- **Provide opportunities to integrate delivery of different infrastructure upgrades** – integrating upgrades of different elements can minimise costs and disruption of works, maximise use (and re-use) of existing resources and engage and enable communities.

Many of these benefits draw upon case study and anecdotal evidence, and we recommend that Government improves the evidence base on the benefits of area-based delivery of housing retrofit programmes, compared to individual home retrofits. This should look at costs of work and costs of delivery. This could be achieved through an extension of the Technology Strategy Board's *Retrofit for the Future* competition to cover retrofit at different scales. It should also draw on the experience of large area-based programmes, such as RE:NEW and Arbed.

Case Study – **Improving quality of place at Barkantine**

Images above show before and after pictures of work to deliver energy efficiency measures at the Barkantine Estate on the Isle of Dogs, east London. The estate was improved through both external wall cladding and introduction of a Combined Heat and Power system.

Case study – **Improving quality of place and life at Daneville… as well as carbon reduction**

An award-winning scheme to upgrade 600 homes on the Daneville estate in Liverpool has delivered a range of social, economic and environmental benefits to the area and transformed the estate into a desirable location.

In 2008, Daneville was a run-down estate with poor-quality housing and around 60 long-term voids. Some of these had been empty for 30 years (the estate had total void period in excess of 1,000 years) and were in such a bad state of repair that they were earmarked for demolition. Aware of neighbouring estates which had seen extensive demolition programmes, residents were keen for properties to be bought back into use. Liverpool Mutual Homes (LMH), the registered social landlord that took control of the homes in 2008, therefore began a large-scale £30 million refurbishment to upgrade their homes.

Objectives of the scheme were to create a sustainable neighbourhood through increased security and wellbeing; make the neighbourhood desirable; reduce fuel poverty; tackle the blight of 70 empty properties; and improve the carbon footprint of the homes.

Work has been undertaken to apply an insulated render to the outside of properties (which cuts noise pollution as well as improving thermal comfort), provide re-roofing and internal insulation, and install B-rated windows and doors, A-rated boilers, dual-flush cisterns, and kitchen and bathroom replacements.

The scheme has achieved:

- Carbon emission reductions – these are estimated at 3,500 tonnes per year across the estate, which equates to reductions of around 70 per cent per property
- Reduced fuel bills – savings are estimated to be £600 per household, with costs reduced from £836 to £236 per year. This is vital, given the elderly population on the estate
- Creation of local jobs – LMH estimates that 300 jobs were created in the local area, within firms of contractors and suppliers
- Improved civic pride in the area – all properties are occupied, and there is a waiting list of people to move into the estate. According to Regeneration and Renewal, 'People are now proud to get off at the Daneville bus stop'.[53]

Case study – **Integrating multiple benefits through the Greenhouses Project**

Groundwork Creswell's 'Greenhouses' project derived economic, environmental and social benefits from renovating derelict houses in coalfield areas. The project had a strong focus on providing vocational training to the unemployed, but it used the opportunity to reintroduce houses to the market which are models of energy efficiency.

The project was undertaken by Groundwork Trust's Transitional Labour Market (TLM) programme with funding from the Energy Saving Trust's Innovation Programme, the Coalfields Regeneration Trust, the Learning and Skills Council, Job Centre Plus and the European Social Fund. It was delivered in partnership with local authorities, manufacturers and housing associations in areas of Nottinghamshire, Derbyshire and South Yorkshire, highlighting an excellent example of people and groups working together for multiple, common sustainability goals.

Groundwork trained and employed local long-term and young unemployed in the redesign and rebuilding work on the vacant houses, providing skills and experience to boost employment chances. The appearance and comfort of the homes were increased alongside energy efficiency improvements which far exceed building regulations. Sustainable building materials were used and a wide range of energy-saving devices and renewable energy measures were installed, including insulation, solar hot water and rain harvesting systems.

The completion of the first 'Greenhouses' resulted in the following key outcomes:

- Carbon savings of 13 tonnes per annum from the completion of the first seven properties (two in Nottinghamshire in 2006 and five in Derbyshire in 2008, all now occupied)
- Provision of training to 46 TLM trainees (3,000 training days)
- Provision of five full-time jobs on the site team.

Case study – **Enabling private households to benefit from social housing schemes in Cardiff**

The Cardiff Partnering scheme retrofitted approximately 100 social and private sector homes and five blocks of flats with energy efficiency upgrades. The partnership found that the cost of installing measures as part of a neighbourhood-based scheme would be discounted by at least 20 per cent compared with the costs of individual installation.

These economies of scale were achieved through:

- quicker delivery, as some of the work required for individual upgrades (such as detailing steps and staggers or cutting of boards or beads in the render) is eliminated
- ability to provide roof extensions (where needed) for a whole terrace rather than for each individual building
- the need for less preliminary work meant speed of delivery could be improved
- ability to bulk buy materials (especially insulation).

The process was not easy and took much up-front planning and a proactive design team looking at ways of reducing the costs and time on site.

The local authority funded its own stock, and eligible owners were offered a grant from the Private Sector Housing Grants section, which was means-tested. Owners who were not eligible for grant aid were offered the opportunity to buy in at preferential rates, using the economies of scale that the scheme offered.

The scheme achieved a 20-25 per cent take-up rate of measures from those private sector households that were not eligible for grants. Residents became interested after seeing the improved external appearance of properties during the first phase of works, and subsequently speaking to residents about increased warmth. Cardiff Council followed this up with talks about improved running costs, maintenance and saleability of property after the work was completed. They also contacted the local building society to provide loans for the improvements. This approach – of the social housing programme being offered to private sector homes – is being adopted by the Arbed scheme in Wales, where registered social landlords are offering loans to cover the cost of works.

Benefits of an integrated approach

The benefits of an area-based approach are highly likely to increase further through the integration of upgrades to infrastructure elements beyond buildings. Benefits include further reduction of costs and disruption; maximising use (and re-use) of existing resources; and galvanising communities into action through offering a wider range of infrastructure upgrades.

Many of these benefits draw upon case study and anecdotal evidence, and we recommend that Government improves the evidence base on the benefits of integrating delivery of more than one infrastructure upgrade to a neighbourhood (for example, water plus energy plus adaptation measures). This should review monetised and non-monetised costs, particularly those around building social capital and acceptance for wider retrofit projects.

Reducing costs and disruption of works

In its report on Sustainable Community Infrastructure, UKGBC notes that 'practical and cost-efficient delivery of new or radically restructured infrastructure is most likely to be financially and practically viable where requirements can be coordinated in such a way that multi utility corridors and work schedules are combined in a common delivery arrangement. This minimises disruption for residents and businesses both during construction and subsequent maintenance'.[54]

Many of the UK's 'Warm Zones' (created by more than 50 local authorities in partnership with energy providers and others) have combined an energy efficiency programme with delivery of public services such as fire safety, crime prevention, income maximisation and water efficiency. From these experiences, NEA concludes that there is potential to reduce and spread costs of delivery through integrated programmes.[55]

A good example of how duplication of effort and resources can be avoided is the separate efforts currently under development to improve the water efficiency and the energy efficiency of homes. Hot water use accounts for 23 per cent of carbon emissions in existing homes.[56] Even though water efficiency measures can reduce carbon emissions by 8 to 12 per cent,[57] such measures are rarely included in energy efficiency retrofits – despite some water-efficiency products being included in CERT. This is mainly due to the separate regulatory requirements of water and energy companies, which make it difficult to join up delivery to achieve separate reduction targets. Water companies are now spending time and resources developing delivery structures, as they do not have the resources and expertise acquired by energy companies. It would be more effective for water companies to piggyback on existing structures than to replicate existing ones, especially when take-up rates of water-only efficiency programmes are low (around 10 per cent) compared with programmes in which water and energy are combined (where the rate is much higher).[58]

Maximising use (and re-use) of existing resources

As detailed in the Buro Happold study (see Annex D), taking an integrated, area-based approach will help identify existing resource flows and see how these can be improved to be more cost-effective and sustainable. Key opportunities exist where renewable resources can be harnessed, and waste products from one activity can be used as an input for another:

- waste heat from a power station can be used to supply heat to buildings
- sewage and material heat can be used to generate power, heat and fertiliser
- woodland waste and woodchip waste from industry can be used to generate heat
- household/municipal waste can be used to produce biogas to fuel local public transport or buildings
- material waste can be re-used or recycled to provide useful materials
- food waste can be used for composting to promote food growing
- waste water can be used to irrigate gardens and planted areas.

The potential for greater synergies between infrastructure elements to achieve a more efficient supply and usage of local resources, was highlighted in the recent UKGBC study on Sustainable Community Infrastructure.[59] Achieving

Case study – **Elephant and Castle MUSCo: an integrated services delivery vehicle**

Southwark Council procured partners to form a Multi Utility Services Company (MUSCo) to integrate the delivery of sustainable utilities infrastructure across 30 hectares of mixed-use development in Elephant and Castle and Aylesbury development areas, and surrounding estates in south London.

The MUSCo will plan, finance and operate the infrastructure required to deliver carbon-neutral heating, cooling, electricity, non-potable water and data connectivity services to the area, with the aims of reducing carbon emissions, improving water efficiency, and providing open-access ICT networks.

The MUSCo comprises Dalkia, Veolia Water and Independent Fibre Networks Limited. It will work with Southwark Council and the master developer for the Elephant and Castle. The MUSCo takes on all commercial risk for the development, devising a model of investment and taking ownership of the commercial vehicle. The Council will recover the land value of the sites in its ownership which are required by the MUSCO for energy centres and other operations.

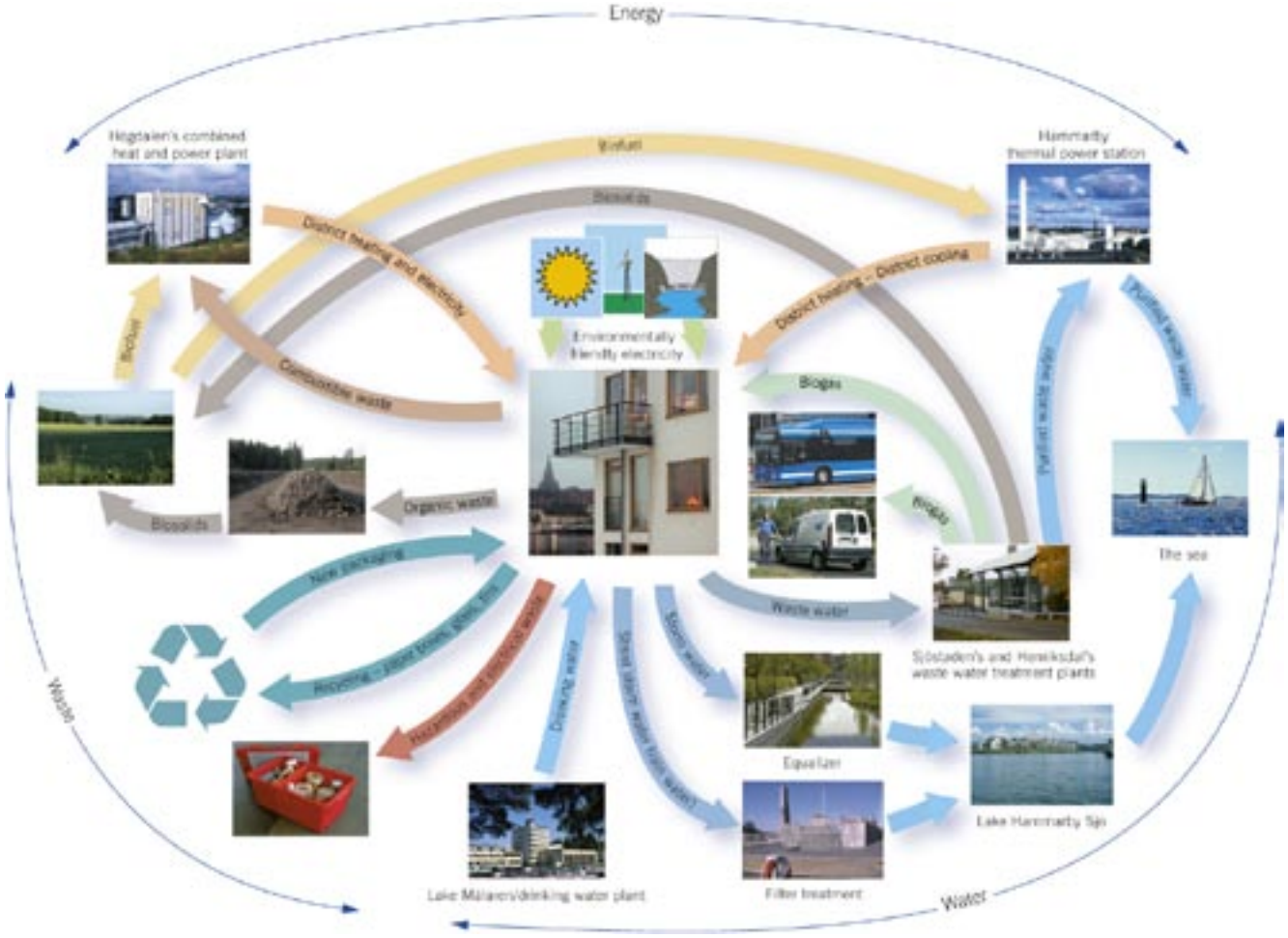
Having a single body responsible for a range of elements can provide good opportunities to integrate services in new and innovative ways. It can also minimise capital investment, reduce disruption by utilising shared ducting, and limit the need for multiple duplicate networks. In delivering and managing the infrastructure upgrades together, the MUSCo partners expect to save on the capital investment required for infrastructure deployment and to be able to offer a saving for developers who would otherwise need to interact with a number of different utilities providers. Agreements and co-ordination with planners, housing associations, the Highways Agency and other public actors ensure further savings on cost and efficiency.

The MUSCo will deliver the following services:

- replacing the existing community heating network with a more efficient common district heating/ CHP network, for which import/export agreements have been made with energy supplier EDF, as the CHP plants will export to the grid with a preference for providing the new electrical infrastructure required for development areas
- dual water services to all buildings within the core development area, so that non-potable water is delivered to toilet cisterns and wash facilities, reducing the requirement for mains supply of (potable) water by 30 per cent with the intention of seeking an inset appointment for all water services
- an open-access optical distribution network, charging service providers for access, encouraging entry from multiple providers and maintaining low costs. External developers will install fibres within the buildings themselves.

these, it noted, would make a key contribution towards meeting national and international carbon reduction targets. The approach, heading towards a closed loop system, has been adopted in several new developments. In Hammarby Sjostad in Stockholm, Sweden, the new neighbourhoods have been linked to existing city-wide infrastructure to maximise resource efficiency. Taking an integrated, area-based approach to planning and delivering neighbourhood infrastructure upgrades allows a step change in resource efficiency towards zero carbon, zero waste, water-neutral communities. This cannot be achieved by taking a piecemeal approach.

Integrated design is about more than making resources work more efficiently. It must also be about achieving better outcomes. For example, if there is a need to dig up roads to re-lay pipes, consideration should be given to refitting the infrastructure elements both below and above ground. It is not just about coordinating upgrades to underground services, but also looking creatively at how those above ground could be reconfigured. As a minimum, consideration should be given to re-laying permeable paving to help lower the risk of flooding. There is also potential to introduce new cycle lanes, create priority lanes for public transport or install traffic-calming measures. Coordinating underground services (by grouping and routing under streets) can improve access for maintenance, provide opportunities for new ICT infrastructure and minimise utility disruption from improvements such as planting street trees.



The Hammarby Model (above) integrates energy, water and waste management in a closed loop system. This urban extension has its own recycling model and a local sewage treatment plant. Renewable fuels are used to generate energy in the district heating plant. By the time the development is completed, it is estimated that residents will produce 50 per cent of all the energy they need, via district-wide systems which recover energy from liquid and solid wastes. Combustible waste is re-used as heat. The remaining heat demand is met by extracting waste heat from the wastewater treatment plant. Waste collection costs are reduced through use of a vacuum-based underground waste collection system.

Buro Happold's study highlighted the importance of understanding these interdependencies during the design process, thereby maximising opportunities. For example, recycling collection points need to be planned to make it 'easy' for people to recycle. This may in turn have implications for pedestrian routes linking individual dwellings to the collection points, requiring them to be secure, well-lit and well-maintained. The enhancement of pedestrian routes needs to be coordinated with green space upkeep and other non-vehicle transport routes, such as cycle ways, to ensure appropriate links with other community centres.

Making existing resources work better to achieve better outcomes lies at the heart of the Total Place approach being piloted by CLG and the Treasury. These pilots are reviewing the delivery of public services in an area, looking at themes such as children's health and wellbeing, services for older people, and alcohol and drug abuse. Service providers are working together to understand how delivery can be made more efficient while improving outcomes. Evidence from the Total Place[60] review has found that outcomes can be integrated effectively if works are planned and delivered at local scale, through area-based programmes. It also finds that significant financial savings could be achieved

from these approaches.[61] The review of lessons learnt from Total Place[62] concludes that examining multiple causes and connectivities could help to unlock solutions to some of the 'wicked issues' – complex problems that require different public services to act together. Delivery of neighbourhood retrofit projects would benefit from a similar integrated approach.

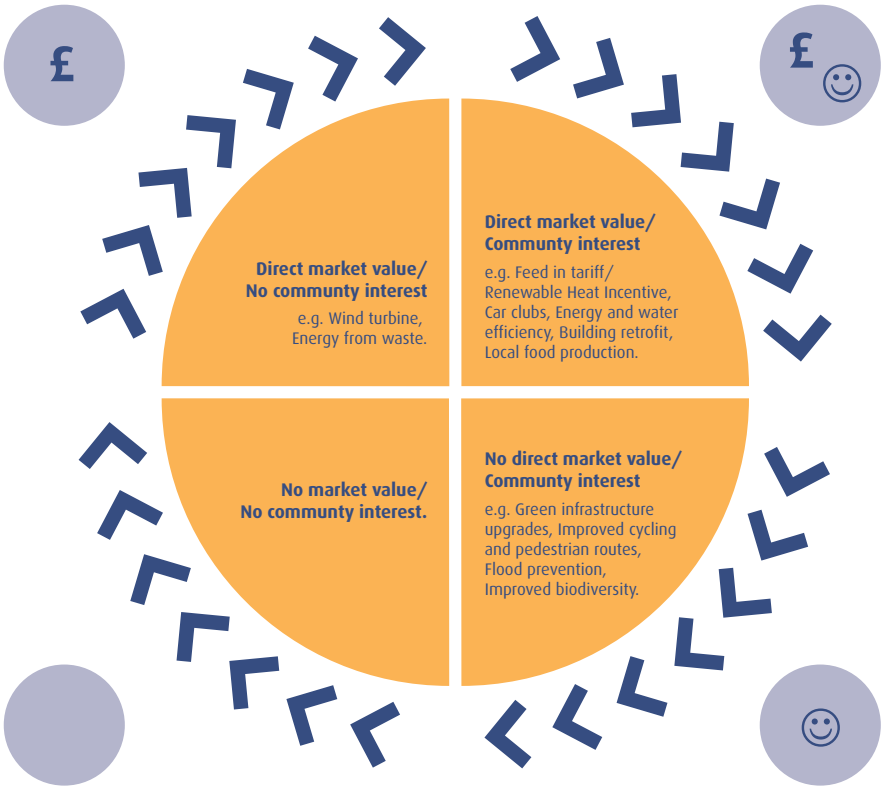
Galvanise communities into action

We identified a number of active community groups with climate change as their main driver. However, a strong and consistent message from our case study research and Community Task Group was that it is far more effective to engage communities through a discussion about improving their quality of life and their neighbourhood, than it is by talking about carbon reduction and climate change.

Taking a holistic approach to an area allows communities to address issues of immediate concern to them. These might include addressing traffic and nuisance parking, reducing high levels of crime and unemployment, or improving play opportunities. It also helps to create a critical mass, making it easier for people to engage and promoting the idea of upgrades as being socially acceptable. This echoes previous SDC research which found that leading with a positive story about how a low carbon, climate change-adapted economy might look is an effective way to engage communities – especially if it made locally relevant.[63]

Target issues will vary between neighbourhoods and individuals so it is important to identify these 'routes in' at the outset of any engagement process. The UKGBC report on Sustainable Community Infrastructure[64] found there is strong consumer interest in water efficiency measures and using waste as a source of energy. From our discussions with experts, and from wider research, it is clear there is strong public support for upgrading green infrastructure (food growing has proved popular in recent years), reducing traffic speeds in residential areas, and initiatives that improve quality of place. From this starting point, it is easier to engage communities in wider, infrastructure upgrades that generate less public interest or support. It can also provide a forum for discussion of those issues that have historically been contentious but provide potential revenue streams, such as wind turbines or waste infrastructure (as illustrated in figure 2).

Figure 2 **Engaging communities and generating income through an integrated approach**



Recommendation

Government should support an integrated, area-based approach to upgrading local infrastructure as a cost effective way of achieving maximum sustainable outcomes in an area.

This would be supported by: ensuring existing and new polices and delivery programmes (such as the new obligations on energy companies post-2012) are flexible in operation to support integrated delivery; improving the evidence base to assess the economic, environmental and social benefits of this approach; and developing pilot projects which test integrated delivery.

Case study – **Using food growing to engage communities in Incredible Edible Todmorden**

Incredible Edible Todmorden (IET) is a local food growing initiative in West Yorkshire, started by two residents who wanted to do something to bring the community together and make people think about living in a more sustainable way.

They chose food growing because it is something that connects everybody. Their philosophy is 'If you can eat, you're in'. Local food is therefore seen as an effective starting point for greater engagement on the bigger issues of climate change and health.

The aim of the project is to make the town self-sufficient in food production by 2018. In its first two years, IET has achieved:

- Vegetable plots, herb gardens and orchards planted on a variety of public and private land (sometimes with permission, sometimes without). These include six 'guerilla propaganda gardens' where anyone can plant or pick food
- Britain's first community vegetable beds at a railway station, in the car park of Northern Rail's Todmorden station
- Provision of a modelling tool to enable streets to see how they might look after an 'incredible edible makeover'

The project has brought together a wide range of groups in Todmorden. More than 60 people attended the first meeting and interest has expanded since. Every school in the town is involved in the initiative, along with the fire station, health centre, an old people's home, the main RSL and local businesses. The church is even using the graveyards as a food growing area. Despite the guerrilla tactics employed by the community, the council has been very supportive of the scheme. In response, it has developed the UK's first community growing licence which will allow community groups to use council-owned land for growing their own produce.

The project has led to the development of a social enterprise in association with the local school.

This Aquaponics enterprise will produce fish, vegetables and fruit for the school and wider community. It is expected the project will employ two people. IET is also working with local traders to promote local food, including the first local organic cheese, and they have established a network of 40 local people keeping chickens for the sale of eggs. In addition there is a team of local people employed through the Future Jobs Fund, all of whom have jobs relating to IET from making raised beds to learning which vegetables grow best where.

Since the project began two years ago, IET has had phenomenal success not only in Todmorden but in inspiring and advising groups nationwide. 'Local food tourists' have been spotted in the area and the IET website receives around 5,000 hits a week. New 'incredible edibles' are looking to spring up in Huddersfield, Wigan, York, Ludlow and Accrington and there are IET supporters across the globe.

The Todmorden initiative was also selected as one of the SDC's Breakthrough projects (see www.sd-commission.org.uk/pages/breakthroughs.html).

IET's Mary Clear believes it is only a matter of time before everyone in Todmorden and beyond will want to grow their own. If nothing else, she says, it reminds people that we are all in this together: 'It doesn't matter what culture you're from or what age you are; there's something about being outside and growing and eating that touches everybody... It's a brilliant way to bring people together!'

Councillor Ian Cooper, Calderdale Council's Cabinet Member for Community Services, said 'Incredible Edible Todmorden is an example to communities across the country of how they can really make a difference by working together, and planting small seeds that grow into big changes.'

Case study – **Achieving organisational goals through joint working in Toronto**

The Toronto and Region Conservation Authority (TRCA) is one of 36 conservation authorities in Ontario, Canada, a government agency set up to conserve, manage and restore natural resources on a watershed basis. Recent TRCA watershed plans and future scenario modelling clearly identified the need for improved sustainability in older communities to achieve their water-management and biodiversity objectives.

However, when TRCA tried to engage property owners they found them to be more or less willing to implement neighbourhood level environmental actions, depending on how closely the actions aligned with other, more immediate interests – such as jobs and the quality of parks. From ongoing work with municipal partners TRCA had found it beneficial to coordinate implementation planning around local infrastructure renewal and other socio-economic priorities. For these reasons, the TRCA has initiated a partnership-based approach to improved sustainability in older neighbourhoods where coordinated delivery of economic, environmental and social improvements can support development of a holistic environmental improvement action plan.

TRCA is currently piloting three Sustainable Neighbourhood Retrofit Action Plans (SNAPs) to help communities achieve sustainable, existing places through infrastructure upgrades and behavioural change. These all integrate climate change mitigation and adaptation strategies (including watershed conservation) with other cultural, economic, environmental and social objectives, driven by relevant community aspirations and needs. For example, one pilot has a key focus on poverty, unemployment, food security and safety while another is addressing the stewardship of local natural heritage.

Although they vary according to community needs, the SNAP pilots are following a three stage process:

Stage 1: **Neighbourhood characterisation** – understanding the community from a technical and behavioural perspective. This looks at community objectives, work underway and planned and technical feasibility

Stage 2: **Evaluation of alternatives** – using focus groups and demonstration projects to engage the community in evaluating a number of retrofit scenarios

Stage 3: **Action Plan and Business Case** – development of the SNAP, with community engagement in the final evaluation. Identification of visible quick-win projects to demonstrate progress to communities.

The TRCA team stresses the importance of working with groups and organisations that already exist. From its experiences to date, it has found the SNAP to be an effective tool for bringing together groups, programmes of work and funding more effectively. It also helps to reduce duplication in effort, especially with regard to community groups.

As part of the project, TRCA has provided support, technical advice and capacity building for the pilots. This has included training community groups to undertake basic energy audits for homes in the neighbourhood.

Case study – **Working with community interests at Shoreditch Trust**

Shoreditch Trust is a charitable regeneration organisation in north London. Its approach to regeneration is based on recognising the inherent value of local communities and developing strong partnerships that deliver long-term social, economic and environmental benefits. The Trust was established as part of the *New Deal for Communities* (NDC) succession strategy.

Although the Trust has delivered a number of infrastructure upgrades which provide environmental benefits, the focus when engaging with communities has been to identify and address their immediate problems and deliver upgrades which address these too. For example:

- Shoreditch Trust helped engage residents in a feasibility study at Cranston Estate, where there was a need to replace the failing district heating system. Residents were involved from the start in deciding what the replacement system should be and considering the pros and cons of individual units over a new communal system. Consideration was given to how well the options would meet their needs (of affordable, reliable and controllable heating). The Trust also provided advice to residents on climate change and the potential for energy price rises. The residents opted for a new CHP plant to be installed

- The Trust has developed a number of waste recycling initiatives and upgrades which have both dealt with waste more effectively and addressed residents' concerns. These include the collection of organic waste from the restaurant, businesses and residents' kitchens which is then processed through a macerator dryer machine. After processing, the food waste is compacted to a third of its original size and transformed into a dried, granular material. This means the waste can be left on site longer without smelling, reducing the need for regular waste collections. Residents have been keen to sign up to this scheme because it will help to address their existing waste collection problems – rats, mice and refuse smells

- The Trust is also working with residents of Follingham Court in Hackney to set up a carbon club which will encourage residents to reduce their emissions through the use of social networking tools. More than 70 per cent of residents have signed up to it. Initial themes will be zero waste

and home growing. The tenants and residents association will use communal space and a vertical growing wall for food production, and residents will be offered training in reducing food waste. Water butts will be installed in common areas and water saving 'Hippos' will be provided to households.

From its experiences, the Trust has found that working with communities as part of the team can deliver benefits in terms of getting long-term buy-in and commitment. The Trust trained local people to undertake a survey of local green spaces. It estimates that providing a nine-week training programme for long-term unemployed/carer to NVQ level 2 costs around the same as employing consultants. It also enabled them to build a local skills base which has since been used to support further action-based learning. This local involvement meant they were able to achieve a better response rate (72 per cent) to the survey and it helped to build local trust in the process.

Case study – **Engaging people in One Planet Living**

1	Zero Carbon
2	Zero Waste
3	Sustainable Transport
4	Local and Sustainable Materials
5	Local and Sustainable Food
6	Sustainable Water
7	Natural Habitats and Wildlife
8	Culture and Heritage
9	Equity and Fair Trade
10	Health and Happiness

From its experiences working across the UK, sustainability charity BioRegional has found that a variety of 'routes in' are required to engage communities in sustainability. BioRegional uses its One Planet Living principles to find issues that are relevant to local communities, and engage with them around those. These may be as diverse as 'Health and Happiness' or 'Sustainable Transport', depending on the needs and aspirations of the community.

From this starting point they can progress awareness-raising and discussions to other areas, such as 'Zero Carbon', as more people become engaged and enthusiastic. BioRegional notes that priorities can be quite locally dependent on socio-economic circumstances and other factors (such as proximity to new development), so there may well be a range of different priorities and 'routes in' within a local authority area.

BioRegional has utilised this approach effectively to engage existing communities in both Sutton and Middlesbrough. In Sutton, BioRegional is working alongside the local authority to deliver *One Planet Sutton*. Projects include a Greening Businesses project and a Low Carbon Zone in Hackbridge, a Pay As You Save pilot, a £1 million local and sustainable food project, and community festivals and workshops. In Middlesbrough, BioRegional is supporting the local authority and community to write their own Sustainability Action plan using the 10 One Planet principles.

(Image adapted from BioRegional)

What can we learn from the past?

Area-based approaches have been a key tool to deliver Government policy for many decades. These have improved our understanding of the most effective ways to deliver programmes of work in an area to tackle complex and interrelated economic, environmental and social issues. From these schemes we have learnt a lot about how local authorities and communities can work together. We also have good evidence about how public sector bodies can work in partnership to make efficient use of resources and leverage in private sector investment. The table below summarises key findings from some of the major programmes. The evaluation studies referenced provide a more comprehensive source of information on these programmes.

Table 3 **Lessons learnt from previous area-based initiatives**

Date & Name	Description	Lessons learned
1974 **Housing Action Areas (HAA)**	Local authorities declared HAAs to improve housing quality (for both private and council owned homes) and remove the underlying issues in small areas of multiple deprivations. The programme worked with existing communities to improve multiple aspects and services. Grants were the primary source of funding for renovations.	• The HAA programme was popular with communities, LAs, and central Government alike, and showed that a wide range of improvements to an area could be successfully delivered in a single, integrated approach • Significant investment was required to provide the renovation grants.
1978 **Enveloping**	This approach secured the repair, to high quality standards, of key elements of the building's external envelope: roofs, gutters, chimneys, windows, doors and walls – including structural faults. It was applied to all homes within a designated area. Improvements were provided at no cost to the householder. Enveloping was applied to groups of 500 to 1,000 homes within a HAA. It was first introduced in Birmingham to repair terraced housing.	• The initial investment for the scheme could be argued to deliver value for money in the long-term; when viewed on a whole life cost basis it avoided costs from clearance and rebuilding of a neighbourhood and the re-housing of residents • The area-based nature of enveloping was seen to have a greater impact on property values than isolated improvements to individual dwellings. This impact could extend beyond the enveloped area.[65]
1979 - 1982 **Priority Estates Project (PEP)**	This government-led research and development project studied the impact of local, intensive and integrated management in improving run down and 'hard to let' council housing estates. PEP pioneered tenant and neighbourhood management, promoted social enterprise, and empowered residents and workers from deprived areas. The size of the estates varied from roughly 200 to 800 homes, and included a holistic approach to services in each area.	• Management and maintenance of all aspects of estate infrastructure was interlinked • Improvements and maintenance could only be managed effectively with the involvement of residents • Resident engagement led to better targeting, upkeep and information sharing, which enabled landlords to address management issues • Interventions were cost neutral and within existing budgets.

Date & Name	Description	Lessons learned
1980 - current **Urban Development Corporations (UDCs)**	UDCs have a broad remit to secure the regeneration of a defined area achieved by bringing land and buildings into effective use. UDCs have powers to compulsory purchase, planning powers and a general power to do anything necessary or expedient in the interests of their objectives. They have a limited lifespan of between five and 17 years. More recently declared UDCs are encouraged to work in close partnership with the council, community and other key players.	Evaluations of the early UDCs[66] found: • UDCs achieved notable successes in property development and environmental improvements, using public sector finance to leverage in substantial private sector investment • A single-minded focus on property-led regeneration of early UDCs meant, however, that social benefits were not achieved • To achieve wider outcomes delivery agencies focusing on physical renewal should be anchored to wider policy objectives and strategies for the area and integrated with other agencies working in the area.
1988 – 2007 **Housing Action Trusts (HATs)**	Six HATs were set up to regenerate some of the most deprived local authority estates in England. HATs statutory objectives were to repair and improve housing; to manage housing effectively; to encourage diversity of tenure; and to improve the social, environmental and living conditions of their areas. HATs were given operational flexibilities. Their approach to comprehensive regeneration has been diverse and broad, reflecting local concerns and opportunities.	Evaluation of the HATs[67] found: • Wider economic and social benefits could accrue from housing-focused regeneration programmes • Residents were the key partners in success. Resources therefore need to be available to maximise their involvement • Importance of working with the community structures and resources already in place • Resources could be utilised effectively and benefits maximised where links were made between the various agencies and the different activities.
1992-1998 **City Challenge**	31 City Challenge Partnerships were established in deprived urban areas. Each Partnership was eligible to bid for £37.5m over five years and, including levered-in funds, each Partnership spent over £240m. The aim of the programme was to bring sustainable and integrated regeneration to areas of widespread and multiple deprivation. It emphasised improvements to economic and social infrastructure and local quality of life alongside physical regeneration. The programme was an advance on previous initiatives due particularly to its partnership basis, community and private sector involvement, strategic and targeted approach and its implementation by dedicated, multi-disciplinary teams.	Evaluation of City Challenge[68] found: • Success of the programme depends on how well local issues, needs and opportunities are understood, and the level of community involvement • To maximise success of programmes significant time and effort need to go into building community capacity so they can be involved in its design and implementation • Community involvement and ownership is needed to sustain the improvements in the long-term • Benefits to local people and businesses were estimated to be substantially greater than could have been achieved through a single agency approach • Partnerships can create revenue-generating assets to deliver ongoing benefits.

Date & Name	Description	Lessons learned
1998 – 2009 **New Deal for Communities (NDCs)**	39 deprived neighbourhoods (under 10,000 people) were designated as NDCs. Each NDC received approx £50m to transform their area over 10 years by achieving holistic change in relation to crime, community, housing and the physical environment, education, health, and worklessness. NDCs were required to achieve value for money, work with other delivery agencies, and place the community at the heart of the NDC.	Evaluations[69] of the NDCs found: • NDCs had delivered considerable positive change, and in many respects transformed neighbourhoods • The programme has provided good value for money, with benefits outweighing costs • Communities can play a strong role in defining local needs; however, they tend to be less interested in/ lack skills for delivery • A holistic approach to tackling area-based disadvantage requires robust partnerships between key agencies.
2001 - 2010 **Decent Homes Programme**	Government set a 'decency' standard to which all social rented homes should be improved and, in some cases, allocated funding to enable that improvement. The standard targeted streets and estates of social housing for minor upgrading, such as new kitchens, bathrooms and central heating systems.	Evaluation of Decent Homes[70] found: • The programme has been popular with tenants. The targeted area-based approach improved homes and contributed to skills development and job creation • Opportunities were often missed to deliver substantial energy efficiency upgrades or improvements to local environment at minimal extra cost.
2001 - 2009 **National Strategy for Neighbourhood Renewal (NSNR)/ Neighbourhood Renewal Fund (NRF)**	The overarching vision of the NSNR was that within 10 to 20 years no one should be seriously disadvantaged by where they live. The NRF Government provided the 88 most deprived areas with budgets to deliver locally determined measures. Budgets were not ring-fenced and common areas for spend were community safety, education, health, worklessness and the environment. NRF was intended as a top-up to neighbourhoods, to help disadvantaged local authorities improve core services, rather than as a conventional 'programme'. To support the NSNR Government also developed a range of information and support networks.	Evaluation of NSNR[71] found: • Key success factors were: integrated approaches; neighbourhood management; resident involvement; local leadership and partnership working; the availability of additional and flexible funding; and supportive national policies • Key benefits of resident involvement were: more responsive programmes and services, greater buy-in from residents, increased trust between residents and service providers, and improved community capacity and social capital • Neighbourhood management partnerships were important in identifying local priorities and bending mainstream resources • NRF delivered value for money. Funding helped provide a 'carrot' to bring local actors together.

What geographic scale is appropriate for delivery?

Area-based schemes can cover a range of scales, from a single street to a city or region. It is important to identify what scale is appropriate for technologies and delivery structures, and to consider how these can work together.

Table 4 **What are the characteristics of each geographic scale?**

Individual dwelling	Neighbourhood	Local Authority	City/sub region	National
• Individual units (residential or commercial).	• Ranging from a single street or small high rise block to approx 1,000 buildings • Local areas within towns and cities recognised by people who live there as distinct places, with their own character and approximate boundaries • Shared existing infrastructure and shared benefit from upgrades • Likely to contain a mix of residential, commercial and public buildings • Community leadership personally known.	• Administrative level of Government authority • Democratically accountable to public • Responsible for maintaining place • Powers include planning and tax raising • Ability to leverage Government resource.	• Grouping often decided by local agencies (as MAA/ or for the purposes of HCA single conversation) • Based on functional links or similar challenges (usually economic, environmental, geographic or planning areas).	• Legislative and regulatory powers • Fiscal and economic powers.

A key message from the case study research was that it is most effective to undertake community engagement on a neighbourhood scale. However, to deliver maximum economic benefits, it can be more cost-effective to operate at a larger scale. The need to work at a scale potentially larger than local authority on funding and strategic planning is evident from the levels at which local authorities have chosen to engage with the Homes and Communities Agency (HCA) for their 'single conversation' on investment plans for housing, infrastructure, regeneration and community activities. Many are engaging at city region or sub-regional levels to deliver maximum benefits. Decisions on what measures are to be delivered to individual buildings, and how these are to be funded, will usually be decided on an individual basis. However, materials may be purchased in bulk and the cost of externalities (such as scaffolding or skips) shared. Whilst it may be more effective to deliver retrofit works on a neighbourhood scale, this is likely to be linked upwards to enable co-ordination at local authority level, or potentially multi-local authority level. The potential levels of working are outlined in Tables 4 and 5.

It should also be noted that, while some of the technologies may technically work well at neighbourhood level, this does not mean communities will be able to deliver them on their own. Many of the measures listed below will require communities to work with local authorities and other partners to enable delivery. These are indicated in Tables 4 and 5.

We also note that, while neighbourhood delivery can bring significant benefits, it must not be pursued as the only option. Individuals, businesses and local authorities must be enabled and encouraged to undertake work to upgrade their own buildings alongside, and in addition to, neighbourhood level programmes. Many households, businesses and local authorities will want to take action before their area is targeted, in order to make immediate cost savings (for example, when commercial leases change, on sale of a house, or as utilisation of a pension lump sum). We are not advocating an either/or approach, but one that supports and promotes both options.
By providing communities with the certainty of a long-term neighbourhood scale programme, infrastructure providers can capitalise on this information and make an informed decision on whether to schedule their own upgrades to coincide with a neighbourhood programme (providing them with cost savings, approved delivery partners, and a planned approach to minimise disruption), or whether to take action at an earlier stage.

Figure 3 **Appropriate scales of delivery – Where do communities fit?**

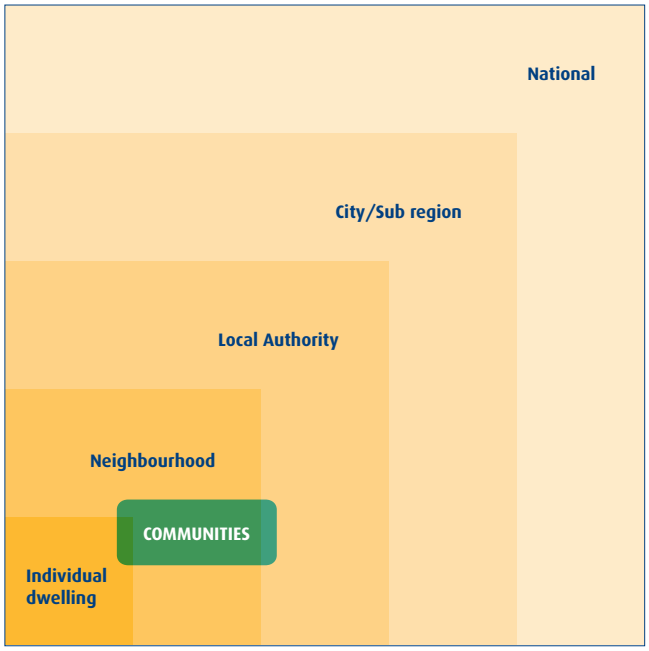


Table 5 **Appropriate geographic scales for neighbourhood infrastructure upgrades**

	Individual dwelling	Neighbourhood	Local Authority	City/Sub region	National
Energy	Energy efficiency measures Water efficiency measures Micro-generation Smart metering /building management systems Biomass Solar thermal, ground source heat pumps	Thermal/ energy master plan* Neighbourhood energy infrastructure including one or a combination of: • Combined heat, cooling and power* • Coordinated PV and solar thermal • Wind and micro-hydro energy • Coordinated ground, water source thermal Energy efficient street lighting* Smart grid functionality and operation*	Thermal / energy master plan (for LDF) District heat networks Energy efficient street lighting Smart-grid functionality and operation Electricity and gas distribution networks	Baseline studies, aggregate LA targets and performance benchmarking Thermal masterplanning / heat mapping and energy opportunity planning in regional and sub-regional strategy Wave and tidal power Electricity and gas distribution networks Smart-grid functionality and operation	Electricity and gas distribution networks Smart-grid functionality and operation

	Individual dwelling	Neighbourhood	Local Authority	City/Sub region	National
Waste	Building scale facilities to support waste separation and management Composting	Local waste reduction programme Community composting Local re-use/ recycling schemes Waste to energy facilities*	Waste management infrastructure Waste reduction programme: Waste to energy facilities	Joint waste management	
Water	Water efficiency fixtures & fittings Soakaways and SUDS (Permeable paving/private gardens etc) Rainwater harvesting systems	SUDS (using public spaces, parks, permeable paving etc)* Communal rainwater harvesting for grey water use and on gardens and parks	Water cycle strategies Climate change risk assessment/ local climate impact profile Surface water management plan	Flood risk assessment Climate change risk assessment/ local climate impact profile	
Transport	Personalised travel planning and travel marketing aimed at behaviour change	Home zones* Reduced speed limit* (20mph zones) School and workplace travel planning Car clubs Improved cycling and pedestrian routes, general public realm improvements*	Local Transport Plan Parking control Reduced speed limit Improved cycling and pedestrian routes and better integration with public transport Congestion charging/road tolls	Regional Transport plan Integrated public transport (rail/ bus) Congestion charging/road tolls	Smart Card ticketing strategy for public transport
Green infrastructure	Green roofs Wildlife habitats Food production Planting and shading	Urban trees Wildlife corridors Local parks and green spaces* Food production Community land bank	Green infrastructure strategy Urban heat island strategy Tree strategy	Protect floodplains Green infrastructure strategy Urban heat island strategy	Green infrastructure strategy (including spatial planning for food growing)
ICT	Broadband access	Neighbourhood office facilities/ ICT hubs Village cabinet Installation of broadband Social/ community networks and forums	Social/ community networks and forums	Social/ community networks and forums Establishment of best practice/ information sharing portal	Establishment of best practice/ information sharing portal

	Individual dwelling	Neighbourhood	Local Authority	City/Sub region	National
Delivery	Provision of advice to householders (technical and behaviour change) Identification of energy efficiency works required Delivery of measures to individual buildings	Engagement with residents and existing community/ local third sector groups Identification of local priorities and opportunities Peer pressure and peer to peer learning Collaborative planning (i.e. enquiry by design/planning for real) Detailed investigation of district heating opportunities Integrated planning and delivery of infrastructure elements Shared externalities (i.e. scaffolding, skips, decanting) Bulk purchase Some procurement efficiencies Community owned ESCOs/ MUSCOs Community management of infrastructure elements Marketing	Increased procurement efficiencies Bulk purchase Strategic planning HEM community partnerships HCA single conversation/ investment plan Engagement with LSP partners LAA Local authority owned ESCOs/ MUSCOs	Increased procurement efficiencies Strategic planning HCA single conversation/ investment plan LAA/MAA Jobs and skills development Best practice networks	National policy development Joining up policy making National programme to support delivery (i.e. advice, best practice, start up funding etc.) Pro-active legislation Regulation Planning Policy Statements Development of standards/ accreditation

	Individual dwelling	Neighbourhood	Local Authority	City/Sub region	National
Funding	Funding for energy efficiency (i.e. PAYS, CERT) Funding for water efficiency Feed-in-Tariff/ Renewable Heat Incentive	Funding for energy efficiency (CESP, Low Carbon Communities Challenge, Low Carbon Infrastructure for Growth, Low Carbon Zones) Income from community owned FIT/ RHI/ renewables Tenant management/estate management funding Community revolving fund Community share issue 'Allowable solutions'	Local authority owned FIT/RHI/ renewables 'Allowable solutions'? Community Infrastructure Levy/ Section 106/ tariff Local fiscal incentives (i.e. council tax rebates) Potential for investment portfolios Local authority bonds	EU funds (i.e. JESSICA) Greater potential for project portfolios	Green Investment Bank National revolving fund Green bonds Coordination of funding streams Funding for R&D projects.

* These measures would require local authority involvement

Case study – **Association of Greater Manchester Authorities: maximising economic benefits through city scale delivery**

Working at a city region scale, Greater Manchester is developing a high level of commitment from public- and private sector partners to ramp up delivery scales and timings, resulting in greater economic benefits.

In December 2009, Greater Manchester was designated the UK's first Low Carbon Economic Area (LCEA) for the Built Environment. The LCEA will build on the city region's strong track record of regeneration in the built environment, and its world-leading university and research capabilities in the low carbon built environment.

The LCEA programme is based around a five-year retrofit programme, which will be one of the largest initiatives of this type in the world. If its most ambitious targets are realised, it is anticipated the works would save 6 million tonnes of CO_2 from homes, public and commercial buildings in Greater Manchester, creating an additional £650 million for the economy and supporting 34,800 jobs.

The scale of the retrofit works are intended to shift delivery from the current sporadic CERT-led approach into a strategic programme that can be linked to job creation and other public sector initiatives to improve quality of existing places. The scale will also enable testing of key features around funding and delivery. These include:

- financing models and mechanisms for attracting new sources of finance; and
- how Total Place principles can improve delivery and funding structures for retrofit works.

While collaboration is required at city region scale to generate the high level of buy-in from partners to maximise economic benefits, the retrofit measures will be delivered at neighbourhood level. Delivery structures will build on Greater Manchester's long history of working with communities to transform existing places, such as Housing Market Renewal Areas in Salford/Manchester and Oldham/Rochdale, Hulme and East Manchester. It will build upon their experiences of delivering area-based retrofit and behaviour-change programmes.

The LCEA will also focus on developing new retrofit technologies; the associated supply chain; business models; and how these can stimulate business opportunities and increase employment levels.

Initial work on the design of the programme has been carried out by teams from Greater Manchester's commissions for the Environment and the New Economy. The Energy Saving Trust is closely involved with the design and delivery of programmes. In addition, assistance has been provided by the North West Development Agency (NWDA) and the Homes and Community Agency (HCA).

The designation of Greater Manchester as an LCEA is anticipated to create market confidence through widespread public- and private sector commitment to the retrofit programme. This support will be detailed in the Joint Delivery Plan, which will be agreed with Government, its key agencies and NWDA. At a local a level it is anticipated that the ten local authorities, registered social landlords, private sector landlords, universities and further education establishments and new skills and training organisations will be signatories to the Plan.

What are the key barriers to integrated, area-based delivery?

During our study, a number of barriers were consistently identified:

- **Development of single-issue programmes, policies and regulation that do not have sufficient flexibility to enable integrated delivery on the ground** – caused by a lack of understanding of the benefits. This can waste investment, as programmes are driven by a single outcome (such as cost per tonne of carbon saved) rather than measuring the wide range of benefits that can be achieved for the same cost

- **Limited understanding of non-financial benefits** – some of the infrastructure upgrades will provide benefits with no current market value. These include avoidance of healthcare costs, reduced flood risk, greater social cohesion and improved quality of place. These wider costs need to be accounted for when investment decisions are made to avoid underestimating the true benefit of the investment

- **Complexity of ownership and regulatory requirements** – as identified in Box 1, the legacy of infrastructure development, privatisation and regulation has resulted in the involvement of a large number of different organisations in the provision of infrastructure in existing neighbourhoods. The drive to make our utilities more efficient by deregulation and market creation has yielded benefits, but it has also borne significant, unintended costs and consequences

Box 1 **Infrastructure ownership**

As Buro Happold identified in its review of Blacon, Southville and Armley, infrastructure ownership is spread across private sector players and local authorities. Although there may be some variation across the UK, depending on the presence of Energy Service Companies (ESCos), district heating networks and community-owned assets, there was a consistent pattern of asset ownership in these three locations:

- **Private ownership** – gas, electricity, water, telecoms, rail, bus
- **Public ownership (LA)** – waste, streets, cycle and pedestrian infrastructure, green and blue infrastructure
- **Mixed ownership** – buildings.

- **Lack of understanding of how best to engage with communities** – engaging communities will be vital to the effective the take-up and continued maintenance of any neighbourhood retrofit programme. It can also help to achieve wider outcomes around enabling sustainable behaviour change and community cohesion
- **Lack of flexible budgeting and public sector finance** – retrofit programmes will require at least some level of public sector finance to support core functions at the outset, lever in private sector finance and fund works for those who are unable to pay. The current approach of providing funding in discrete pots for discrete outcomes can hinder the delivery of an integrated programme of works. It can also result in those developing programmes wasting time and money chasing different funding streams, then tailoring the programme to meet the different funding and reporting requirements
- **Lack of mechanisms to attract private sector finance** – a number of factors ranging from uncertainty about market size, type of measures required, scale of investment and future policy development to the absence of proven business models or accreditation systems are deterring private sector investment in infrastructure upgrades. It is also difficult for community-led initiatives to access investment capital
- **Lack of skills in private, public and third sector** – there are already skills shortages in many of the areas that will require work, particularly around planning. While many of the skills gaps were identified within the local authorities, there are also clear shortages in community groups and utility providers.

In discussing these issues with our task group members and case study contributors, it was very clear that while some concerns were raised over technical and funding issues, there was a strong consensus that unlocking the organisational issues would be key to enabling integrated delivery (as illustrated in the diagram below). It was recognised by all that there is a need to develop a plan of works before funding options can be identified.

Figure 4 **Barriers to Delivery**

There was strong consensus that the identification of a local body which could coordinate neighbourhood retrofit works would provide the starting point for many of the other jigsaw pieces to fall into place. This finding is echoed by the work undertaken by CAG for the Ashden Awards, which found that a locally-based 'trusted broker' is required to orchestrate activity and bring together local partners to deliver area-based schemes.[72]

Chapter 2 summary

- There is clear support for, and benefits to, taking an area-based approach to delivery
- Area-based delivery will enable people to have works undertaken, often at reduced costs, by approved tradespeople in a way that can improve their home and the urban landscape. There is also potential to link this to wider works to improve the overall quality of place and the services within it
- Taking an integrated approach to community infrastructure upgrades can reduce the cost and disruption of works, maximise use (and re-use) of existing resources, and galvanise communities into action. By applying an outcome-focused approach (as adopted by the Total Place pilots) there is potential to make existing places and resources work better
- Taking a holistic, area-based approach provides a real opportunity to engage communities in this agenda through the development of positive visions for the future of their neighbourhoods, tailored to meet their needs
- The benefits of integrated and area-based approaches have been drawn from case study and anecdotal evidence, we recommend that Government improves the evidence base on the benefits of neighbourhood delivery, the benefits of integrated delivery and the benefits of involving communities.
- We should learn from experiences of previous area-based programmes to understand what has worked and, more importantly, what has not
- Delivery at neighbourhood scale maximises opportunities for engagement, behaviour change and local ownership. It needs to be linked to planning and support frameworks at wider scales to maximise economic, environmental and social benefits
- Work will be required at a range of scales to enable neighbourhood retrofit delivery and simultaneously to meet other challenging targets such as those for carbon reduction and fuel poverty
- Key barriers preventing integrated, local delivery of infrastructure upgrades are:
  - Development of single-issue programmes, policies and regulation that do not have sufficient flexibility to enable integrated delivery on the ground
  - Complexity of ownership and regulatory requirements
  - Lack of understanding how best to engage with communities
  - Lack of flexible budgeting and public sector finance
  - Lack of mechanisms to attract private sector finance
  - Lack of private, public and third sector skills
- There was general consensus that key to unlocking many of these issues would be the identification of a body to coordinate neighbourhood retrofit works at a local level. This could engage the community and bring together public, private and third-sector contributors.

Recommendation

Government should support an integrated, area-based approach to upgrading local infrastructure as a cost effective way of achieving maximum sustainable outcomes in an area.

This would be supported by: ensuring existing and new polices and delivery programmes (such as the new obligations on energy companies post-2012) are flexible in operation to support integrated delivery; improving the evidence base to assess the economic, environmental and social benefits of this approach; and developing pilot projects which test integrated delivery. *(Action: CLG, DECC, DEFRA, DfT, DH,HMT, Infrastructure UK)*

3 Where are we now?

Chapter 3 examines:

- Delivery on the ground
- Government policy
- Why do we need to do things differently.

Delivery on the ground

Our research clearly highlights the need for a local delivery vehicle to coordinate neighbourhood retrofit projects. Some local bodies and partnerships are already working on projects to make their areas more sustainable. As highlighted below, these are led by a number of players including area-based energy efficiency partnerships (such as Warm Zones), development trusts, co-ops, transition towns and local interest groups as well as local authorities and wider Local Strategic Partnerships (LSPs). The focus of these partnerships can vary widely, from a strong focus on carbon, energy or transport to a broader regeneration or growth-based approach.

Community-led initiatives

The bodies involved include community-led partnerships, many of which (such as Blacon and Shoreditch) have evolved from neighbourhood renewal and regeneration schemes. Others (such as Ashton Hayes and Low Carbon West Oxford) have sprung from a community desire to act on climate change.

Table 6 **Communities taking the lead**

As the case studies of Blacon, Sanford, Shoreditch, Todmorden and *20's Plenty for Us* show, a number of communities are taking the lead in works to improve the sustainability of their places. The following provide further illustration of the many community-led projects we came across as part of this research.

- **Low Carbon West Oxford** (LCWO) – in 2007, residents in West Oxford set up a community association following concerns over flooding. They are working to reduce the carbon footprint of West Oxford and encourage residents to live more sustainably. LCWO has established West Oxford Community Renewables, an Industrial and Provident Society, to build and own renewable energy schemes in the local area. Initial funding will be generated from a share offer. Earnings from investments made will be donated to LCWO to reinvest in low carbon community projects

- **Ashton Hayes** – the parish council adopted a resident's proposal that Ashton Hayes should work to become the first small community in England to achieve carbon-neutral status. The project attracted support from residents (more than 75 per cent of whom came to the launch event), businesses and public sector bodies. Funding has been sourced from local businesses and grants rather than drawing on local taxes. Since 2006, the community has achieved a 23 per cent reduction in carbon emissions through working together, sharing ideas and changing behaviour

- **Transition Town Network** – since 2006, Transition Towns have been spreading through the UK and beyond as a way of mobilising people to make their communities more resilient to the impacts of peak oil and climate change. Transition Towns have a common 12-step programme which takes them from setting up a Steering Group and committees to developing a 15- to 20-year energy action plan. In the UK, these groups have already spawned a range of initiatives including the development of community gardens, raising awareness of energy efficiency, setting up local currencies (in Lewes, Totnes, Stroud and Brixton) and establishing ESCos.

Local authority-led initiatives

Local authorities are required to set out a long-term vision for the social, economic and environmental wellbeing of their local area in their Sustainable Community Strategy (SCS). Many have been developing new and imaginative ways of working to realise these visions. They range from direct local authority delivery of projects to working with Local Strategic Partnerships (LSPs), energy suppliers and others to improve the sustainability of their areas.

Table 7 **Local authorities taking the lead**

As illustrated in the case studies and text, a number of local authorities are leading work to improve the sustainability of their existing areas (including Kirklees, Sutton, Southwark and Bristol). Here we list other examples of leadership and vision from local authorities which are driving change.

- **Woking** provides a good example of what local authorities can deliver with a clear vision and continued political support. By 2006, it had achieved an 81 per cent reduction in carbon emissions from its own property and a 21 per cent reduction borough-wide, based on 1990 levels. These have been achieved through a range of projects including investment in several CHP systems (among them the first heating and cooling sustainable energy station in the UK), PV pay-and-display machines, hybrolights (streetlights powered by solar and wind – see www.woking.gov.uk/environment/climate/Greeninitiatives/sustainablewoking/hybrolights.pdf) and a PV canopy which improves pedestrian access to the station while generating electricity

- Birmingham, Manchester, Durham, Plymouth, Islington, Camden, Bristol, Harrogate, Harrow and Haringey have all signed up to an emissions cut of at least 40 per cent by 2020, and are actively planning how this can be achieved

- Nine local authorities (Bournemouth, Poole and Dorset working together in their Multi Area Agreement, Bristol, Haringey, Leeds City Region, Manchester City Region, Nottingham City, Northumberland, Oxford and Plymouth) are working to develop Local Carbon Framework pilots.

Local authorities delivering in partnership

There are also examples of local authorities working with LSP partners or forming wider partnerships to improve the sustainability of existing places:

- **Birmingham's Green New Deal** – the LSP (Birmingham Environment Partnership) brought a range of partners together to develop a five-year project to improve energy efficiency and renewable energy sources for homes and businesses across the city. The project aims to coordinate delivery of the retrofit works at an enhanced scale, to ensure that it delivers maximum benefits in terms of job creation, business expansion and reductions in both carbon emissions and fuel poverty. The project has £1.2 million from the Working Neighbourhoods Fund to finance the initial phase, which tests out the attractiveness of combining Feed-in-Tariff with other low-cost financing options. This will be followed by upscaling and transition to a fully self-financing delivery model by 2014

- **Devon Futures** – Devon Strategic Partnership established Devon Futures Group to inform the LSP on how its work can maximise opportunities for increasing sustainability and develop synergies between the themes. The group is responsible for monitoring progress on sustainability and highlighting implications for Devon's future. Responsibility for delivery of actions remains with LSP partners

- **Bath and North East Somerset LSP** – LSP members are working to cut energy consumption from their organisations by at least 10 per cent by 2012, saving an estimated £4.7 million. Alongside physical measures, thousands of staff across the LSP partners will be trained to deliver changes at a grass roots level

- **Warm Zones** – through these zones, more than 50 local authorities have formed partnerships with energy providers and others to deliver energy efficiency measures through area-based programmes. These partnerships have enabled partner organisations to engage households in a wide range of additional areas, including benefits advice, water efficiency, fire safety and support for long-term carers.

Several partnerships have also been formed between local authorities (or local authorities and regional development agencies) to support delivery and ensure that the strategic benefits to the economy presented by these works can be maximised. These include Greater Manchester, London's RE:NEW scheme and the Arbed programme in Wales.

Figure 5, below, indicates the range of different structures partnerships may take and the range of bodies who may be involved.

Figure 5 Potential delivery partners

	Examples
1 Community, Third Sector and Not-for-profit bodies	Tenants and residents association, Co-operative, Transition Towns, Carbon Reduction Action Groups, Tenant Management organisations, Development Trust, Faith groups, Special interest groups, Social enterprises, Community Interest Company, Community owned ESCO/MUSCOs.
2 Local Authority (LA) programmes and teams	LA led regeneration programmes (i.e. renewal areas), LA led transport programmes, LA led energy efficiency programmes, LA led housing programmes (i.e. Decent Homes), LA owned ESCO/MUSCOs.
3 Private sector	CERT, Privately owned ESCO/MUSCOs, Business Improvement Districts.
A	Parish council, Low Carbon Communities Challenge, Low Carbon Zones, Energy Supplier Obligation 'Community Partnerships'.
B	LSP, CESP, Low Carbon Zone
C	Warm Zones, Energy Supplier Obligation 'Community Partnerships'.
D	Warm Zones, Local Asset Backed Vehicle.

Government policy

The past year saw a significant shift in the previous Government's policy around works to upgrade energy efficiency in existing buildings. Learning from the experiences of many of the partnerships listed above, it was recognised that successful delivery on the ground is often the result of a partnership approach between energy companies and local community organisations. The Community Energy Saving Programme (CESP), launched in 2009, encouraged greater partnership between energy companies, local authorities and community groups.

This approach was developed further in the Strategy for Household Energy Management[73] which sets out a new model of delivery, through partnerships between energy companies, local authorities and other local organisations. The supporting evidence for this strategy shows that delivering through partnerships between local authorities and energy companies can deliver £6 billion in benefits over the lifetime of the strategy, compared to £4.2 billion for a local authority-led model, -£0.3 billion for an energy company model (with no local authority involvement) and -£1.2 billion for an area franchise model (with no local authority involvement).[74] DECC's Low Carbon Communities Challenge is also looking to learn more about these local-level partnerships and how they can aid delivery on a range of objectives. At the city level, London is piloting a number of Low Carbon Zones.

Earlier this year, Local Carbon Framework pilots were launched. These involve local authorities working with partners to set a trajectory for carbon reduction targets and develop a delivery plan. In return, local authorities can receive increased flexibility and funding to develop and lead a local investment plan for energy efficiency measures.

Table 8 **Pilots**

Name of pilot	Details of programme	Likely outcomes
Community Energy Savings Programmes (CESP)	A community-based approach to whole-house energy efficiency upgrades, delivered by partnerships of energy companies, local authorities and community groups. Up to £350m of energy efficiency measures to be delivered through an Energy Company Obligation, for a three-year programme.	Around 100 schemes are expected, benefiting around 90,000 homes and saving nearly 2.9m tonnes of CO_2 emissions. CESP is expected to deliver annual average fuel bill savings of up to £300 for those households involved.
Low Carbon Communities Challenge (LCCC)	A two-year research programme to test delivery options for cutting carbon emissions at community level. It will provide financial support, advice and guidance to 22 'test bed' communities. Projects are led by both community groups and local authorities. The programme is brings together five government departments (DECC, Defra, CLG, BIS, Cabinet Office) all have contributed funding except CLG. DECC is providing a support team and website to coordinate support to projects and share good practice.	The communities will receive funding for joined up packages which could include smart meters, local demonstration homes, community-level energy and transport systems, leadership from local schools, businesses and public buildings, and hands-on support for households about which green technologies (energy, waste, water and travel) are right for them. LCCC will look at how bringing together technologies alongside community-level behaviour change, can deliver carbon reduction and wider economic, environmental and social benefits.

Name of pilot	Details of programme	Likely outcomes
Local Carbon Frameworks	£3m support funds for councils (initially Bournemouth, Bristol, Dorset and Poole, Nottingham, Northumberland, Oxford, Leeds, Manchester, Haringey and Plymouth) to develop Local Carbon Frameworks.	Councils will produce a LCF prospectus. This will set out clear carbon targets, a strategy for achieving them and a delivery plan based on discussions with partners.
Low Carbon Zones (London)	Ten London Borough pilot zones to receive a minimum of £200,000 (up to £400,000) to reach a target of at least 20.12 per cent CO_2 savings by 2012, and 60 per cent by 2025. Zones are larger than a single street but no more than 1,000 buildings. Partnerships are often led by a mix of local authorities and community groups (see Muswell Hill case study).	Until reaching the target in 2012, the pilot zones will report to and work with the GLA to develop 'best practice' advice to inform delivery models for application across London, to help achieve the city's overall 60 per cent reduction target by 2025.

Why do we need to do things differently?

Whilst we welcome the direction taken by these pioneering partnerships and pilots, the majority are focused either primarily or wholly on carbon emission reduction outcomes or other single issues. We believe these narrow remits will fail to maximise use of resources and capitalise on broader opportunities. Without a wider understanding and remit, well-intentioned bodies are unlikely to realise the full range of opportunities to upgrade existing infrastructures and use their resources to maximum benefit. Public and private finance, community resources and goodwill are likely to go to waste. At the same time, opportunities will be missed to deliver real benefits to communities and the public purse through improved health, reduced impacts from climate change and improvements in quality of existing places.

We also need to move beyond pilots and one-off community projects if we are to achieve the scale of change required. These local partnerships must be mainstreamed as a matter of urgency if we are to achieve the quantity and quality of neighbourhood retrofit necessary. This will require Government support.

Chapter 3 summary

- Local delivery will require local partnerships between key players to achieve integrated delivery of infrastructure upgrades
- In some places, local partnerships are already planning and undertaking works to upgrade existing infrastructure. These are led by a range of local organisations, including community groups and local authorities. The remits of these groups and the works they are undertaking vary widely
- There is some support for the development of local partnerships, particularly to deliver targets on carbon reduction – but this needs to be rolled out urgently to meet the challenging targets set for carbon reduction. Although they are to be welcomed, these projects will not deliver the scale of change required to meet the Government targets outlined in Chapter 1 and Annex A
- The range of remits of these groups and the fact that they are mostly focused on a single issue, together with a lack of coordinated support for their work, mean that they are unlikely to utilise their resources most effectively.

4
What we need to enable integrated neighbourhood retrofit

Chapter 4 examines:

- Key principles of an effective neighbourhood partnership
- Key elements for an effective neighbourhood retrofit programme.

Recommendation

SDC calls on Government to encourage, enable and empower communities, local government and other bodies to work together to plan and coordinate delivery of integrated neighbourhood retrofit programmes to achieve sustainable outcomes. For this report, we refer to these partnerships as neighbourhood partnerships.

The purpose of these partnerships would be to identify the key improvements needed; integrate activities to ensure the maximum economic, environmental and social benefits for the minimum cost; and facilitate local people and organisations in planning for, and delivery of, works required to make existing neighbourhood level infrastructure more sustainable.

The remit of neighbourhood partnerships must include, at the very least, carbon-reduction and adaptation targets (making it a key tool in supporting local delivery of these – and potentially supporting Local Carbon Frameworks) but it is essential that they look wider than this to maximise economic, environmental and social benefits for communities. These broader priorities would be developed according to community needs and aspirations but the outcomes framework in Chapter 1 (Table 1) should be used as a basis for these discussions.

Delivery of previous initiatives has taught us that tightly prescribed programmes are not effective in dealing with complex economic, environmental and social issues. Neighbourhood partnerships must therefore be shaped at the local level according to need, aspirations, skills, resources and existing partnerships and relationships.

Key principles of an effective neighbourhood partnership

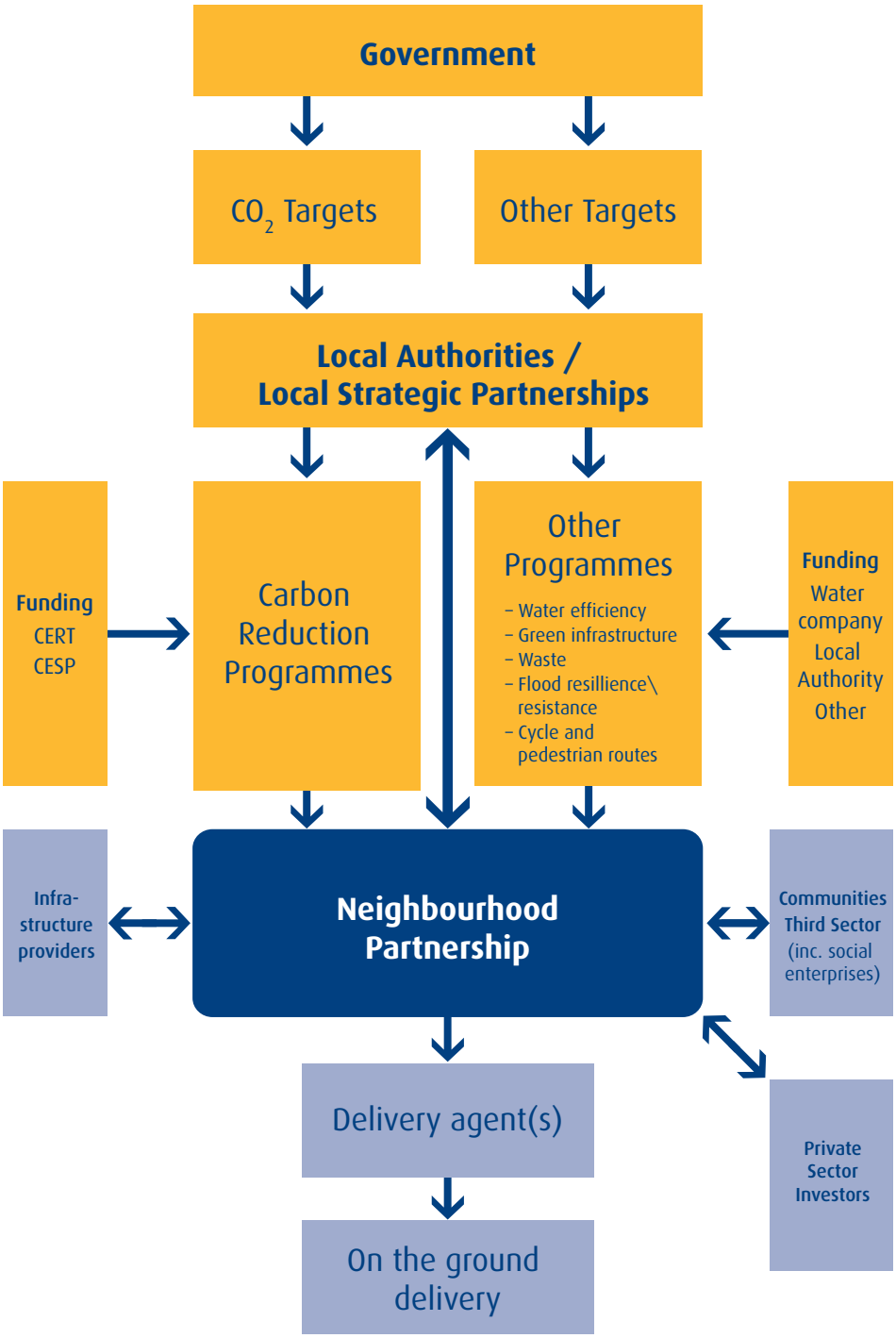
Whilst the form and structure of a neighbourhood partnership will vary according to local needs and circumstances, an effective neighbourhood partnership would be likely to display these characteristics:

- It is a multi-disciplinary partnership between communities, local authorities, infrastructure owners and other players, particularly those with finance, decision-making powers and technical expertise
- Its key task is to develop a delivery and investment plan for improvements to existing neighbourhood infrastructure that will achieve carbon reduction and adaptation targets alongside wider economic, environmental and social benefits (as set out in the outcomes framework)
- The neighbourhood retrofit delivery plan is informed by a collaborative, spatial planning process. This identifies a vision of how infrastructure upgrades can improve existing neighbourhoods and a range of projects that will support delivery of this
- The partnership can take a range of forms, with leadership from either the community or the local authority. It must build on existing partnerships and delivery structures where they exist, and where it is appropriate to do so. The structure will depend on the level of financial involvement partners want to contribute to delivering projects

- It engages and delivers at neighbourhood scale, but is linked to larger scale (LA, city, region) to enable strategic benefits to be maximised (especially around job creation and investment potential)
- It draws on a range of resources including public, private and social capital
- It is a trusted intermediary between citizens, local government, the utilities and investors.

Figure 6, below, indicates how a neighbourhood partnership could integrate existing delivery structures.

Figure 6 Integrated delivery structures



What do effective neighbourhood partnerships need to do?

These groups may have originally formed around a single issue such as traffic congestion or local food growing. As such they may be limited in their scope and structure. If they want to expand and work to develop an integrated neighbourhood retrofit programme it would be helpful for the partnerships to consider who they need to work with, what their objectives are and how they can work together to achieve this. The level of detail of these discussions will vary according to the resources available to the group. This chapter details key considerations and processes they are likely to undertake.

Identify the partners and level of operation

Before any programme of works can be delivered, it is vital that the key players are identified to make this happen. The partnership would benefit from multi-disciplinary skills and should include community members as well as people with relevant professional and technical skills, together with those who are responsible for the budgets and taking decisions on various elements of infrastructure. This might be the local authority, a utility provider, a registered social landlord, etc.

It may be clear who needs to be involved, especially where issues are local. Where it is not clear, neighbourhood partnerships could undertake a review of the resource flows both into and out of each area, and existing partnerships, to ascertain who the key players are. Existing bodies such as Local Strategic Partnerships (LSPs) may already be engaging these players effectively. If this is the case, potential for the neighbourhood partnership to sit within this structure should be explored. Neighbourhood partnerships could link LSP partners and the Homes and Communities Agency's Single Conversation to neighbourhood-level delivery. The LSP could, for example, include a neighbourhood partnership group to help deliver the neighbourhood improvement elements of the Sustainable Community Strategy.

There needs to be agreement about what is the role of each partner in the team, which body is leading the initiative, and the resources each partner will contribute (especially in terms of time and finance). As the review of New Deal for Communities (NDC) partnerships found, 'In terms of involving mainstream agencies, it is about identifying priorities and aligning interests. If these tasks are done well, much can be achieved.' This report also noted the need for a start-up period which enables these discussions to take place before projects are required to meet targets.[75]

The scale at which the neighbourhood partnership will best operate should be considered. Partnerships may be required to operate or link to a range of geographic and operational scales according to local circumstances and working practices. Some partnerships may be effective working entirely at a street level (for example, Sanford co-operative). However, the partnership may function at a more strategic level, linking down to existing neighbourhood structures to engage the community.

Develop a vision and targets

The next step is to ensure that all members of the team are agreed on a vision for the area. Some strategic objectives, particularly targets relating to carbon mitigation, adaptation and economic development, are likely to be set at the local authority level and should be taken as the starting point for activity by the neighbourhood partnership. Other key areas of concern and activity will need to be agreed at a smaller scale. The outcomes framework in Chapter 1 (Table 1) should be used to guide these discussions.

It is essential to have discussions with communities in advance of starting out on a retrofit programme. This will help to identify their needs and aspirations and the potential to deliver these through a programme of work to upgrade existing infrastructure. It will also help to identify the different objectives and aims of the partners and their timescales for delivery. These can be very different, so identifying the key drivers for each partner at the beginning can help to address any issues or potential conflicts that could arise later in the process.

Developing a shared vision will also help ensure that programmes of work deliver real benefits to communities. From this visioning process, a clear set of priorities and medium- and long-term targets can be developed. These should clearly identify targets for both carbon and wider sustainable outcomes.

Case study – **Bristol's Neighbourhood Partnerships**

The Bristol Partnership (LSP) 20:20 plan states: ***'The people of Bristol are fiercely proud of their communities – and rightly so. But many people would like to be able to make the place they live even more vibrant, supportive, safe, clean and green. We would like to make sure that everyone can influence what goes on in their area and knows how to get involved in their Neighbourhood Partnership if they want to. We would also like to ensure that people can get involved in shaping the way services are delivered in their area; from bins to buses'.***

To support this, Bristol City Council has established 14 Neighbourhood Partnerships (NPs). These bring together local residents and voluntary and community groups with councillors and statutory bodies to identify local problems and develop solutions to these. The NPs are part of the overall LSP, with 14 representatives – one per NP – on their Thriving Neighbourhoods Board.

The NPs build on existing community groups, which have developed in response to local needs. The council is supporting development of these partnerships with a £500,000 package, which includes 10 area co-ordinators.

Partnerships can undertake a range of activities which could include:

- drawing up a local action plan of problems to be addressed
- working with local service providers to deliver the local action plan
- applying for funding from other sources
- coordinating campaigns to improve local services.

NPs are provided with £20,000 to £30,000 (depending on size) for expenditure on wellbeing. NPs decide how this is spent, with potential options including staff support and event costs, purchase of equipment and works or provision of grants to community groups. Some neighbourhoods are also looking at ways to generate additional money.

The NPs provide an opportunity for structured local area involvement in key decisions being made in the city. Currently, each NP is engaged with the council on the proposed Site Allocations and Development Management Document. Some decision-making powers and funds have been devolved from the Council to the NPs, to be controlled by the elected members of the 'Neighbourhood Committee', a sub-set of each NP.

Produce neighbourhood retrofit plans

Spatial planning must form a fundamental part of the decision-making process about how the priorities and targets set out in the vision can be delivered. A collaborative planning approach (such as Planning for Real or Enquiry By Design) can facilitate discussion between partners on potential infrastructure solutions specific to the area. This approach will enable each party to understand the others' needs and constraints, and provide a forum for an informed compromise to be reached. Identifying and resolving these difficult issues early in the process can save significant time in delivery. It can also enable more effective solutions to be reached as there is more flexibility in the design process at this stage.[76]

It is essential there is a strong evidence base identifying the state of play on existing infrastructure. This will need to have reference to the array of local authority strategies that have been, and will be, developed in these areas. These may include energy options plans and feasibility studies, water cycle studies, surface water management plans, minerals and waste local plans, local transport plans, green infrastructure strategies, open space strategies, heat mapping, sustainable community strategies and climate change strategies.

Development of a sustainability options plan – as recommended by the UK Green Building Council (UKGBC) in its Sustainable Community Infrastructure report – can help to integrate analysis of these different strategies. We therefore support the UKGBC's calls for the Department for Communities and Local Government (CLG) to develop a Sustainability Options Plan methodology. This will enable

comparisons between different layers of economic, environmental and social data to identify potential priority areas. As well as informing future planning, it can help identify the viability of different infrastructure solutions in an area. Working at neighbourhood level will allow full exploration of opportunities in these priority areas. For example, while heat mapping can identify potential areas in which district heating networks may work, their true viability can only be understood after discussions with potential larger heat users about their existing service arrangements.

To allow effective development of neighbourhood plans, partners will require access to the information held on their area. Currently, much of this information (such as energy consumption or Energy Performance Certificate ratings) is not available due to data protection and business confidentiality issues. This is an issue we would like to see Government address as a matter of urgency.

Consideration should also be given to whether there is any benefit in adopting the neighbourhood retrofit plan as an Area Action Plan, Local Development Order (LDO) or other planning guidance (as with some community-led plans). Where plans involve significant works, such as the installation of a district heating network or upgrades to a large number of buildings in single ownership, it may be that an LDO will overcome the need for a series of separate planning applications.

Figures 7 and 8 show how spatial planning could be used to review a range of economic, environmental and social data to identify suitable locations for infrastructure upgrades.

Figure 7 Example of energy opportunities plan at local authority level

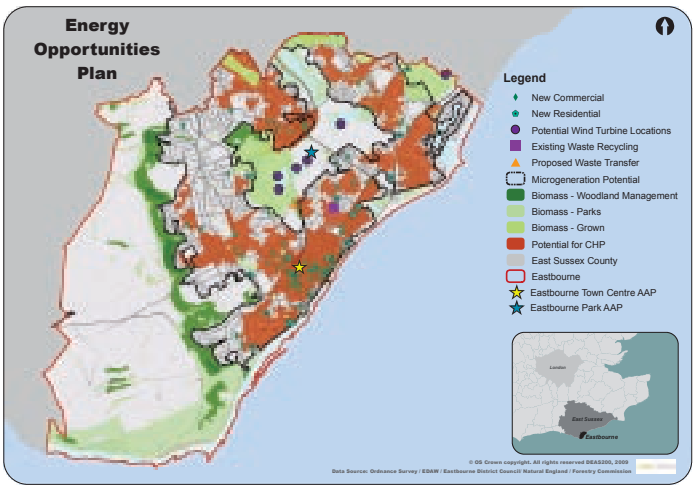
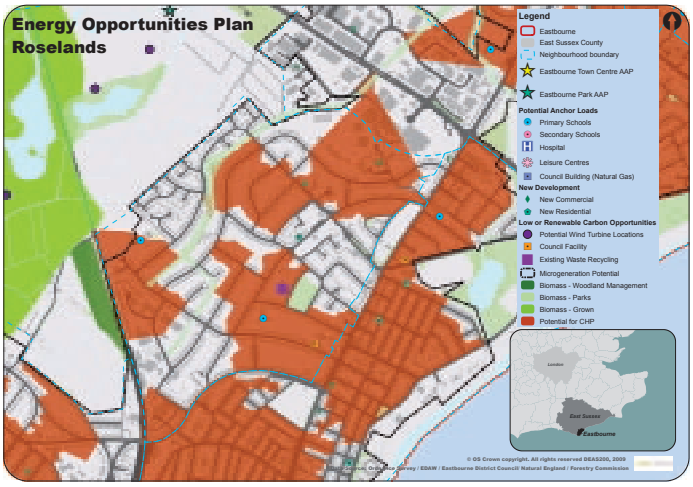


Figure 8 Example of energy opportunities plan at neighbourhood level



Images courtesy of AECOM

Case study – Seattle's neighbourhood plans

Between 1999 and 2009, the city of Seattle saw its population grow by 50,000. In 1995, to prepare for this, the city undertook a neighbourhood planning exercise. This called for residents to work in partnership with the council to develop plans which would improve the quality of life in their neighbourhoods while increasing density. Over the next four years, 38 communities developed positive visions for their neighbourhoods.

Neighbourhoods were asked tough questions: Where would all the additional people live? How would the city be able to provide them with public services, transport and housing? How could this be achieved while protecting the character of existing neighbourhoods and quality of life?

In the plans set, proposals for areas included improved social services and public safety along with improvements to infrastructure such as transport links, housing, libraries and community centres. These policies were then broadly adopted in the city's Comprehensive Plan. The resources to implement the plans came from a variety of sources, most notably residents themselves who approved the levies and bond issues that were used to finance the works.

An independent review of the work found key factors contributing to the success were

- city support and resources for the process (council staff provided ongoing support, and training was provided to community members
- neighbourhood support in the form of dedicated community participants
- leveraging city resources with external funding sources and resources, not-for-profit initiatives, business and community volunteers
- adoption of elements and inclusion of recommendations into subsequent city planning.

The review also recommended the following improvements to the process:

- improved clarity on how the plans would be used
- a common framework for plans
- clear identification of those items over which participants had actual control and those that required action by other agencies
- establishment of clear planning boundaries.

The plan process has been held up as a model for citizen involvement, with the city implementing many of the recommendations. Ninety-three per cent of residents surveyed believed it had delivered positive impacts in their neighbourhoods. This model has been emulated in the US and beyond. The same model is about to be redeployed in Seattle to help the city determine how it can provide for the projected additional 100,000 residents by 2024.

Develop a neighbourhood retrofit delivery and funding plan

Having a clear long-term plan for delivery of major works, especially those involving upgrades to private homes, will provide clarity for local people and delivery agencies. This is likely to increase uptake as the longer the lead-in time, the more likely householders will be to schedule their own plans (especially major home refurbishment) to align with the larger programme.

Having a clear delivery plan of areas to be targeted, and works to be undertaken, will also provide local and national businesses with certainty of future demand. This will enable them to undertake training for skills required to deliver and maintain these works. Businesses will also be able to plan marketing initiatives and special offers, to encourage homeowners to undertake more extensive improvements to their properties alongside the planned works.

A fundamental function of the partnership will be to identify sources of funding. Each member should identify wider resources which they can contribute to this work and how they can be used most effectively. These could be time, skills, contacts, physical assets, etc.

Case study – **Southey Owlerton: neighbourhood strategies for long-term sustainability.**

In 1999, the Southey Owlerton Area Regeneration partnership (SOAR) was set up to regenerate a significant part of North Sheffield. A collaborative, community approach to planning was adopted after residents rejected proposals for large-scale demolition.

The SOAR team worked in partnership with Sheffield City Council, the Commission for Architecture and the Built Environment (CABE) and others to develop six individual neighbourhood strategies which identified priorities at neighbourhood level. These strategies – for redevelopment sites, parks and green spaces, hub buildings and centres, and street scene projects – were developed through participatory workshops with local communities.

Neighbourhood strategies were then brought together into a single spatial regeneration framework to guide allocation of existing and future funding – which included Single Regeneration Budget (SRB) funding of £20 million.

A key aim of the work was to develop a positive identity for the Southey Owlerton area and for its individual neighbourhoods. CABE's evaluation found that development of the neighbourhood strategies *'helped unearth and develop keen understandings around sense of place and identity. It positioned the Southey Owlerton neighbourhoods differently within Sheffield – as places physically visible from much of the city, with a key role in structuring Sheffield's identity... Through this new strategy, the SOAR partnership involved local people much more closely in the regeneration of their communities, leading to a new, shared vision based on the long-term sustainability of the area'.*

Through this process, SOAR established itself as a registered charity and community organisation which delivers projects to benefit the residents of South Owlerton. This provides an ongoing process to help ensure residents aspirations become reality.

The first process in developing the delivery plan must be to identify 'quick wins' and whether there are existing sources from which these projects can be resourced. These are the no- or low-cost projects which can help to address immediate community needs, such as provision of free energy and water efficiency measures (through coordination of CERT delivery and water company reduction targets) or re-allocation of underused public land for food growing. Development of the neighbourhood plan and delivery plan is likely to be time-consuming, but these early wins will keep communities engaged in the programme and build trust for future projects that may be more complex and contentious.

The next process is to understand the funding options for each remaining infrastructure element. These will have different business models, ranging from those that will generate income to those that require 100 per cent subsidy. It is important to understand the business model for each infrastructure element and how partners' assets can be used to achieve delivery. Chapter 7 provides full details on the possible funding routes and roles of partners.

Partners should consider the attitude to be taken towards assessing whole life cost (WLC). A whole life cost approach provides an essential basis for making decisions in the interests of sustainable development, but there are still major constraints on its application. There is a lack of reliable data on the WLC of the elements of a project (capital, facilities management and disposal) and the performance of building elements and services in use.[77] Furthermore, unless private sector actors are able to take a long-term interest in a project over its lifetime, they are not normally willing to commit to higher up-front costs in the interests of minimising negative environmental and social impact, as well as operational expenditure, on a whole life basis.

Consideration must also be given to what type of body will be delivering the work and the level of involvement neighbourhood partnership members want in this. It may be that works are contracted directly to third-party companies – an approach adopted by London RE:NEW and suggested by the UK Business Council for Sustainable Energy (UKBCSE) in its recent paper.[78] Alternatively, it may be that an ESCo or a 'Low Carbon Investment Franchise' (as recommended by Consumer Focus)[79] is established.

Chapter 4 summary

- Where neighbourhood partnerships do not already exist, their formation should be encouraged and supported to coordinate planning and delivery of upgrades to existing neighbourhood infrastructure. They must deliver carbon reductions, adaptation measures and wider economic, environmental and social benefits. Neighbourhood partnerships should utilise and build upon existing organisations and partnerships which may currently be focused on a single issue
- Neighbourhood partnerships should:
  - **identify partners** – the initial stage should be to identify and engage with those bodies that have an interest in the neighbourhood
  - **develop a vision and targets** – it is vital for the partners to understand each others' objectives and from this develop a shared vision for the neighbourhood. The outcomes framework in Chapter 1 (Table 1) should be used to guide these discussions
  - **produce a neighbourhood plan** – a local spatial plan developed in partnership with the communities will help partners to understand the opportunities and barriers for the neighbourhood. A collaborative planning process should be used to decide which infrastructure solutions can deliver the vision
  - **Develop a delivery and funding plan** – a clear delivery plan will provide clarity for local people, delivery agencies and local businesses. It is also likely to provide security to encourage private sector investment.

Recommendations

SDC calls on Government to encourage, enable and empower communities, local government and other bodies to work together to plan and coordinate delivery of integrated neighbourhood retrofit programmes to achieve sustainable outcomes. For this report, we refer to these partnerships as neighbourhood partnerships. The outcomes framework in Chapter 1 (Table 1) should be used to guide these discussions. These partnerships should work to improve infrastructure at a local level so as to deliver carbon reduction and adaptation measures while at the same time achieving wider economic, environmental and social benefits. *(Action: CLG (lead), DECC, DEFRA, DfT, DH, HMT)*.

5 Who needs to be involved in neighbourhood partnerships?

Chapter 5 examines the need for involvement by:

- **Communities (including third sector)**
- **Local authorities**
- **Other partners.**

It is clear that the achievement of the tasks set out in Chapter 4 go beyond the current powers and roles of a single organisation. It is vital, then, that a team of the key public and private sector bodies come together with the local community to help shape and deliver a vision for the future of our existing places – as neighbourhood partnerships.

Who needs to be involved in a partnership will be determined by the functions they need to deliver. These include:

- Engaging with communities, local authorities, infrastructure providers and other key players
- Focusing on the achievement of long-term sustainability outcomes – including, but going well beyond, a focus on carbon
- Coordinating the development of a vision, strategy and delivery plan for neighbourhoods with clear investment opportunities.

These attributes point towards two clear candidates for potential leadership of the neighbourhood partnerships: community members themselves, and local authorities.

Both score highly in all recent research looking at who is trusted by communities to undertake work to improve the sustainability of their area. The Commission's work on the Suppliers Obligation[80] found there is a low level of trust between energy suppliers and consumers. It suggested there was a need for a trusted intermediary to deliver such works – potentially local authorities, given the greater success of projects they have endorsed. As part of its work on Sustainable Community Infrastructure, the UK Green Building Council (UKGBC) undertook research on who this trusted intermediary might be. They found that whilst some groups were opposed to local authority delivery, the most trusted bodies for day-to-day management of community infrastructure were community groups and local authorities.[81]

Both have a long-term connection to the area, an interest in how public money is spent there, and the potential for this to work harder.

Community involvement in neighbourhood partnerships

Neighbourhood partnerships must not be simply a way to deliver the government's objectives on climate change and wider agendas. They must be about delivering real change to the quality of life for people living there. People want places that are resilient to the impacts of climate change, places where they feel safe, places they can walk, cycle and play in, places that don't waste resources and have minimal impact on the environment. They also want homes they can afford to heat and some level of control over their neighbourhoods. An increasing number of people are demanding cleaner, greener, more sustainable places as demonstrated by the rapidly expanding social enterprise and community movement.

It is estimated that up to 12,000 local organisations are already working to improve the sustainability of their areas.[82] These include Transition Towns, those in the Low Carbon Communities network, Tenants and Residents Associations, development trusts and a wide range of other local interest groups. The *Stop Climate Chaos* coalition involves over 100 organisations, with more than 11 million members.[83] As the overwhelming response to NESTA's *Big Green Challenge* and DECC's *Low Carbon Communities Challenge* showed, many of these groups are eager to be part of the solution that will make our places fit for the 21st century and beyond. (The first of these Challenges received applications from 355 groups, the second from 301).

What are the benefits of having communities involved?

A key element in the retrofitting debate has been the need to engage consumers in the programmes of work, in order to access their homes and persuade them to invest significant amounts of their own money in upgrading their properties. Greater consumer demand is seen as vital for reducing costs – since the more appetite there is for the upgrades, the less it will cost Government to persuade people into action or pay for measures itself. While this is evidently true, this whole idea of 'engaging with consumers' fails to identify the potential for communities to be part of the solution and the benefits this brings.

In addition to this, occupiers' behaviour is a critical factor in ensuring the effectiveness of measures and upgrades installed to improve the environmental performance of neighbourhoods and homes; engaging resident is essential to achieve this.

Whilst there is limited quantitative evidence on the benefits of engaging communities, there are clear and consistent messages about the potential benefits, both from our own research and that of others working in this area (as referenced in Annex C). The consistent messages are that community involvement can:

- **Enable people to live more sustainable lives** – using existing community networks is a powerful way to communicate positive messages on this agenda. It can help to engage members of society more widely and engender long-term behaviour change in both individuals and communities. Engaging with communities can increase the success of policies in both the short- and long-term. This can be achieved through simple word-of-mouth recommendations, inspiration from real-life examples, structured learning from trusted intermediaries and mutual support groups, or the active involvement of communities in designing and managing programmes of work for their areas[84]

- **Reduce costs of delivery** – as detailed earlier, this can be achieved through increased uptake of measures. Having an engaged community can also avoid delays or issues such as vandalism. On a £2.2m housing redevelopment project for the Shoreditch Trust, consultants at Dearle and Henderson Ltd. estimated that the additional costs saved from community engagement were circa £500,000. Their sum is based on comparisons with similar projects where less effective engagement has resulted in time delays and additional costs from responding to residents' complaints, reworking designs at a late stage to meet user needs, and on-site events (such as vandalism or crime)

- **Improve effectiveness of works** – communities are widely recognised as a vital source of knowledge on the concerns and priority issues in their locality. As such, they may be aware of practical and effective solutions that would address these issues. Communities are aware of the functioning of places and relationships that support this at a scale that is often invisible to local authorities. Feedback from the New Deal for Communities programme found that the critiquing of local services by residents was 'absolutely vital in making more focused, refined and fit for purpose local delivery vehicles'. The report also noted that 'some of the most successful projects... are those where we have engaged residents in the design of the process; and some of our least successful projects, including some of the disasters, have been the ones where we haven't engaged residents'[85]

- **Generate public support for works** – as the 20's Plenty For Us case study highlights, community groups can deliver positive change in an area through mobilisation of support for key issues. This can create a sense of local ownership over the issue, increasing the likelihood of positive, long-lasting impact.

Local and central government can also derive benefits from community involvement in neighbourhood partnerships. Not only can they have greater confidence that their targets will be more easily achieved (due to the willing attitudes, direction and resources provided by the community), but their reputation can be enhanced through a partnership approach and the greater accountability this yields.

Whilst there is a growing evidence base on the benefits of working with community groups to deliver sustainable outcomes, this is largely anecdotal and it can be difficult to use this to ascertain the cost-effectiveness of such measures. This can result in community engagement being undervalued and under-resourced.

Recommendation

Government should improve the evidence base on the cost-effectiveness and benefits (monetised and non-monetised) of working with communities to deliver sustainable outcomes. This should include a review of projects such as the Low Carbon Communities Challenge run by DECC, DEFRA's Greener Living Fund, NESTA's Big Green Challenge, and the Community Energy Saving Programme (CESP). It should bring in findings from the review of Scotland's Climate Challenge Fund and the Research Council's Energy Research Programme. It should also look to learn from previous area-based delivery programmes such as New Deal for Communities, Housing Action Trusts, and City Challenges.

Local Authority involvement in neighbourhood partnerships

What are the benefits of having local authority involvement?

Local authorities deliver, or have some responsibility for, more than 700 different services. These cover areas such as education, transport, planning, social services, public health, procurement, energy consumption and provision, recreation and leisure, housing, regeneration and environmental stewardship. Furthermore, the vast majority of a neighbourhood's public space (streets, green space) is under local authority control, making the LA's involvement essential to any adaptations made to this.

Local authorities have extensive experience in many key areas which would support delivery of neighbourhood retrofit. These include:

- in-depth understanding of their local area, residents' needs and opportunities
- existing relations with key players (households, community groups, businesses, utilities, other public bodies and central Government)
- experience of working in partnership with these groups to discuss a range of complex issues
- creating local identity and providing civic leadership
- inspiring and encouraging behaviour change
- coordinating area-based housing and regeneration initiatives
- a political mandate to mediate between players and achieve trade-offs.

Local authorities also have access to a range of data on their areas and those living within them that will be valuable in developing neighbourhood plans. Local authorities can also play a key role in accessing funding and using their powers to support delivery of the partnership's aims. The most significant powers are those they hold over planning and building regulations and wellbeing.

Planning

Traditionally, a local authority's planning role was to regulate new development. However, planning reforms have given authorities a new focus on spatial planning so as to better understand how to make our existing places more sustainable.

The Commission believes this approach must look at the need to retrofit existing infrastructure as part of these spatial development plans. Local authorities can also use their planning powers over new developments to require works that will improve the sustainability of existing places and make retrofits more viable. The London Plan[86] requires developers to connect to a heat network if there is one. If not, they should examine the potential of on-site CHP generation. This should be provided in such a way that it enables future connection to existing development. However, if councils are to mandate connection to heat networks, these should be regulated. Otherwise local authorities may be forcing people to connect to unregulated monopoly providers, which could have wider economic and social impacts.

Having local authorities as partners in neighbourhood partnerships will help ensure there are clear links between their plans for the neighbourhood and the Local Development Framework. It will also provide access to the spatial and socio-economic data they hold on the neighbourhood. Both of these can play an important role in providing other partners with the confidence to invest their assets.

Wellbeing powers

Introduced in 2000, the Well Being Power enables local authorities to do anything they consider likely to improve the economic, environmental and social wellbeing of their area. It has only two restrictions; it cannot be used with the primary motive of raising money, and it cannot be used to circumvent other local authority prohibitions, restrictions or limitations.

The power has been used to support many once-innovative practices which have now become mainstream:

- Nottinghamshire County Council used the power to enable the council to participate as a minority share-holder in a not-for-profit Energy Service Company (ESCo)
- Braintree District Council used the power to roll out financial incentives for residents to install hot water systems, given the importance of investing in renewable energy
- South Hams used the power as the basis for developing a district-county agreement to establish a waste transfer station (now enabled through Joint Waste Authorities).

Even where the power has been used unsuccessfully (as in the case of Brent LBC v Risk Management Partners Limited), it can still drive innovation. In this case, a number of London boroughs set up a mutual insurance company to pool their risks. Although there was precedent for this, the Court of Appeal decided that the Well Being Power does not allow local authorities to embark on schemes simply to reduce costs. Unless cost savings are clearly identified to promote or improve wellbeing, they are not within the scope of the power.

A neighbourhood partnership with a local authority on board may be able to take advantage of the LA's powers to facilitate the development and delivery of retrofit programmes.

Funding and use of own assets

Local authorities could use their own assets and funding streams to support neighbourhood retrofit projects. Chapter 7 explores this issue in detail. Local authority involvement in the partnership will also improve access to buildings they own, especially social housing. As detailed in the impact assessment for the Strategy for Household Energy Management,[87] certainty of demand from these homes can help to achieve significant economies of scale for measures such as solid wall insulation (where savings are estimated at 15 to 36 per cent).

Why would LAs want to be involved?

Local Authorities are required to develop a Sustainable Community Strategy (SCS), which sets out the long-term vision for tackling local needs. This is the 'plan of plans' and sets out the key tasks for partners to achieve wellbeing in their area. The performance of local authorities is currently measured by a range of National Indicators (NIs), which are designed to deliver the SCS vision. These cover the full range of their responsibilities.

As noted in Chapter 2, work to upgrade existing infrastructure can deliver a wide range of benefits which will help local authorities meet many of their targets and outcomes as set out in the SCS. In 2008, the SDC and the Improvement and Development Agency (I&DeA) developed proposals for a sustainable development (SD) lens. This is a basket of local indicators that can be used voluntarily to guide and track progress towards sustainable development at the local level. The lens brings together the 22 current key local authority NI targets relating to sustainable development.[88] As Table 9 demonstrates, upgrading existing infrastructure could have a direct, positive impact on 14 out of 22 of these categories. Depending on the delivery vehicle (and the extent to which this involves communities) it could also have a potential positive impact on a further seven of the remaining eight indicators.
By playing a central role in neighbourhood partnerships, local authorities could ensure that programmes of work are designed to maximise these wider benefits.

Table 9 **The SD Lens**

SD Issue	National Indicator (NI)	Potential impact of infrastructure upgrades on NI target
A safer community	NI 17 Perceptions of anti-social behaviour	Potential positive impact
	NI 198 per cent of children walking or cycling to school	Direct positive impact
Community cohesion & identity	NI 2 per cent of people who feel that they belong to their neighbourhood	Potential positive impact
Effective & inclusive participation	NI 4 per cent of people who feel that they can influence decisions in their locality	Potential positive impact
Good Governance	NI 3 Civic participation in the local area	Potential positive impact
Mitigation against, and adaptation to, the effects of climate change	NI 186 Per capita CO_2 emissions in the LA area	Direct positive impact
	NI 188 Adapting to climate change	Direct positive impact
Sustainable consumption/ waste reduction	NI 191 Residual household waste per head	Direct positive impact
Protecting & improving biodiversity	NI 197 Improved local biodiversity – active management of local sites	Direct positive impact
Good quality, sustainable buildings	NI 158 per cent of decent council homes	Direct positive impact
	NI 187 Tackling fuel poverty	Direct positive impact
Access to good quality green space	NI 199 Children and young people's satisfaction with parks and play areas	Direct positive impact
Water use	Water use: water consumption per head (Source: Area Profiles/Ofwat)	Direct positive impact
Access to local services	NI 175 Access to services and facilities by public transport, walking and cycling	Direct positive impact
Road traffic congestion	NI 167 Congestion – average journey time per mile during the morning peak	Direct positive impact
A strong local business community	NI 172 VAT registered businesses in the area showing growth	Potential positive impact
Good employment opportunities	NI 152 Working age people on out of work benefits	Potential positive impact
Economic wellbeing	NI 116 Proportion of children in poverty	Potential positive impact
Health & wellbeing	NI 119 Self-reported measure of people's overall health and wellbeing	Direct positive impact
Education and lifelong learning	NI 163 Working age population qualified to at least Level 2 or higher	No direct impact
Health inequalities	Health inequality: (a) infant mortality (by socio-economic group) (b) life expectancy (by area) for men and women (Source: ONS)	Direct positive impact
Local area footprint	Ecological footprint of area (Source: REAP/WWF/ Stockholm Environment Institute)	Direct positive impact

Whilst these targets are key drivers for local authorities, the non-mandatory nature of most of them means they cannot be relied upon as an incentive for action. This is especially the case with climate change, given the increasing role local authorities are expected to take and the seriousness and urgency of the issue. Some forward-thinking local authorities have already realised that the costs of not implementing climate change mitigation and adaptation measures will be significant, and have developed carbon management plans or climate change strategies. Manchester undertook its own 'mini-Stern' (looking at the economic cost of climate change) and estimated that the city region risks losing £12 billion over the next 12 years if it fails to adapt (and £70 billion for the North West region).[89]

However, many other local authorities are making slower or minimal progress in this area. Only last year, the Audit Commission found that 'few areas have developed ambitious long-term strategies to drive CO_2 reductions'. Two-thirds of Local Strategic Partnerships (LSPs) have set targets for NI 186 (per capita CO_2 emissions in the local authority area) – but these targets range from a 1 per cent reduction in Bristol to a 15 per cent reduction in Kirklees, with a median reduction target of 10.6 per cent. Only a fifth of targets exceed the reductions that are expected to be delivered by nationally implemented initiatives.[90] This level of ambition is woeful compared to the scale of change needed to meet the agreed UK carbon reduction target. In addition, only 57 local authorities (out of almost 400 in England) have designated NI 188 adaptation targets.[91]

The Carbon Reduction Commitment (CRC) energy efficiency scheme, which came into force in April 2010, may help to bring discussion of carbon impacts into the financial decision-making in those local authorities which fall under the scheme. However, the focus is only on emissions from local authority stock. It does not look at borough-wide emissions such as those from transport or issues relating to climate change adaptation. A concern is that the scheme may encourage local authorities to dispose of assets with poor energy performance, in order to reduce their emissions. This can be a significant problem when assets are taken on by community groups with limited income to undertake upgrades. Where assets are disposed of to such groups, assistance should be made available to undertake energy efficiency upgrades to the asset.

As well as helping local authorities achieve their NI targets and SCS vision, working with neighbourhood partnerships can help improve their local evidence base on reductions in carbon emissions – achieved through both physical measures and behaviour change. This will be vital in measuring progress against area-wide emissions (i.e. for NI186 and Local Carbon Frameworks). While there is an increasing number of incentives for local authorities to take action on climate change, these are not necessarily sufficient for this to become a key concern across all local authorities – especially in times of shrinking public sector budgets.

Climate change mitigation and adaptation measures should no longer be viewed as optional extras. Earlier this year the Royal Commission on Environmental Pollution called for all public bodies, programmes and policies to have a legal duty to adapt to climate change.[92] This follows the route taken in London where since 2007 the GLA has had a statutory duty to tackle climate change. Alongside this they are required to produce a Climate Change and Energy Strategy, and Climate Change and Adaptation Strategy.

Recommendation

Given the urgency in tackling climate change and the critical role local authorities can play in enabling, encouraging and engaging people to undertake action through neighbourhood partnerships and integrated neighbourhood retrofit programmes, we recommend that the local authority's role be formalised as local leader on climate change mitigation and adaptation measures. This could be achieved through a requirement to set mandatory targets on climate change mitigation and adaptation (NI186 and 188) or by making this a duty on local authorities.

Case study – **Southwark Council: improving outcomes through resident engagement**

Improvements include: solar thermal heating, garden railings and street furniture

Photos: © Southwark Council

Southwark Council are employing many of the lessons learnt from the award winning Bellenden Renewal Area to the development of their Low Carbon Zone. Bellenden Renewal Area operated from 1997-2007, delivering a range of housing, environmental, employment, economic, community development, crime and health benefits.

The renewal area is predominantly privately owned properties (78 per cent at the start of the scheme – a mixture of owner occupied and private rental homes and small retail units) and works were delivered on a cross tenure basis.

The council successfully engaged with residents by seeking their views on local problems and suggested solutions. Decisions on buildings' and streets' appearance were devolved to residents, and residents received construction training. This community-led approach garnered high levels of take up even though participants were asked to make a financial contribution. In one street a single householder was unwilling to participate because he did not want the council interfering with his property, but residents conveyed the benefits and persuaded him to join in.

The scheme also demonstrates how community involvement can deliver innovative and inspiring outcomes. Residents were keen to see environmental improvement monies used creatively and could see no reason why local artists shouldn't be involved in the designing of walls, gates, paving, street lighting, traffic islands and more. The Council drew on their local assets and involved over 60 local artists (including Antony Gormley, Zandra Rhodes, John Latham and Tom Philips), most of whom provided their services for no- or minimal fee.

The scheme has successfully transformed the Bellenden area of Peckham from a run-down back street into a desirable neighbourhood, with house prices 15-20 per cent higher than those in surrounding streets, and up to 20-25 per cent higher where whole streets have been improved. It also trialled a number of innovative environmental measures including solar heating systems linked to individual condensing-combination boilers. The scheme has won a number of awards including NHIC's 'local authority that has done the most to promote the repair of homes in the private sector' and BURA's Best Practice in Regeneration award.

The council are employing many of the lessons learnt in their LCZ. These include:

- spreading information through residents and existing community networks. They are working with Global Action Plan to develop EcoTeams to disseminate information to friends, family members and neighbours
- engaging residents on overall sustainability of a place or their immediate problems/interests that the scheme can deliver (such as new windows, environmental realm improvements or better recycling) rather than carbon and climate change
- being clear about parameters when giving residents control. If the scheme must deliver 80 per cent carbon reduction this must be clear from the start

A key concern at the LCZ is the lack of a single funding source. This results in programmes being developed around available funding (and its often restrictive qualifying criteria) rather than outcomes. This approach limits the amount of true community involvement in the process. It also hinders the potential to deliver the measures that would provide the most effective carbon and sustainable outcomes in the area.

Case study – **20's Plenty For Us – mobilising communities to create political mandate for action**

While road safety for motorists in the UK is good, our roads remain much more dangerous for pedestrians and cyclists. The UK's streets are some of the most dangerous in Europe for pedestrians. As a percentage of total road fatalities, pedestrians make up an average of 21 per cent, compared with an average of 11.7 per cent across Northern European countries.

This is particularly the case in deprived areas, with the level of child pedestrian casualties four times higher in these areas than in the least deprived. With speed limits in residential and urban roads 60 per cent higher than most Northern European countries there has been growing community interest in ways to reduce traffic speeds on residential roads.

Whilst retrofitting streets with homezone type principles can provide a long-term solution alongside improvements to existing streets, this can be expensive (although through their 'DIY Streets' programme Sustrans are looking at ways to deliver benefits at reduced costs) and would take years to roll out across towns and cities. It is also unlikely to happen without community and local authority support. Reducing speed limits to 20mph across residential areas, while at the same time engaging the community in road safety issues, can be an immediate and highly cost-effective way to obtain results and generate further interest. Portsmouth introduced 20mph speed limits across all 1,200 residential roads (other than main arterial roads) at a cost of £475,000 over a period of nine months – an average of less than £400 per road.

20's Plenty For Us is a national voluntary organisation supporting communities and local authorities who want to introduce area-wide 20mph speed limits. Through the provision of information, advice and best practice it helps communities to establish democratic initiatives which reinforce the community's sense of ownership of the solution, and therefore their likely compliance with the limits. The aim is for drivers to consider and decide upon their compliance with a decision made by their community, rather than simply complying with a sign. This high level of community interest and campaigning around the issue can also be effective in overcoming traditional stumbling blocks such as the highways department, by providing a political mandate for the works.

This approach has proved very effective, with communities in twelve local authorities having signed up to the scheme. 20's Plenty for Us is working with communities in a further 40 areas to develop initiatives. The scheme has shown that working from the bottom up can be effective in mobilising strategic action, as the Department for Transport recently issued revised guidance on setting local speed limits to encourage highways authorities to introduce 20mph zones and limits in primarily residential areas, and in town or city streets with high levels of pedestrians or cyclists.

Who should lead neighbourhood partnerships?

The role that communities are willing and able to take will vary according to the level of existing social capital and supporting structures. If there is a well-established group, with effective community links and access to technical knowledge, they may be able to take a key role in neighbourhood partnerships, potentially as initiators of change and owners of the solution. From our research and from reviews such as NESTA's of the Big Green Challenge,[93] it appears that they are unlikely to have sufficient resources to provide an effective administration function.

Likewise, the role of the local authority is likely to be determined by the level of commitment it has to climate change and sustainable development issues, the effectiveness of existing structures and the resources available. It will also be determined by the level of community activity. If no active groups are present, a local authority would have to take the lead in raising awareness of the issues and creating forums for communities to discuss the key issues and participate in a neighbourhood partnership.

Our case studies highlight the scope for a range of different leadership options. These vary from Sanford Co-op, which had minimal local authority involvement, to local authority-led schemes at Kirklees and Woking and city-led programmes across London and Greater Manchester.

Case study – **Sustainable Blacon: community leadership of an integrated programme of works**

Map: © Buro Happold

Sustainable Blacon Ltd. (SBL) was established by Blacon Community Trust (BCT) to take forward the community's aspiration of becoming a model sustainable urban community, with 20 per cent reduction in carbon emissions within three years. To achieve this they are looking in an integrated way at four key areas: energy; green space; transport and social enterprise. Their intention is that these works should also bring new life and investment to an area with significant deprivation.

The group has evolved from previous regeneration initiatives in the area. It builds upon experience of developing partnerships between the community and other organisations to improve the quality of life. BCT was set up in 1984 and has developed a range of community services. These include social enterprises, enterprise coaching and incubator support for neighbourhood businesses and a vocational training centre. It also has an income generating arm. BCT works with Chester and District Housing Trust on neighbourhood management (following on from the Neighbourhood Management Pathfinder).

The people managing Sustainable Blacon are local residents, representatives from Cheshire West and Chester Council, the Chester and District Housing Trust and expert advisers in energy, green spaces and urban design. Through this body the community is leading the process and discussions with key players such as DECC, energy companies (home energy consumption reduction, renewable energy technology installation and new technology development), Cheshire West and Chester Council, West Cheshire Primary Care Trust, and the Northwest Regional Development Agency. Their organised approach meant that they were one of the first communities selected in DECC's Low Carbon Communities Challenge and be recognised by British Gas in their Community Energy Saving Programme.

The Low Carbon Communities Challenge research programme aims to achieve an overall target of 20 per cent reduction in household energy bills with corresponding CO_2 emissions reductions. These are:

1. Establishment of two demonstration houses to provide energy efficiency information and practical advice to local residents and promote low carbon technologies and living
2. Trial of Energy Management Systems (EMS) in 150 homes representative of community, faith and service groups across Blacon. 100 will have EMS installed and 50 will be a control group. All 150 will embark upon a community-based sustainability programme.

Further work planned in the area includes:

- Demonstration energy projects – district heating and renewable power microgrid in mixed use redevelopment, energy efficiency retrofit at key community building and external cladding of three high rise blocks
- Working with British Gas to trial new smart meters
- Engaging the community in energy efficiency through a programme of thermal image surveying delivered by volunteers and Blacon High School
- Improving green spaces
- Improvements in the cycling and walking infrastructure along with cycle training and maintenance courses
- Establishment of a new Furniture Re-use Project diverting 74 tonnes of reusable furniture from landfill per annum.

Both SBL and the local authority believe that initiatives to reduce carbon emissions will be much more effective if they are led by community groups in delivering long lasting behaviour change. This is based both on their experience of neighbourhood management and research undertaken by Ged Edwards (Sustainable Blacon's CEO) into Ashton Hayes' *Going Carbon Neutral* project. The local authority is looking into the potential of trialling integrated local service delivery in the area.

Case study – **Council and Community Partnership – Muswell Hill**

Muswell Hill Low Carbon Zone (LCZ) is a partnership project between Muswell Hill Sustainability Group (MHSG) and Haringey Council, supported by a number of organisations including Marks & Spencer, London Sustainability Exchange, Groundwork, faith groups, a library and local residents associations. MHSG was formed by two local residents associations in 2008 and currently has around 100 members. The Group approached Haringey Council to work together to make a bid to the GLA's LCZ initiative, for which they successfully attained funding in July 2009 to become one of ten chosen neighbourhoods.

Low carbon zones have a target to reduce carbon emissions by 20.12 per cent by 2012 and to work towards London's target of 60 per cent reductions by 2025. Muswell Hill's LCZ project will involve solar and other renewable energy generation along with energy efficiency advice and assessments in around 1,000 buildings, including private and social housing, businesses and schools. A cross community steering group oversees the project.

The Council also worked with MHSG to develop another successful funding bid to DECC's Low Carbon Communities Challenge. The funding will be used to install large scale photovoltaic arrays at a local business and housing estate, for which a revolving fund has been set up to use Feed-In-Tariff payments to invest in further renewable energy projects. These projects are overseen by the social enterprise En10ergy, an Industrial and Provident Society set up by MHSG for the benefit of the community, with shares sold to residents and local organisations.

Haringey Council consider that MHSG's links with local residents, organisations and businesses bolstered their project proposals, and that their plans also benefitted from a range of professional expertise in their membership. The group's knowledge of the area facilitated an early assessment of the potential for large-scale renewable energy installations. In return MHSG have benefitted from the connections, expertise and support the Council could offer in the bidding and organisational processes. The council's guide on 'Use of Renewable Energy Systems: Historic Buildings and Conservation Areas' clearly sets out acceptable development in these areas which should aid delivery of the partnership's goals, given that much of its area is in a Conservation Area.

Who else needs to be involved?

To operate effectively, neighbourhood partnerships must be multi-organisational and multi- functional. They must bring communities and local authorities together with infrastructure owners (utilities, RSLs, private sector landlords, etc.), finance, businesses and those with technical skills to aid delivery. Partners could make different types of contribution to the team in terms of finance, technical expertise, decision-making powers (for community, local authority and infrastructure owners), innovative thinking, contact to other bodies, and more. There are numerous examples of such partnerships operating effectively, especially in the delivery of regeneration or large-scale new development. Local Strategic Partnerships (LSPs) could also perform this role but are usually borough-wide and do not necessarily include key players with an interest in neighbourhood retrofitting such as utilities. Combining these skills, areas of expertise, powers and buy-in capabilities can provide the seed bed for innovative solutions.

It is probable that players will have different levels of involvement at different stages of the process. Whilst it may be useful to have input on potential funder requirements in the design and planning stage, many of the funders are unlikely to become interested in the discussions until there is a clear portfolio of projects on the table. Likewise, the community groups involved in the initial planning stages are likely to have less involvement in developing the detail of the financial packages.

A key function for neighbourhood partnerships must be to attract and coordinate private sector investment. This includes funding for energy and water companies' efficiency targets and investment in ongoing maintenance

and upgrades for existing infrastructure providers. It is useful if these organisations are members of (or engaged with) the neighbourhood partnership. Depending on local circumstances and priorities, wider public sector bodies and land owners (such as Network Rail, NHS, schools) may also be key to successful delivery.

Some infrastructure owners may be difficult to engage in local projects where there is no direct link to their primary role. For example while Network Rail is one of the top public sector investors in regeneration projects, it only invests in projects which include a rail development or improvement.[94] It can also be hard to coordinate delivery of infrastructure works, although this is something London is starting to address through the permit scheme for roadworks, introduced in 2009,[95] which enables boroughs to coordinate works undertaken on their roads.

While there are potential cost savings in terms of joining up delivery and minimising community opposition to works, it is unlikely these will be sufficient to encourage bodies to change their working practices. This may need to be addressed through regulatory change. The SDC welcomes the proposal in the Strategy for Household Energy Management[96] to oblige energy companies to consult with LAs on delivery of their Energy Company Obligation targets and to ensure their plans are consistent with Local Carbon Frameworks.

Government must continue to review the existing frameworks for those regulating infrastructure providers, to ensure they enable and support new ways of working that will deliver carbon reductions and sustainable outcomes, in line with their duties as we recommended for Ofgem.[97]

Government should ensure that regulatory frameworks for infrastructure providers enable and support engagement with neighbourhood partnerships to deliver an integrated neighbourhood retrofit approach.

To achieve this Government should undertake a 'fit for purpose' review of existing regulatory structures to identify potential issues preventing neighbourhood partnerships from working effectively. These could include improving access to the grid for community energy systems, and enabling local authorities to supply water or adopt SUDS.

Chapter 5 summary

- As no single body is responsible, leadership will vary from partnership to partnership. It is not critical who leads, as long as they are committed to the vision – but communities and local authorities have key roles to play
- Communities should have a key role in neighbourhood partnerships. They can bring local expertise to improve the design of projects, along with enthusiasm and long-term commitment to the area. Working with communities will also be the most effective way to deliver behaviour change and encourage uptake of measures
- Local authorities should also have a key role in neighbourhood partnerships. They have a political mandate to coordinate action at the local level along with responsibilities on sustainable development and place making. They can offer experience of partnership coordination, access to key partners and higher levels of finance and planning, and wellbeing and procurement powers
- Involvement of other players will depend upon the location and ownership of infrastructure in the area. It should include infrastructure owners (utilities, RSLs, etc.), funders, local businesses and those with technical skills to aid delivery. Some may be unwilling to engage initially, but they will play a critical part in delivering the retrofit programme.

Recommendations

- Government should improve the evidence base on the costs and benefits (monetised and non-monetised) of working with communities to deliver sustainable outcomes *(Action: CLG to coordinate)*
- Given the urgency in tackling climate change and the critical role local authorities can play in enabling, encouraging and engaging people to undertake action through neighbourhood partnerships and integrated retrofit programmes, we recommend that the LA's role be formalised as local leader on climate change mitigation and adaptation measures. This could be achieved through a requirement to set mandatory targets on climate change mitigation and adaptation (NI 186 and 188) or by making this a duty on local authorities *(Action: CLG)*
- Government should ensure that regulatory frameworks for infrastructure providers enable and support engagement with neighbourhood partnerships to deliver an integrated neighbourhood retrofit approach. *(Action: CLG to coordinate).*

6 What support is required for neighbourhood partnerships?

Chapter 6 examines:

- **The need for a coordinated programme of support from central Government**
- **What type of support is needed.**
- **Which areas could implement neighbourhood partnerships first?**

If neighbourhood partnerships for retrofitting infrastructure are to become mainstream, they will require effective and easy-to-access support structures. As detailed below the type of support required will vary according to the experience of the partnership, the skills and make up of its members, its aspirations and the level of involvement the partnership wants in delivering and owning the neighbourhood retrofit projects.

Government already provides support to both local authorities and communities working to improve the sustainability of their areas, delivered through a number of specialised programmes.[98] Feedback suggests that, while some of this support is valued, the myriad sources and providers make it difficult to understand what resources are available. This can dampen enthusiasm for projects. The multiplicity of providers also makes it hard to understand whether the support is meeting user needs, particularly those of communities. Feedback from our task groups suggests there is a predominance of web-based tools and a lack of detailed support, mentoring and handholding. In some areas, there are large gaps – such as financial and legal advice, which fall outside the remit of many of the support bodies.

The Government needs to review the support required by neighbourhood partnerships, identify duplication and gaps, and reconfigure these structures to be more effective. They should also look at ways in which communities themselves, through social enterprises, can help to deliver this support.

Based upon its experiences of previous area-based initiatives, the Commission believes neighbourhood partnerships will be supported most effectively if a single Government department is given responsibility for coordinating cross-governmental support. This department should establish mechanisms for engaging with those departments with overlapping requirements for delivery, as well as regulators, to ensure these adequately support neighbourhood retrofit plans. They should also be responsible for setting up mechanisms to provide the types of support outlined below.

Recommendation

The Department for Communities and Local Government (CLG) should have responsibility for coordinating cross-governmental support for neighbourhood partnerships. This should be informed by a review of the support being provided through existing and recent initiatives to support both local authority and community-led partnerships.

What support do they need to provide?

The key types of support required are:

- Handholding, advice, mentoring and capacity building for local authorities and community groups on technical, financial and legal issues and project management
- Support for core skills, especially finance and project management (including measurement of impact)
- Seed funding for core costs, research and development projects and initial investment
- Development of best practice based on feedback, monitoring and research and development projects
- Development of procurement panels.

Handholding, capacity building and best practice

Support for local authorities

Local authorities should be a key source of expertise and skills for neighbourhood partnerships. The skills levels and capacity to offer this support vary greatly between local authorities. To be effective in this role, some will require support from central Government to build their in-house capacity.

Skills

A report by Consumer Focus recently highlighted the skills shortage in local authorities, particularly around energy planning. In its review of energy infrastructure,[99] it found that while 18 London Boroughs have commissioned work on energy networks or Energy Service Companies (ESCOs), few have the skills or resources to implement the findings from the studies.

While skills are improving in some areas, there are still chronic shortages in planning. Changing technologies, the scale of delivery required and the tightening of council budgets mean it is unrealistic to demand that all local authorities acquire these skills as a matter of urgency. Likewise, it is profligate for local authorities and communities to continually appoint consultants to provide complex technical and legal support. There is a need for a different solution.

Wellbeing power

Despite the breadth and potential of the wellbeing power to improve the sustainability of existing places, widespread use of the power has been limited. In a 2006 survey, the Commission found that less than 27 per cent of local authorities had used the wellbeing power to finance sustainable development initiatives. Less than 10 per cent had used the power to trade for these purposes.[100] A review by the Department for Communities and Local Government (CLG) in 2006 also found its use to be limited, with local authorities relying on more specific powers to achieve their goals. Awareness of the power varied across the public sector, with the highest recognition among corporate officers and executive members, and lowest among partners and the voluntary sector. Only eight per cent of LSPs had made use of the power.[101] It is possible that the Court of Appeal's ruling in the Brent LBC v Risk Management Partners Ltd case (see Chapter 5) has deterred wider use. Government should look at the type of support required to encourage local authorities to use it.

The commission notes that the Government proposes a new general power of competence for local authorities. It is not yet known how this will relate to the Well Being Power; based on our research into the use of the latter it is likely, however that local authorities will require support on how they can utilise the power to deliver maximum sustainable outcomes.

Leadership

There is also a need for enhanced support for local authority leaders. Collecting baseline and benchmark data is of course essential to making evidence-based policy work, but as has been identified by CABE in its Programme for Sustainable Cities,2 local authority leadership on sustainability needs to go much further. Local authority leaders will need to develop and articulate a clear vision of how the future should be, so that they are able inspire their organisation, its partners and the electors to achieve this vision. This will help to prioritise outcomes which offer long-term sustainability and force multi-disciplinary approaches within local authorities.

This is not easy when the political discourse of the past 65 years has been based on growth and ever-increasing consumption. To achieve this, many leaders will need simplified routes to best practice guidance, clear explanations of the benefits of making towns and cities more sustainable, and evidence of change that has brought quality of life benefits elsewhere.

There are already models within Government for providing long-term support to local authorities, which should be explored to understand how they could be used to support neighbourhood partnerships too. These include ATLAS and Partnership for Schools (both detailed below) along with CABE's Sustainable Cities and enabling work, the Carbon Trust's Local Authority Carbon Management Programme and HCA's support on the development of Local Investment Plans, provided as part of its single conversation.

ATLAS – capacity building and long-term support for local authorities

The Advisory Team for Large Applications (ATLAS) has proved a very effective model in disseminating technical expertise and building capacity within local authorities with limited experience of large, complex or strategic planning applications. ATLAS was established by CLG in 2004 and provides a free, independent service to Local Planning Authorities which are dealing with large-scale complex proposals, and their partners.

The team is hosted by the Homes and Communities Agency HCA), which enables it to access its skills and knowledge base. ATLAS will engage where requested by the local authority, on a case-by-case basis and at any stage of the development process.

ATLAS can play a variety of roles, ranging from relatively passive members of the project management process through to active members of the development team reviewing specific pieces of information, assisting with and undertaking bespoke pieces of research related to the key project. It often takes an ongoing role throughout the life of a project, from early inception through to the submission and consideration of planning applications. ATLAS can also draw upon existing contacts and experience collaborative working to develop stronger relationships with project stakeholders.

Through its work, ATLAS:

- Works to build capacity, knowledge and expertise within local authorities
- Disseminates lessons learnt from the work to planning authorities and wider planning community
- Improves the quality of the planning process and the outcomes achieved through activities and an online guide (atlasplanning.com).

ATLAS regularly undergoes independent evaluation. Feedback suggests its mediation, documentation assistance and project management skills translate into significant time and cost savings.

Other examples of support for local authorities

- **Commission for Architecture and the Built Environment** (CABE) – CABE provides advice and support to build the capacity in the public sector for commissioning and influencing design quality. The support ranges from project advice on new buildings, such as schools, and improving public spaces, to strategic support in developing masterplans and open space strategies. Support is provided locally through direct one-to-one advice and also in running local training events and expert workshops. Coordinated by CABE, a network of experienced practitioners across England ensures the advice is locally relevant. All are leaders in their professions, including architects, planners, engineers, landscape architects, urban designers and surveyors. CABE is also providing strategic support to local authorities on adaptation and mitigation in the built environment through its Sustainable Cities website and learning programme
- **The Homes and Communities Agency** (HCA) – The HCA has developed a 'place focused' model of working and a process of dialogue with local authorities, and their partners in which they agree an appropriate vision for their place. This reflects local ambition while supporting national priorities. The HCA may support local authorities in developing their single conversation and subsequent Local Investment Plan using a range of tools. These include provision of advice, support and capacity building; project management; access to HCA procurement panels; and strategic relations with lenders and institutional finance.

Support for Communities

While community organisations can play a key role in neighbourhood partnerships, it is imperative to understand that there are limitations on what they can achieve without effective support. Their key needs have been identified by NESTA's review of the experiences of its Big Green Challenge finalists[102] as:

- Access to expert advice and capacity building
- Business development/mentoring
- Provision of legal support and standard documents, contracts etc
- Facilitation of best practice, information sharing and award schemes.

These findings are entirely consistent with our case study research and task group discussions. It should be noted that the type of support required will vary significantly between groups depending upon their situation, aspirations, scope of projects, stage of organisational and project development and existing access to technical expertise. As identified by CAG's report for the Ashden Awards some communities may require 'priming' to take action.[103]

While some of this support can be provided by local authorities, it would make better use of resources for the generic information to be provided centrally. As noted above, there are a range of existing sources of information funded by the Government. A strong and consistent message from our research is that, while the information is valued, community groups can get lost or tired wading through these and confused about which sources to trust. There is clear demand for these support mechanisms to be streamlined and coordinated through a single interface. As with the Green Concierge and Leapfrog case studies (below) and the advice service proposed in Warm Homes, Greener Homes, this single interface should provide information on a range of technical, project management, delivery and finance issues. It should also offer ongoing, long-term support and capacity building where needed.

This could be provided as a telephone and web service (as for consumers on energy efficiency retrofit). The service should respond to basic queries and arrange long-term, project-specific support. It should also monitor requests for help, to identify areas requiring further support. This could include the development of standard documentation and contracts. This role could be provided by expanding the remit of existing bodies, such as the Energy Saving Trust (EST), to cover issues wider than energy. EST already has the local and central structures needed to support neighbourhood partnerships. This process should simplify and rationalise existing delivery structures. It should learn from the support package provided to the Low Carbon Communities Challenge projects.

The Low Carbon Communities Challenge provides a good example of how Government co-ordination of support can be effective. As part of the programme DECC are coordinating a specialist support team comprising companies, charities, government-funded organisations and public sector departments which will help communities tackle all areas of sustainability. Through its co-ordination role, DECC has been able to identify gaps in existing provision and develop solutions to meet these, such as the recent guide on establishing and running community revolving funds.[104] It has also identified wider issues around the role of social enterprises in providing support, and the need for a central investment fund to support communities.

Recommendation

Support for neighbourhood partnerships should be coordinated through a single interface. In addition to improving usability, this will help ensure that services meet the need of users without duplication of resources.

Likely areas requiring support are:

- Long-term enabling advice, technical support (particularly on the use of the Well Being Power) and capacity building for local authorities
- Technical, financial and legal advice, mentoring, capacity building and project management for community groups
- Access to funding, particularly for initial investment and core costs.

Case study – **Leapfrog: providing a one-stop for free professional advice**

Leapfrog was established in 2006 to galvanise private sector organisations to provide pro-bono advice to enable the development of low carbon projects and provide a network through which this can be accessed by projects in the UK and beyond.

Leapfrog was developed following founder Steve McNab's frustration at seeing viable low carbon projects flounder due to the lack of access to affordable professional advice at key stages of project development. From his experiences as head of environment at law firm Travers Smith he saw many projects fail because of lack of specialised services or because they are beyond the risk profile of venture capital or other funding organisations.

As a business-led not-for-profit organisation Leapfrog has drawn on the growing interest for professionals in supporting low carbon projects. Support is provided for three types of projects:

- UK based carbon reduction projects i.e. Ashton Hayes and Bollington Carbon Revolution
- UK based low carbon entrepreneurs
- International carbon reduction and renewable energy projects.

The projects are matched to bespoke teams with potential to bring in skills later as projects evolve.

Each project will normally be assigned a project manager to ensure effective and manageable liaison between the project and the team. The team will then be contracted to deliver an agreed scope of works.

Leapfrog does not intend that individuals or organisations receive carbon credits for their work as they want volunteers to be involved purely because they are enthusiastic about giving something back to the community. Businesses are incentivised to join the scheme on the basis that it will provide staff with opportunities to develop new skills and strategic approaches. It can also provide personal and professional goals to diversify experience whilst remaining with the organisation. It also provides an opportunity for organisations to develop corporate goodwill.

Leapfrog is currently helping a number of initial pilot projects. These include assisting community groups in Ashton Hayes and Bollington Carbon Revolution who are working to reduce carbon emissions in their areas. They are also providing support to Low Carbon Foundation, a not-for-profit venture capital fund established to invest in early stage low carbon technology companies.

Current participants in the scheme include (amongst others) Lloyds TSB, HSBC, GVA Grimley, WSP, University of Cambridge and the Law Society.

Support for core skills

Project management

Neighbourhood partnerships will require an expansion in skills for those managing the projects. These are the critical, but often overlooked, skills required to deliver quality area-based environmental programmes. Neighbourhood partnerships will need to engage with individual households on a street-by-street basis, delivering a wide range of different measures which are often funded by a variety of schemes from both the public and private sectors. Neighbourhood partnership managers will need to work across the partnership, with communities, utilities, local authorities and other key organisations.

Case study – **Providing a single source of expertise through the Green Homes Concierge**

The Green Homes Concierge provided homeowners with a single point of contact for a range of technical and funding advice on energy efficiency upgrades. Ten Lifestyle Management Ltd (who provided the service) acted as a conduit for the borough council, and through the use of Ten's team of expert Home Energy Advisors who undertook whole house assessments, collected a range of information to advise the homeowner on the appropriate upgrades for their situation.

Feedback from their 12 month service showed that this single, consistent contact body for homeowners reduced confusion and enhanced trust in the range of offers encountered.

The service provided homeowners with a personal home energy check to identify options to improve energy efficiency. After the assessment clients were provided with access to the concierge service to help them take action on the report. The service included support on obtaining grants, advice on commissioning suppliers and product selection and overseeing work covered by the agreement. The service was developed by Ten Lifestyle Management Ltd and the London Development Agency. Homeowners were charged £199 for a 12 month service.

Initial uptake of the service was high; however as the economic downturn hit the take up rates dropped. Whilst there may therefore be issues with the business model the feedback to the service provided has been very positive. Ten UK have been working with EST on applying the principles to their work and the previous Government announced the establishment of a universal web and telephone based advice service in Warm Homes, Greener Homes.

This positive customer response to a single source of information echoes Ten's experiences with 'The Key'. This provides school leaders with access to expert information on a range of subjects. Responses to individual queries are sourced within three days and then posted on the site so that they can be accessed by other school leaders in future. This service was piloted between 2005 and 2008 and is now available nationwide on a subscription basis. Numbers have grown from 500 to more than 1600 in the past year with about 30 new schools now joining each week.

Finance

If neighbourhood partnerships are to attract private sector investment and deliver returns to the community, there is a clear need to improve the financial skills and understanding of partners. This is true of both local authority finance teams and community groups.

In an SDC survey of Directors of Finance in 142 local authorities, more than half (53.5 per cent) agreed that their authorities could save money through sustainable development initiatives. However, 72.5 per cent stated they did not think there was enough information available about sustainable development and how it relates to their role as finance director.[105] The survey also found that 62.6 per cent of respondents either disagreed or strongly disagreed that 'the local authority factors in long-term environmental change, such as that caused by climate change, into financial decision making'.

In its review of Big Green Challenge winners, NESTA found many communities were exploring funding mechanisms that would enable them to become financially self-sustaining. The most significant interventions Government could make would be in helping community- led groups to become less reliant on grant funding. NESTA notes that access to investment capital is difficult for these initiatives, and calls for mechanisms to be established to support this.

Despite the UK having a wealth of knowledge on investment structures, little of it resides in the public sector. Likewise, the private sector has limited knowledge of the complexities of public sector finance regulations. We therefore need to explore mechanisms which can enable dialogue between these sectors. As outlined in Chapter 7, this role could be provided by a Green Investment Bank.

Case study – **Community leadership and professional project management support in Sanford Housing Co-operative**

The vegetable garden produces food for the residents at Sanford Housing Co-operative

Sanford Walk is a self contained housing co-operative of 14 shared houses and six self-contained flats set up in the 1970s, which has achieved a 60 per cent cut in carbon emissions from 2003 to 2008. To reach their target the co-operative has successfully coupled the community engagement and leadership which drives their scheme, with professional project management and support.

Sanford's residents act as collective landlord and therefore own, control and manage the estate. When refurbishment works were required in 2002 they decided that they should take the opportunity to invest their maintenance fund in a programme of works focused on improving sustainability and reducing their energy consumption.

The residents required technical support to understand how they could use their funds most effectively in achieving their goals. The group commissioned a feasibility study by the Centre for Sustainable Energy to investigate potential methods. Following a successful grant application to EST's Innovation Programme, DTI's PV programme and Clear Skies they were able to commission architects and engineers to present project proposals. To enable effective delivery the group also appointed project managers who were critical in getting measures delivered effectively and on time. Because of their expertise in the area the project management team were also able to access additional funds that the community had not been aware of. Ongoing support is now provided through residents (who were trained as part of the project) and a permanent support officer from CDS Cooperatives.

Consultation with residents was central to the project. Residents were surveyed at the start of the project to determine their priorities and ongoing communication was achieved through regular meetings and information provision. All major decisions had to pass majority vote, including the need to increase rents to fund work, which was approved by 87 per cent of residents.

Sanford has reduced its carbon emissions from 228 tons in 2003 to 91 tons in 2008, achieving the 60 per cent ambition. The group also consider that overall awareness of energy and environmental issues has increased, yielding behavioural changes inside and out of the home. The project achieved this through:

- Replacement of 14 gas fired combination boilers with 7 mini biomass boilers
- Installation of solar hot water systems and thermostatically controlled roof windows for passive stack ventilation
- Installation of loft (270mm) and cavity wall insulation
- New communal food growing and bicycle storage areas using recycled materials
- Repair and redecoration using sustainable and toxin-free materials, incorporating residents' own designs.

Case study – **Marches Energy Agency**

Marches Energy Agency (MEA) was established in the West Midlands in 1995 with the support of EU-funding, as an independent charitable organisation. MEA runs a number of projects to provide information and assistance to individuals and private and public sector organisations. MEA operates in rural communities with many small, independent businesses and a significant level of fuel poverty (17 per cent of households).

Started in 2005, MEA's Low Carbon Communities programme (LCC) sets a time-bounded CO_2 reduction target in a community, working with homes, community buildings, and businesses. Each participatory community is assigned an 'honest broker' project manager as a 'key contact' to coordinate activity and advise and motivate different sectors of the community. Currently, ten communities are assisted with measures such as energy audits, renewable energy installations, and creating 'eco businesses', all actions being tailored to the situation. Individuals and organisations are also provided with climate change training so they are equipped to continue independently.

The LCC programme is a winner of the Ashden Awards for Sustainable Energy 2009, but in delivering its community-based approach, MEA draws on its other programmes for support:

- Carbon Forum – communicating and creating local interest in climate change
- Action Heat – providing free insulation and similar measures to combat fuel poverty
- Low Carbon Enterprise – providing technical support to organisations and businesses
- RE:think Energy – a £1.5 million renewable energy capital grant scheme for SMEs in the Rural Regeneration Zone areas of the West Midlands.

External funding (such as CERT) is secured by MEA and then made available to the communities, using portfolio funding through these programmes to ensure that all available resources are utilised. In addition to its turnover of £1m in 2008/9, MEA allocated £1 million in funds.

MEA prefer to deliver LCC in communities with an existing committed community group. Programmes usually run for two years, with the aim that the community will have then gained sufficient knowledge, skills and confidence to continue the low carbon journey with minimal assistance. To date the LCC has delivered some 2,600 measures in homes, community buildings, schools and businesses saving over 3,100 tonnes of CO_2 a year.

Funds for core costs and seed funding

While there is good opportunity for neighbourhood partnerships to establish self-sustaining mechanisms that will generate income in the long-term, most partnerships are likely to require an initial level of funding to enable them to develop to this stage. This has been recognised in programmes such as the Local Carbon Frameworks (where an initial payment of £50,000 is being made to the pilots to support the work and enable staff time to be dedicated to the project) and London's *Low Carbon Zones* (where zones have been awarded at least £200,000 in initial funding, which can be used to meet either revenue or capital costs).

The *Big Green Challenge* finalists found that funding for people and core costs (esp. administration) were hardest to come by. Although it may be possible to source these from partner organisations, this should not be relied upon.

As detailed in Chapter 7, provision of seed funding for neighbourhood partnerships can also enable investment in assets (such as solar PV panels) that will generate income for future re-investment. Several of the Low Carbon Communities Challenge winners have invested their funds in such assets. As noted in its guide to establishing and running community revolving funds, DECC notes that these funds can enable communities to go on making carbon savings without the need for continued grant capital. They can also open up the potential to raise money from shareholders and banks loans.[106]

Case study – **Renew Services Ltd. and Cardenden Heat and Power, Fife**

Renew Services Ltd. (Renew) is a co-operative Energy Services Company which operates projects either as local energy cooperatives or as hybrid cooperatives and commercial concerns where the latter is required to secure private investment in order to realize projects. It is currently developing three energy from municipal waste projects, and three energy efficient new build projects involving 500 homes and over 12,000 PV retrofit.

Renew was established by Ore Valley Housing Association with support from several other bodies, and works in partnership with service providers, financial partners and developers, and a range of other organisations and authorities to develop, fund and manage sustainable energy solutions. Partners differ by project but Renew's aim is always to install a structure accountable to the local community, with the goal of maximising customer value. Renew has three technical delivery partners in a four year framework agreement covering £80m capital value for projects.

An example of Renew's work is Cardenden Heat and Power. They manage this project for Ore Valley Housing Association and Fife Council, providing over 1500 mixed-tenure houses and other buildings with affordable heating and hot water through a biomass DH/CHP system, and aiming to reduce the community's carbon emissions by over 5MtCO_2/yr. The project will be implemented in 2010/11 by one of Renew's delivery partners, with funding from private lending and the Scottish Climate Challenge Fund. This follows a three year period of feasibility studies and community engagement.

Following positive reviews and input to the plans the Cardenden community will own and run the energy network as a cooperative with support from Renew. The project also includes a wider community climate change action plan and energy efficiency behaviour change programmes and Renew considers that there will be scope to develop local jobs through spin off works linked to the CHP system. They are confident that the scheme will provide new sources of strength and confidence within this former mining community.

Recommendation

Neighbourhood partnerships should have access to capital and revenue seed funding to enable partnerships to support core costs or invest in income-generating assets as required. The development of the proposed Big Society Bank provides an opportunity to address this need.

Development of best practice based on feedback, monitoring, research and development

Co-ordination of these support mechanisms by a single department would also enable consistent monitoring of the work being undertaken. This is a vital but often overlooked and underfunded role. Effective monitoring and evaluation will enable gathering and sharing of best practice in a way that can be used to inform future neighbourhood retrofit projects and policy development. It can also help to identify gaps in existing support, and collate data – for example, on the level of carbon emission reduction achieved.

Both central and local government can also play a key role in recognising and rewarding effective neighbourhood partnerships. While relatively inexpensive, good practice awards and local competitions can be an effective way of maintaining motivation among partners and generating pride in the partnership.

Case study – **RE:NEW – Providing a citywide framework to enable neighbourhood delivery**

In partnership with the GLA, London Councils, the Energy Saving Trust, Waterwise and the 33 London Boroughs, the LDA has developed and is rolling out a programme to retrofit energy and water efficiency measures in London's homes. RE:NEW is a pan-London domestic energy efficiency scheme, which aims to help achieve the Mayor's carbon reduction targets of 60 per cent by 2025.

The scheme takes an area-based, whole house approach that covers all types of housing tenures and has something to offer every household. It includes installing a range of free-of-charge, easy-to-do measures, from changing to low energy light bulbs to installing stand-by switches and giving energy saving advice. Water-saving measures such as aerated showerheads and advice on climate change adaptation are also offered, which ensures it is a holistic service.

It also provides more substantial steps such as loft and cavity wall insulation – free for those on qualifying benefits and subsidised for those able to pay. In the future, with the development of new financing mechanisms such as *Pay As You Save*, solid wall insulation and micro-renewables may be offered to householders at no upfront cost. This is particularly important for London with approximately 70% of its housing stock being hard to treat. In London's homes fuel poverty is still at unacceptably high levels. RE:NEW will also help alleviate this partly through improving the energy and water efficiency of homes thereby reducing fuel bills, but also by assisting with income maximisation by carrying out benefits checks whilst assessing homes.

Whilst there will be flexibility for boroughs to design many of the details to fit with local programmes and need, RE:NEW provides a common framework within which these can operate and share best practice. This will be supported by a central procurement framework (to reduce time of delivery) and Good Practice Manual.

The fifteen months of the programme has involved refinement of the approach through learning from three technical trials and demonstration projects in nine boroughs. The results so far are encouraging. Over 800 homes received improvements through the technical trials, saving around 600 tonnes of carbon dioxide. The demonstration projects will have treated nearly 10,000 by May 2010.

The LDA is providing funding of £9.5m for 2009 - 2012, to develop the delivery model, provide top-up funding and support to ensure a holistic approach to delivery, and unify the projects under a London-wide programme, levering additional existing funding where possible (e.g. from CERT, Warm Front, individual borough schemes etc). A typical London borough delivering RE:NEW to 6,000 homes over two years could attract a further £1 million, save 4,200 tonnes of CO_2 and reduce fuel poverty.

The next stage will see RE:NEW active in every London Borough from autumn 2010. The targets are to reach at least 200,000 homes by 2012, and 1.2 million homes by 2015 subject to the leverage of additional finances from government.

Development of procurement panels

There is also potential for Government to develop central procurement frameworks which enable local partnerships to procure delivery agents and other work, especially where the value of a contract means that Official Journal of the European Union (OJEU) processes must be followed. This approach has been adopted by a number of sub-regional/city partnerships (including Hertfordshire and Essex Energy Partnership and phase two of London's RE:NEW programme), as well as national bodies. HCA's Delivery Partner Panel Framework is also a good example, as it provides HCA and local authority partners, regional development agencies and other public bodies with access to OJEU-approved firms for finance and funding, design and construction and sales and marketing. This benefits those on the panel, too, as they will be able to bid for available projects without having to go through a costly and lengthy procurement process. Consideration should also be given to how this approach can enable public sector expenditure to support local economies.

Which areas could implement neighbourhood partnerships first?

Whilst we would like to see neighbourhood partnerships developed across the UK there have been a number of discussions with contributors and colleagues about potential areas that could be prioritised for their roll-out. The consensus was that a number of situations will offer opportunities for partnership working to deliver immediate or real benefits. These 'trigger points' are:

- Areas with a high level of interest in improving the sustainability of their existing places. This may be those with interested and enthusiastic individuals, communities, Local Strategic Partnerships (LSPs) or councils. This should include areas currently developing Local Carbon Frameworks
- Areas with high levels of fuel poverty and/or multiple deprivation, where there is good opportunity for neighbourhood partnerships to deliver a wider range of benefits alongside carbon reduction and mitigation
- Areas with high carbon use, where neighbourhood partnerships could deliver significant reduction in emissions
- Areas where there are existing works planned to improve housing stock or upgrades to other infrastructure elements. This is likely to include regeneration areas and those adjacent to new development.

Chapter 6 summary

- Neighbourhood partnerships will require support if they are to become mainstream and maximise effective use of resources. The type of support will vary according to the skills, experience, resources and aspirations of the partnership
- Key areas requiring support are:
  - Handholding and capability building for local authorities and community groups on technical, financial, legal issues and project management
  - Support for core skills, especially finance (including whole life costing) and project management
  - Seed funding for core costs and initial investment
  - Development of best practice based on feedback, monitoring, and research and development projects
  - Development of procurement panels
- There are a number of existing mechanisms providing support to local authorities and community groups. A coordinated programme of support would make these easier for target groups to access, share best practice and monitor needs of users
- An effective monitoring and research function must be provided to enable neighbourhood partnerships and government to learn what mechanisms are most effective in delivering a wide range of sustainability outcomes.

Recommendations

The Department for Communities and Local Government (CLG) should have responsibility for coordinating cross-Governmental support for neighbourhood partnerships, streamlining and building on the best of existing provision. This should include:

- Coordination of long-term enabling advice, support (especially on the use of the Well Being Power) and capacity building within local authorities. *(Action: CLG, LGA, IDeA, CABE, HCA, ATLAS, etc.)*
- Co-ordination of support for neighbourhood partnerships (including technical, financial and legal advice, capacity building and project management) through a single interface. *(Action: CLG, DECC, EST)*
- Enabling neighbourhood partnerships to access seed funding (capital and revenue) for initial investment and core costs. *(Action: CLG, HMT, Infrastructure UK).*

7
How do we fund integrated neighbourhood retrofit programmes?

Chapter 7 examines:

- The need to make existing resources work better
- Appropriate types of investment for integrated neighbourhood retrofit projects
- How neighbourhood partnerships can attract institutional and community investment
- How public sector finance can be used to attract investment
- Mechanisms to attract investment to neighbourhood retrofit projects
- How to fund projects with uncosted benefits.

The UK's budget deficit in 2009 was the largest it has been in peacetime history. According to the Chancellor, in 2010 it is set to be the biggest in the world. The new Government has made it clear that tackling the deficit will be the most urgent task it faces. As such Ministers have pledged to significantly accelerate the reduction in the deficit, which will mean substantial cuts in public sector funding. Public sector finance for neighbourhood retrofit projects will therefore be very limited.

Some neighbourhood retrofit projects, however, have potential to generate profits in the medium and long-term. These opportunities are increasing with rising energy prices, the opening of energy generation markets to smaller suppliers, the introduction of market incentives such as the Feed-in-Tariff, and increasing levels of Landfill Tax. There is good potential to attract private sector investment for these projects, although the scale and risk profiles of many upgrades may deter institutional investors. We need to consider how the public sector can help to overcome these barriers.

If local areas are to be sustainable in the long-term we must look beyond funding models that use public sector finance to leverage in private capital, only for all profits to be returned to the institutional investors. We must look for models which enable investment by communities so that surplus profits can be re-invested in local areas. We need to consider how this can be supported by the public sector.

Finally, we know that not all neighbourhoods will have the potential to fund their retrofit programmes, especially in the early years. We therefore need to understand what other funding sources (both public and private) are available for projects with no costed benefits, or the initial subsidies and investment required to support income-generating projects.

Identifying funding sources

Once potential neighbourhood retrofit projects have been identified, the partnerships should assess potential funding sources. Apart from heat, most infrastructure elements have some level of existing investment and maintenance funding sources. These tend to be linked to historic ownership patterns and responsibilities. If we are to look at new funding sources, we should start by identifying who owns the asset and who receives the benefits. This will be critical to determining what sources of public, private and community funding might be secured and how the financial returns are divided.

With energy efficiency upgrades, the benefits (in terms of reduced energy bills) are returned to the occupant.

This relatively straightforward relationship enables development of funding mechanisms such as the *Pay As You Save* (PAYS) proposals where loans for the works are linked to the property. With community level energy and/or heat generation and distribution projects, the relationship is more complex. Assets could, for example, be independently held within a legal vehicle where multiple actors can invest in the equity of that vehicle. The vehicle could also receive grants and subsidies and be the recipient of loans. The beneficiaries would include the direct recipients of the product of the project (i.e. heat and power) and the equity holders – which could mean the local community, among others.

The picture can be more confusing still for many of the projects with uncosted benefits. As detailed in the Buro Happold report (Annex D), most of these are owned and funded by local authorities. It is clear from the range of potential benefits that these can deliver cost savings to a variety of public sector bodies (such as hospitals and the police), as well as individual homeowners. This they would achieve through increasing the value of an area, avoiding the costs of flood damage and reducing poor health. All these organisations could be a source of funding, with the incentive being that this would be a way of preventing or minimising these costs.

'Total Neighbourhood'

Experience from area-based initiatives such as New Deal for Communities programme, Urban Regeneration Companies and the Growth Areas programme, has demonstrated that there are benefits to identifying different bodies' spend in an area and aligning this to deliver joined up outcomes. In recent years the previous Government supported this approach through creation of broad place-based outcomes for Local Strategic Partnerships, Local Area Agreements and Multi Area Agreements.

At a time when there is a desire to increase local control alongside daunting budget cuts, funding models such as the Total Place pilots hold significant appeal. The pilots have been a means of exploring the potential for rationalising local service delivery by mapping total spend on a theme within a geographic area and devolving control of funds to those who deliver the services. The idea is that this will enable them to develop and control a cheaper and more effective delivery mechanism.

The emerging findings are that there is potential to achieve these objectives, by devolving decision-making on how funds are spent.[107] The scale of the projects allows conversations to be held between key players on what the intended outcomes of the funding are, and whether there are opportunities to rationalise public sector spending in these areas. For example, it makes sense for local communities to decide which local green areas require grass cutting on a regular basis – and if cutting is not required at all, or not so often, to identify where the savings should be spent.

Based on its experiences with Local Investment Plans as part of their Single Conversation, the Homes and Communities Agency (HCA) has been looking at how the Total Place principle can be expanded to cover capital investment in an area (Total Capital). From a review of spending in five case study areas, it found there was potential for Total Capital to deliver investment more efficiently and with greater impact, and to leverage more private sector investment.[108] The research showed that funding constraints of individual programmes were limiting the outcomes that could be delivered. For example, in Durham (where more than 38 major public funding programmes were deployed – 12 by HCA alone), wider benefits could have been achieved if literacy and skills had been addressed alongside physical regeneration.

As with Total Place, there is potential for the Total Capital approach to allow a focus on the outcomes for the place, rather than for individual organisations, as well as delivering savings through joined-up investment, procurement and asset management. Identifying clear agreed priorities can strengthen local partnership working on investment and delivery, which will in turn encourage private investor commitment.

We welcome the move towards outcome-focused delivery and are pleased this concept is being explored further through the Total Capital and Asset pathfinders (which will assess management of all public sector assets alongside capital funding streams).

We would also like to see these principles extended to neighbourhood partnerships ('*Total Neighbourhood*') to enable them to understand how public sector funding is currently spent in their area, identify potential funding sources and to influence decisions in their locality on how these could be used to achieve better outcomes. This may also enable communities to identify local inputs available to an area, but hidden to local authorities, such as investment by individuals, communities or local businesses. For this approach to be effective, neighbourhood partnerships will require improved information on local public sector expenditure, greater influence over how this money is spent and greater financial autonomy at the neighbourhood level.

Case study – **Rutland Telecom – 'hidden' community finance for ICT infrastructure upgrades**

When the residents and businesses of the small, rural community of Lyddington (population 400) decided that they wanted high-speed broadband access they were not put off by the disinclination of major service providers to provide for these cost-inefficient areas, or the seemingly prohibitive costs set out in Digital Britain. Instead the community clubbed together to raise £37,000 and loaned it to Rutland Telecom, a local business, to install the infrastructure and provide their access. The eleven investors will receive returns on their investment of 10 per cent a year and the return of their capital after 3 years.

Rutland Telecom gained planning permission from Rutland County Council and access from BT to their existing infrastructure, with high take-up rates and community support helping their case. Customers pay Rutland Telecom line rental and monthly charges as they would a major service provider, and the telecom company benefit as long as they meet their threshold of customers per central street hub, which differs in each case.

Lyddington now claims to have the fastest broadband of any UK village with broadband speeds up to 100 times faster (40Mbps) than previously. The company hopes to offer Sky TV services through its network resulting in the removal of satellite dishes from properties in this conservation village.

Rutland Telecom has been approached by over 150 communities across the UK to assess whether a similar scheme is viable in their village. Discussions are well underway with communities in Wales, Yorkshire and Leicestershire to establish street cabinets using private finance models.

Rutland costed the approach taken in Lyddington at under a third of the £1,750 per rural home quoted in Digital Britain. They estimate that the proposed relaxation of ducts and overhead fibre lines regulations should reduce costs further, possibly to £100 per home if Ofcom required BT to give all broadband companies such access.

Integrated delivery at neighbourhood level will require a more integrated approach to funding streams and programmes within central Government. There is significant potential to free up existing public expenditure if existing funding pots are refocused upon outcomes. For example, more than £6 billion of public sector money and more than £1 billion of energy supplier obligation will be spent each year between 2008 and 2011 on measures to upgrade the energy efficiency of existing homes.[109] The public sector funding is delivered through a variety of mechanisms, providing a wide range in terms of value for money. £2.7 billion of this is provided for winter fuel payments, where it is estimated that a massive 88 per cent of recipients are not in fuel poverty.[110] Both the Local Government Association (LGA) and National Energy Action (NEA) have called for development of a single funding pot for household energy efficiency measures.[111] As public sector funding is to be reviewed, there is potential to rationalise national funding streams on outcomes, such as energy efficiency of homes, rather than programme outputs.

Recommendation

Public sector funding mechanisms should promote devolution of funding to neighbourhood partnerships to enable them to influence decisions on how public sector money is spent in their area.

To enable this, neighbourhoods should be provided with greater information on local public expenditure, potentially by providing neighbourhood level breakdowns as in the Local Spending Report. The Government's review of local government finance should look at the issues raised by the Total Place pilots, Total Capital case studies and Total Capital and Asset pathfinders, and promote ways to devolve greater financial autonomy to neighbourhoods.

Appropriate types of investment for neighbourhood retrofit projects

Identifying project types and funding sources

Neighbourhood retrofit programmes are likely to contain projects with a range of risks and anticipated returns. It is important to identify the type of projects that will require funding before considering where funding can be sourced.

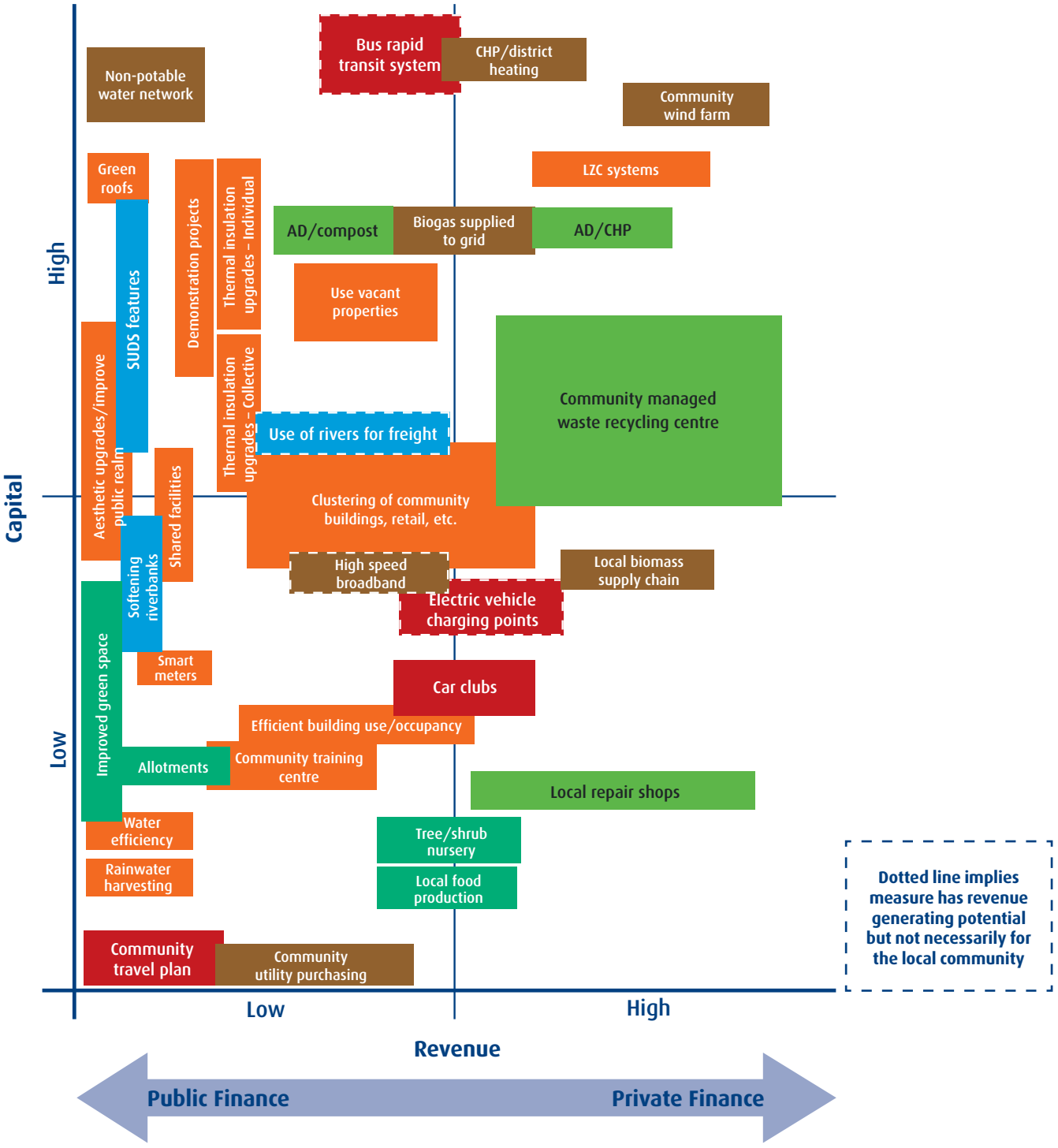
Table 10 **Types of project requiring investment**

	Quick wins	Slow wins	Projects with uncosted benefits
Description	These projects are easy to deliver due to availability of funding and/or delivery vehicles. They can anchor a neighbourhood retrofit programme by building initial momentum and/or generating early revenue streams	These projects are more complex to deliver than quick wins. To be effective these projects are often likely to benefit from an integrated, master-planned approach	These projects deliver a wide range of economic, environmental and social outputs however they provide no direct market return. These projects can often be popular with communities. The major barrier to delivery is often lack of funding for upgrades and ongoing maintenance.
Financial characteristics	Financially & commercially viable with clear, straightforward path to implementation and few/ no planning/regulatory issues	Financially & commercially viable but more difficult to get to financial close due to complexity and/or longer development timescales, or the need to gain wide ranging buy-in. May have planning/ regulatory issues	Not commercially viable though many have potential to deliver long-term economic return to both individuals and public purse. Require funding from sources that have no financial return requirements
Examples	Energy and water efficiency upgrades to existing public sector buildings	Neighbourhood-scale energy and heat generation (CHP, wind turbines, GSHP, small hydro, biomass)	Improving green spaces within community developed for social amenity, food growing, adaptation, bio diversity etc
	Solar PV schemes using Feed-in-Tariff	Neighbourhood-scale energy and heat distribution (CHP, district heating)	Road space redesign with safer pedestrian and cycling provision
	Smaller scale CHP and heat pumps when the RHI goes live after April 2011	Energy and water efficiency upgrades for existing owner occupied/ private rental buildings	Flood alleviation through green roofs, SUDS, replacement of hard paving with permeable surfaces
	Establishment of car clubs	Waste/recycling infrastructure including 'waste-to-energy' projects such as anaerobic digestion and pyrolysis/ gasification	Real-time user-responsive public transport services

The project types referred to in Table 10 do not necessarily need to be undertaken in any particular order within a neighbourhood retrofit programme. For example, funding may be procured for a 'green spaces' project ahead of any funding for quick or slow win projects. However, it is likely that quick wins will precede slow wins, and many projects with uncosted benefits could be funded from a profit share or surplus profits from these.

Figure 9, below, sets out the financial viability and the need for grant funding for many of the examples listed above.

Figure 9 **Cost/revenue ranges of infrastructure reconfiguration** (Source: Buro Happold)



Types of investment for neighbourhood retrofit

In very general terms, projects have two distinct stages often requiring different investment approaches: the pre-operational (scoping, development and implementation) and the operational. For quick and slow win projects, the operational phase is where the project pays for itself and generates profits over its operational lifetime. Table 11 provides more details on typical project phases.

Table 11 **Characteristics of project framework phases**

Phase	Timescale	Proportion of total capital requirement	Level of financial risk
Scoping i.e. general research, feasibility studies and possibly initial buy-in.	Short term – usually months.	<2 per cent	Very high
Development i.e. detailed financial modelling and analysis, obtaining planning consent, regulatory licenses, technology selection, selecting delivery parties, drawing up contracts etc.	Short/medium term – a few months to several years.	Typically could be anywhere between 3 per cent and 15 per cent depending upon the project type and scale of application.	High
Implementation Takes place after 'financial close' where the project is fully defined with all necessary implementation elements secured including sources of funding in place.	Short term – typically days, weeks or months.	Balance of capital expenditure requirement – typically between 85 per cent and 97 per cent.	Medium
Operation The 'utility' period of the project which, for quick and slow win projects, provides the means for capital recoupment and profit generation.	Long-term – decades.	0 per cent for quick and slow win projects as replacement parts are covered through operational revenues. Projects with uncosted benefits may require ongoing capital expenditure and revenue expenditure for maintenance.	Low/medium

The types of finance that can be provided to neighbourhood retrofit projects are:

- grants and subsidies/incentives (usually provided by public sector)
- equity investment – provided by public or private sector investors (which includes individuals, communities and institutional investors)
- debt – usually provided by a lending organisation such as a bank or the Public Works Loan Board

The way in which each of these forms of finance is combined on individual projects depends on a number of factors:

- **The risk profile of each project.** Normally, higher risk will lead to greater emphasis on equity investment, and a decreased ability to use debt. The pre-operational stage often holds higher overall risk than the operational stage, requiring all equity investment to be fully committed to the project by the beginning of the implementation phase

- **The level of correlation that a project's value has with relative market values of similar assets.** A project with a low relative value to similar asset types will typically require a higher level of grant/subsidy in order to be attractive to equity investors
- **Security of revenue streams and certainty of costs during the operational phase.** If it is perceived that the income streams from a project have poor or short-term covenants requiring renewal well within the operational period, this will place a greater weighted average cost of capital (WACC) on both the equity and debt components of financing. Similarly, the vulnerability of operational costs to unpredictable market swings will have a similar impact upon WACC (for example, fuel price volatility).

The combination and proportion of each type of funding will be different for each type of project, depending upon the factors above. As illustrated below for quick wins and slow wins, different types and sources of funding may apply to each of the phases.

Table 12 **Funding/financing for project types**

For reference the table below illustrates the likely ranges of debt and equity financing and indications of the type of grants/subsidies that may be available:

Project types		Grants etc.	Equity	Debt
Quick wins	Solar PV using FiT	FiT subsidy (income)	10 - 100 per cent	0 - 90 per cent
	Energy and water efficiency upgrades of public sector buildings	CERT, CESP*, Salix, Prudential borrowing	0 per cent	100 per cent (after implementation)
	Smaller scale CHP under RHI/FUT	RHI/FIT subsidy (income)	20 - 100 per cent	0 - 80 per cent
Slow wins	Neighbourhood scale renewable energy generation	Various grants plus FiT subsidies	20 - 100 per cent	0 - 80 per cent
	Comprehensive smart metering and smart grid management	?	10 - 100 per cent	0 - 90 per cent
	Energy and water efficiency upgrades in privately owned buildings	CERT, CESP*, Pay As You Save (proposed)	0 per cent	100 per cent (after implementation)
	Waste/recycling infrastructure including 'waste-to-energy'	Various grants plus FiT and potentially RHI subsidies	20 - 100 per cent	0 - 80 per cent
Projects with uncosted benefits	Green and blue infrastructure	Grants plus capital that has been accrued where the local community participates in revenues from quick slow win projects	0 per cent	0 per cent
	Road Space redesign with safer pedestrian and cycling provision		0 per cent	0 per cent
	Real-time user-responsive public transport services			
	Flood defences including SUDS etc		0 per cent	0 per cent

CESP only covers domestic buildings

Note: The equity and debt percentages refer to the total remaining funding required from private sector sources i.e. 100 per cent = remaining capital requirement after grants have been taken into account.

How can neighbourhood partnerships attract private sector investment?

The key sources of private sector investment are likely to be institutional investors and communities.

Institutional investment

There is likely to be competition for capital (both debt and equity) even where investments provide higher end returns. This is particularly true of small-scale projects and for pre-operational phases.

The small scale of investment needed for individual neighbourhood retrofit projects can limit how attractive they are to investors, unless they are agglomerated. As a guideline, proposals to the equity and debt institutional investment markets should reach the following scales:

- For equity investment in projects, a minimum aggregate investment requirement of £50m (excluding leverage) is broadly considered to be an acceptable 'baseline' for a portfolio of projects, although ideally this should be a larger figure
- For debt investment (i.e. bonds), £100m is broadly considered an acceptable baseline.

Where neighbourhood retrofit programmes cannot reach these investment levels they could work with other partnerships to develop a joint portfolio of projects with similar financial profiles to make it easier for institutional investors and their advisers to analyse the offerings. This approach is being developed in Greater Manchester (see case study), and has been adopted by the Green Valleys scheme in the Brecon Beacons, in which 40 micro-hydro projects (which individually are too small to attract private finance) have been grouped in an investment portfolio.

For bonds (i.e. debt investment), a credit rating from a suitable agency should be acquired to reduce servicing costs (i.e. rate of interest/coupon). In order to achieve this, the asset 'pool' will need to be appropriately diversified, and project income covenants clearly secured. In order to ensure scale at these levels and above, a national approach to aggregation would most likely be optimal.

If projects need to access private sector capital but cannot achieve the necessary scale for the institutional markets – either by themselves or by aggregation in portfolios – there are a variety of alternative incentives and structures aimed at smaller propositions. For example, Venture Capital Trusts (VCTs) and Enterprise Investment Schemes (EISs) offer individual and corporate investors attractive tax incentives on their investment. Some banks have debt facilities for projects of the types outlined in this document. However, it is worth noting that the cost of capital at this smaller scale may be higher generally, due to higher transactional costs and higher perceived risk (because of diversification).

Community investment

Communities may also look to seek investment from their own members. This has two key benefits. Firstly, local investors are likely to be motivated by wider concerns than simply financial return, so this form of investment may enable less viable projects to progress to operational stage. This could be a vital source of capital for projects. Secondly, but equally important, community investment will ensure that at least a share of profits generated is retained in the local area. This can be used to develop a long-term income stream for re-investment in further neighbourhood retrofit projects, thereby reducing reliance on public sector funding.

Investment sourced from the local community (including the local authority) is normally undertaken through some form of shares issue. These are issued by a legal entity established by members of the local community with the express purpose of facilitating sustainability initiatives (a Local Community Vehicle – LCV). Structures commonly used by community investment projects, which channel finance in pursuit of environmentally and socially beneficial outcomes, include: development (and other) trusts; co-operatives and mutuals; charities; community-interest companies (CICs); industrial and provident societies (IPSs); community funds; associations; and community finance institutions.

Of these vehicles, IPSs established for the benefit of the community (IPS BennComs), along with CICs, provide the following safeguards to ensure assets are used for community benefit:

- They are clearly constituted to operate principally for the benefit of the communities they serve. CICs are also regulated by a Government-sponsored regulator
- They include an 'asset lock'. This means that the vehicle's assets cannot be migrated out unless they are to be used expressly for the same purpose as that stated within its constitution. If the entity is wound up, it is a legal requirement to ensure its assets are transferred to another legal entity where the funds will be used for the same purpose.

Table 13 **Examples of community investment**

Fintry Development Trust (FDT) grew out of a community aspiration to make Fintry a carbon-neutral sustainable community. To achieve this goal the community engaged in discussions with developers of a proposed local windfarm over the potential for a community owned turbine.

FDT and subsidiary Fintry Renewable Energy Enterprise Limited were set up to manage the investment and subsequent re-use of surplus profits for carbon reduction within the community. Founded in 2007 FDT is a company limited by guarantee with charitable status. Membership is for 3 years, costs £1 and is restricted to adults living within Fintry Community Council boundaries.

FDT owns 10 per cent of the energy produced by the ten wind turbines at Earlsburn wind farm. The 8000MWh of electricity is sold, with the money earned used to pay off the loan and running costs. The leftover profits (between £50,000 and £100,000 a year) go to FDT. Once the loan is paid off, the annual profits are estimated to rise to more than £400,000 for the rest of its 25-year lifespan.

In May 2008, FDT received its first income from the operation of the turbine and later in the year, partly funded from this income, partly from CERT and partly from a Climate Challenge Fund grant the trust started its first project – evaluating the energy use and providing free insulation to all households in the area that could benefit. To date free cavity wall and roof insulation has been provided to 46 per cent of local homes.

Westmill Wind Farm Co-operative is the first fully community owned wind farm to be built in the South East of England. The co-operative was established in 2004 with the explicit purpose of constructing a community owned turbine. It now has around 2,400 members and five turbines, which have been operational since 2008.

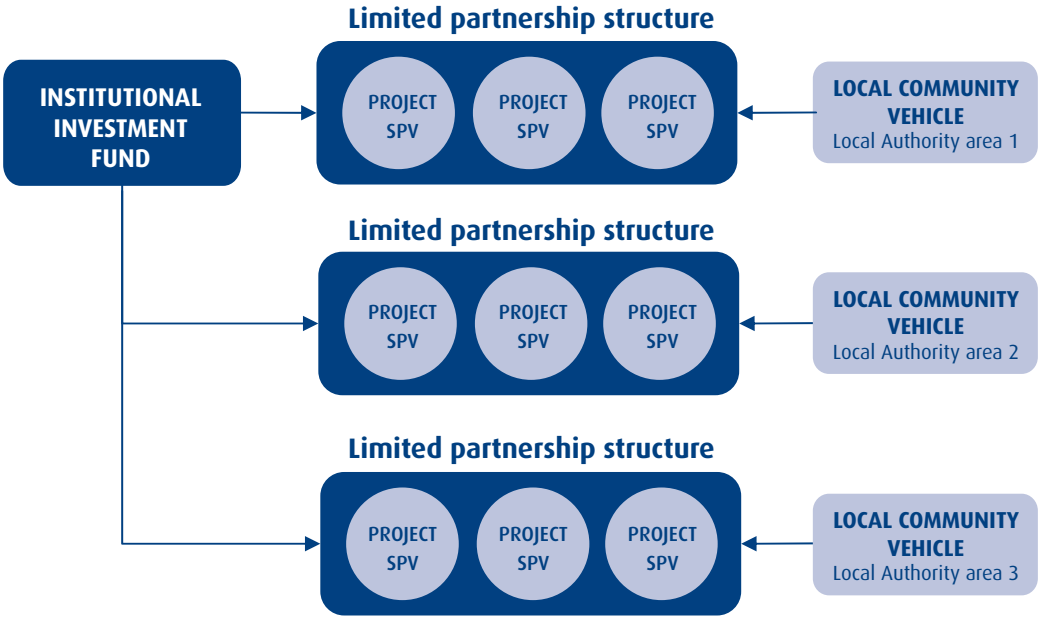
The co-operative is an Industrial and Provident Society, using the model developed at Baywind. It has raised £7.6 million through a combination of donations, equity shares sold to members and a loan from the co-operative bank.

The share issue was especially, but not exclusively, aimed at groups and individuals local to the Wind Farm. Shares in the project are expected to deliver a return of approximately five per cent over the first five years of the project, rising to an average of 12 per cent over the 25-year life of the development.

In addition to providing a direct return to local investors the co-op established Westmill Sustainable Energy Trust (WeSet) as a charity to encourage and promote the deployment of sustainable energy, in particular (but not exclusively) within a 25 mile radius of the farm. The co-op donates 0.5 per cent of its revenue (approx £5,000 - 7,000 per annum) to the charity.

For reasons of scale, it can be difficult to develop links between these projects and institutional investors. There is potential for these local vehicles to aggregate their assets – typically held in a structure known as a 'Special Purpose Vehicle' (SPV) – through an intermediary funding structure. This funding structure (typically a limited partnership) could subsequently provide institutional investors with a diversified investment portfolio of income-generating assets at the appropriate scale. Each Local Authority area could have its own LCV to hold interest in projects undertaken in that area (as illustrated below in figure 10). As detailed later, a Green Investment Bank could provide a link between neighbourhood partnerships and institutional finance.

Figure 10 **Local Community Vehicles and Special Purpose Vehicles**



As noted above, the types of funding and potential sources are likely to differ depending on the stage the project is at, and its risk profile. For quick or slow win projects, communities could finance the scoping costs through local investment at sub-market rates of return. They could then seek development debt from an appropriate body (potentially a Green Investment Bank – see later).

Post development, the body would bundle the mature revenue-producing assets and sell these to institutional investors, recycling the proceeds into new developments. The community would anticipate a return for its initial investment, either in the form of a long-term revenue stream or capital receipt. This could be re-invested into further neighbourhood retrofit projects.

Using public sector funding to attract private sector finance

Although the early phases of projects represent a relatively small proportion of total capital expenditure, they represent the highest level of financial risk. This raises two issues:

1. It is notoriously difficult to raise initial finance and
2. It may require the sale of a significant element of the project's equity to private sector funders.

These issues mean it can be difficult for projects to progress past their earliest phases. It can also limit the ability of projects to offer second level funders a reasonable return. This constrains the ability for projects to provide a profit share or revenue share for community benefit (i.e. for undertaking projects with uncosted benefits).

These problems are particularly exacerbated for community-led schemes, many of which have found it difficult to access investment capital.[112]

Consideration should be given to how public sector finance can be used to overcome these issues. As detailed below, options could include de-risking individual projects, de-risking technologies or industries or developing mechanisms that enable neighbourhood partnerships to access investment capital. While these options will require some initial public sector outlay, there is potential for neighbourhood partnerships to use this investment to develop self-sustaining finance vehicles, which provides long-term benefits to the community and the public purse.

De-risking projects using public sector finance

De-risking projects through provision of guarantees

There is potential for central and local government to reduce the early risk by providing underwriting guarantees. As described earlier, the early stages of projects carry the most risk but require only a small proportion of the total capital requirement. Removing the risk associated with this part of the process would enable private sector capital to flow into projects at the earlier stages and accelerate the rate and scale at which they can be undertaken.

In return for reducing the upfront risk for private sector investors, it should be possible to secure a greater level of revenue share or equity for communities from the projects that are underwritten. This in turn would provide long-term benefits to the local area through an increased ability to undertake projects with uncosted benefits.

The key benefits of taking this approach are:

1 No cash is directly committed to the project unless the guarantee is called. So when the need for underwriting falls away (i.e. after a project reaches financial close), the collateral can be redeployed.

2 Many local authorities and other local actors can combine their underwriting commitments to pool risk and reduce average risk exposure. It also provides a demonstration of faith in the project from more than one 'sponsor'. This can leverage a greater volume of private sector investment into their respective areas than would otherwise be the case.

De-risking projects through use of assets

There is also good potential for the public sector to use its own assets to de-risk investments and encourage business start-ups that will support provision of sustainable infrastructure. As demonstrated by schemes in Sheffield, Southampton and Woking, public buildings can provide an anchor load for district heating networks, thereby reducing the upfront risks. The Commission therefore supports the previous Government's commitment that public sector properties connect to heat networks where one exists or is planned.[113]

De-risking projects through research and development

As noted by Stern et al[114] there is also good potential to tackle market failures through incentivising research and development (R&D). He notes that this can be done through offering prizes for innovations, providing public sector investment for basic R&D, and through establishing best practice forums. There have been numerous examples of these types of investments. English Partnership's Design for Manufacture competition helped Government to explore the potential to deliver homes meeting exacting design and quality standards for a design cost of £60,000. The Technology Strategy Board is currently funding a £10m research programme to develop innovative solutions to improve the energy efficiency of existing houses.[115]

To be most effective, these programmes should be clearly outcome-focused. This will enable them to be technology agnostic and develop solutions that are market-driven, rather than those requiring ongoing subsidy.

There is also a clear argument for public sector funds to be used to test and refine delivery models. Through provision of seed funding, the public sector can bring together a range of parties to test development proposals. As noted earlier, this approach is being adopted at a city level in London through the RE:NEW programme and at a national level though a range of carbon reduction pilot programmes.

De-risking projects through policy alignment and regulation

Providing a clear, long-term policy framework of what standards are required for infrastructure upgrades – and by when – de-risks investment opportunities through guaranteed demand. This is evident in the new-build sector, where clear targets for zero carbon homes by 2016 have led to significant refocus of the industry to achieve these goals.

There have been repeated calls from business to create long-term policy stability through proactive regulation, particularly around the need to set minimum energy efficiency standards for existing buildings. At present, the average Standard Assessment Procedure (SAP) rating for fuel-poor households in the UK is 37 while the average for all properties is 50. As detailed in Annex B, there is general consensus among expert bodies that improving existing homes to SAP81 could reduce fuel poverty by 50 per cent or more, or indeed eradicate it completely, as well as making significant reductions in carbon emissions.

In 2008, the Fuel Poverty Charter called for SAP81 to be introduced as a minimum energy efficiency standard; in 2009, the Environment, Food and Rural Affairs select committee called for Government to assess the cost and feasibility of making SAP81 a minimum standard for improved thermal comfort in all social housing.[116] This has not been heeded due to concerns over the costs of tackling hard to treat homes.[117] The Strategy for Household Energy Management[118] instead proposed development of a Warm Homes standard to raise all social housing to SAP 70 by 2020, and to consult on regulation of private sector landlords to meet minimum energy efficiency targets from 2015 onwards. Given that hard to treat homes across all sectors will need to be addressed if we are to achieve 2050 targets we would like to see social housing lead the way by setting tougher energy efficiency targets.

Recommendation

Clarity on long-term policy direction should be provided through the introduction of minimum standards for the energy efficiency of all existing buildings.

As called for in our response to the Heat and Energy Savings Strategy consultation, the standards and timeline for introduction should be defined now but phased in as mandatory over a period of 15 years, a long enough time to enable householders to prepare for these works if finance options are in place. These could be stepped up at different times by different sectors to reflect their different starting points and issues, but by 2025 all homes should be SAP81 or above.

Government could also help to drive action on housing retrofit by aligning fiscal policies on new build and refurbishment. Currently, VAT on repairs and refurbishment works in domestic buildings is 15 per cent, while VAT on new build is 5 per cent. As well as increasing costs for retrofit projects, this makes it more economically attractive to build new homes rather than restore and improve existing buildings. The Commission has repeatedly called for this VAT change – and now that the EU Economic and Financial Affairs Council has ruled that member states can lower VAT for this purpose, we would like to see this implemented in the UK without delay. As an Isle of Man pilot demonstrated, even when this is introduced the impact of fewer 'cash in hand' deals and market stimulation meant total sales and total tax output from construction increased compared to previous years.[119] A similar reduction in Italy is estimated to have created up to 75,000 jobs in the construction sector.[120]

Recommendation

UK Government should equalise VAT for repairs and refurbishment works in domestic properties with new build.

Clear policy direction could also be achieved at the local level through development of long-term public sector investment plans along the lines of HCA's Single Conversation and the proposed approach to Total Capital, Place and Assets in the Treasury Report of the pilots.[121] This would help to de-risk uncertainties around investment planning decisions (especially those around the complexity of funding streams, sequencing and funding criteria) which are a key barrier to attracting private sector investment.

Mechanisms to attract private sector finance to neighbourhood retrofit

Despite the returns that can be made, there is insufficient private sector investment in infrastructure upgrades on the scale required to transform the sustainability of our existing places. In its review of finance for low carbon transition, the Aldersgate Group calls for central Government to develop public policy mechanisms that mobilise these funds.[122]

To date, discussions around these mechanisms (such as a Green Investment Bank and EU JESSICA funds) have focused on their potential for attracting private sector investment to large-scale, strategic projects. However, they could be used to support neighbourhood retrofit projects, by channelling finance to smaller-scale projects and providing an interface through which these can access support and investment. As detailed below, we would like Government to explore how these structures (and those being developed for individual householders, such as Pay As You Save) can support neighbourhood retrofit projects.

Pay As You Save (PAYS)

The PAYS mechanism has significant potential to attract private sector finance for upgrading the energy efficiency of existing homes at little public sector expense. By attaching charges to individual properties, it would enable homeowners to access the upfront funds required to upgrade their home. Works funded through PAYS could be undertaken either on an individual basis, or as part of a coordinated neighbourhood retrofit programme.

The charge on the property would then be repaid over a number of years, potentially through local authorities or energy providers. By stretching the repayments over a long time period (up to 25 years), it is estimated they would be less than the savings from energy bills. The Government may wish to subsidise the interest rate to incentivise take-up. This approach is taken by KfW in Germany, where the amount of subsidy depends upon the level of carbon reduction achieved (see case study below). The Commission urges the Government to enact enabling legislation for the introduction of PAYS as a matter of urgency. We would like to see a mechanism developed that has sufficient flexibility to be used by all property types and tenures, delivered in a way that meets local needs, and enables applicants to borrow sufficient funds to meet the full costs of retrofitting their property for energy efficiency, water efficiency and adaptation.

Regional JESSICA funds

A good example of how existing public funds can work more effectively is the Joint European Support for Sustainable Investment in City Areas (JESSICA). Developed by the European Commission and the European Investment Bank (EIB) in collaboration with the Council of Europe Development Bank, it provides EU member states with new flexibilities to establish revolving funds for promoting sustainable investments in urban areas. Member states can use their structural funds to make repayable investments in projects in various ways.

The key benefits of this approach are:

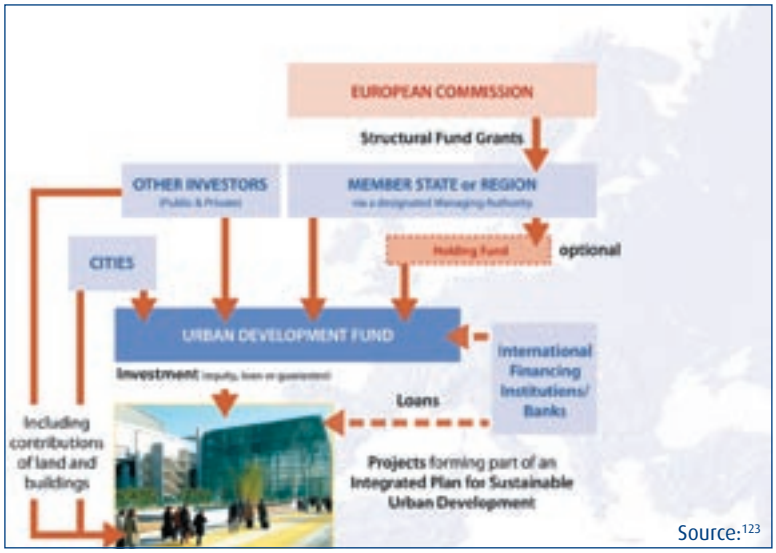
- **Funds can be recycled for reinvestment.** For states facing the prospect of reduced EU funding in future rounds, JESSICA allows them to create a lasting legacy
- **Private sector finance can be leveraged.** JESSICA provides seed corn funding which can be used to engage the private sector, potentially leveraging in both money and experience of project management and implementation. By providing an equity stake, commercial partners are incentivised to deliver the public sector objectives
- **Fund is not regarded as public sector debt** (i.e. it does not appear on the Public Sector Balance Sheet). Although grant receipts are transformed into repayable investment, it does not go to the EC so would not be regarded as public sector debt
- **Fund provides flexibility on use.** Unlike previous EU models, JESSICA provides a great deal of flexibility on the eligibility of funding and use of funds by way of either equity, debt or guarantee investment. To maximise benefits, it is important that those who administer EU funding are bought together with those who understand investment markets.

Projects must form part of an integrated development plan. This should comprise a system of interlinked actions which seek to bring about a lasting improvement in the economic, physical and environmental conditions of an area. Projects could include upgrades in existing infrastructure, wider

energy efficiency improvements, or redevelopment of brownfield sites. Housing is not eligible, but could be included as part of a wider project if funding can be obtained from other partners.

This model provides an interesting way to use existing EU structural funds to finance infrastructure upgrades in eligible areas, and could be applied more widely in the UK. The case studies below show how some areas in the UK are exploring potential use of JESSICA.

Figure 11 EC and JESSICA Structure



Source:[123]

JESSICA – details of UK proposals for JESSICA funds

London

A £100 million JESSICA fund has been established to fund low carbon infrastructure projects in London. This consists of £50 million of its 2007-13 European Structural (ERDF) funding, £32 million from the London Development Agency and £18 million from the London Waste and Recycling Board. Projects will be selected by the fund managers, who will be procured by the European Investment Bank (EIB) later this year.

Potential projects include:

- Creation of a district heating spine connecting Barking Power station to the Barking area. This is estimated to cost £150 million and deliver 100,000 tonnes of CO_2 savings a year.
- Renewable Fuels Plant – for mixed commercial waste processed using Hydro mechanical separation, anaerobic digestion and pyrolysis. This is estimated to cost £31 million and deliver over 21,000 tonnes of CO_2 savings each year.

North West

The North West has also established a £100 million JESSICA fund. This will comprise £50 million from ERDF funding and £50 million from the North West Development Agency. Two separate Urban Development Funds will be established within this overall Northwest Urban Investment Fund. There will be one for Merseyside with the other covering the rest of the North West.

Projects may include development of employment sites, creation of new commercial floor space, reclamation of derelict or contaminated land, and provision of site servicing and infrastructure.

East Midlands

The East Midlands have established a JESSICA Urban Development Fund to provide funding to commercial development projects which will support lasting jobs across the region. The fund currently comprises £15 million, £10 million ERDF funding and £5 million from

East Midlands Development Agency (emda). This builds on emda's experience as a key investor in the Blueprint fund.

Wales

An evaluation study for the feasibility of a JESSICA fund in Wales was completed in 2008 and discussions are underway on the potential to establish a fund. It is anticipated that this would focus on physical regeneration development opportunities, initially in convergence areas. It is expected that the fund will use £25 million of ERDF, £30 million from investment of Welsh Assembly Government property assets and £55 million private sector investment.

The Scottish Government are also looking at the possibility of establishing a JESSICA fund. It should be noted that not all regions have sufficient ERDF funding to establish a JESSICA fund. While size is a consideration there may be other reasons why regions do not proceed with a JESSICA approach such as the nature of local projects, preference for grant, timescales etc.

Neighbourhood Retrofit Fund

One mechanism would be the development of a national revolving fund focused on retrofit investment. A public sector revolving fund could support initial projects through to stable income flow stage, before selling these to private sector investors (or using them to seed a privately financed fund). Establishment of a fund would avoid state aid issues, the high perception of risk by the private sector during the project stage, and the lack of project finance in the current risk-averse financial markets. This could provide a short-term solution to improve access to investment for neighbourhood partnerships.

An example of where work is already being undertaken is the Marguerite Fund (officially the 2020 European Fund for Energy, Climate Change and Infrastructure). The vehicle was launched by the EIB in collaboration with other financial institutions based in Germany, France, Spain, Italy and Poland. It will target a range of renewable energy, energy and transportation opportunities throughout Europe. Through Infrastructure UK, the UK Government has already invested £90 million in this fund. The Marguerite Fund could benefit from a focus on retrofit investment, or a similar fund with a retrofit focus could be set up in the UK and managed by, for example, HCA or Infrastructure UK, ahead of potential management by the Green Investment Bank.

Green Investment Bank (GIB)

Over the past year, organisations including Green Alliance, the new economics foundation, Climate Change Capital, Platform, and Friends of the Earth have called for the establishment of a GIB. This was also chosen as one of SDC's *Breakthroughs for the 21st Century*[124] ideas. While there is Government support for this in principle, it is not yet clear how this would operate in detail.

Potential functions of a GIB could include: establishment of a new, dedicated institution; investments by, or adaptations to, existing, publicly-owned banks such as RBS; raising and using funds created by the sale of Government assets; and the extension of existing bodies such as the Carbon Trust. The potential remit of a GIB also varies dramatically, from a focus solely on financing large low carbon infrastructure projects to supporting a wider range of sustainable projects and bodies (including SMEs and community groups). There is clearly potential for an effective GIB to play a significant long-term role in supporting the transition to a sustainable low carbon economy.

To be effective in directing finance to sustainable, low carbon projects, our research suggests that the key roles of the bank should be:

- Providing initial capital or guarantees for sustainable/ low carbon projects (for major infrastructure, SMEs and community groups) where private capital markets will not take the risk
- Working in partnership with the private sector to structure financing of major sustainable/ low carbon infrastructure projects
- Working in partnership to bundle small projects to a scale that attracts wider investment interest

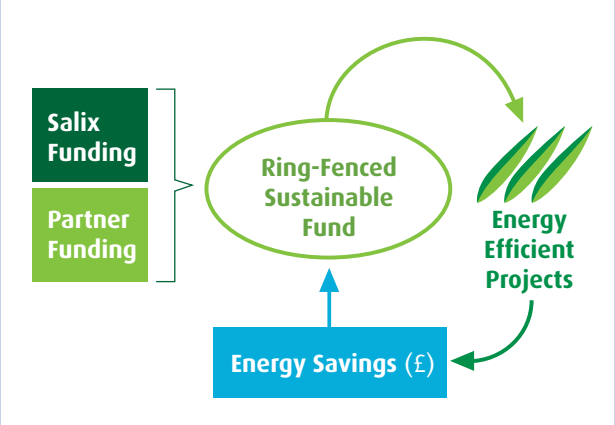
Case study – **Salix Finance – a revolving fund for energy efficiency in the public sector**

One potential funding source and a potential model to look at for provision of funds to neighbourhood partnerships is Salix Finance. This not for profit organisation is a independent social enterprise established by the Carbon Trust to provide public sector bodies with interest free loans for works which will deliver carbon and energy savings.

Salix Finance provides funding of up to £500,000 which must be matched by recipient organisations and spent on projects that will:

- deliver payback within five years and cost £100/ tCO_2 lifetime basis, for energy efficiency projects
- deliver payback within seven and a half years for projects with lifetime £/tCO_2 =<£50, for approved energy efficiency and renewable projects.

Figure 12 Salix Finance revolving fund



The Local Authority Energy Financing Pilot scheme was launched in 2004 and has since developed into their Local Authorities programme. This enables local authorities to borrow money interest free for investment in energy efficiency projects in their own stock which will reduce energy bills and carbon emissions. Projects relating to reducing water usage will also be allowable if the technology has an energy saving element. Local authorities then pay back 75 per cent of the savings from the measures until the loan is repaid, thereby sustaining a national revolving fund.

Whilst most of the financial benefits to local authorities will be realised once the fund is repaid they are allowed to retain 25 per cent of the savings from day one. This can be spent on frontline services, or potentially used as seed funding for an internal 'neighbourhood retrofit funding pot'. Local authorities can also add an administration fee of 15 per cent to the loan. This could fund a range of areas including additional staff or measures which do not meet the funding criteria i.e. awareness raising and advanced metering systems to monitor the effectiveness of the energy savings measures.

Take up from local authorities has been slower than other public sector bodies despite a growing number of councils developing carbon management strategies. One reason given by Salix for this is that the sustainability teams in councils are not linked up to those who identify capital projects. It is hoped that the Carbon Reduction Commitment will enhance communication between directorates.

- Raising capital from government and investors or taking deposits from retail customers
- Working with government agencies to reduce transaction costs and risk profiles of projects
- Working as an intermediary between policy makers, developers and the investment community
- Developing ongoing public sector expertise and capacity
- Strengthening market confidence – by strategic Government investments which back their policies.

Case study – KfW

KfW is the largest promotional bank in the world with a balance sheet of almost 400 billion Euros. It was established in 1948 using money from the Marshall Plan to establish a revolving fund. This money (known as the ERP) is now used on a range of products to either subsidise interest rates or reduce risk. Whereas at the beginning KfW financed its promotional activities almost completely with public funds, today it refinances its promotional volume to 94 per cent with capital market funds.

KfW was the first German promotional institution to finance ecological protection measures in the water and agricultural sectors as early as the 1950s and 1960s. Today KfW is one of the key financiers of renewable energies, both within Germany and abroad. Germany's "number one environmental bank" invests around 20 per cent of its overall financing volume in national and international climate projects.

KfW has a clear set of objectives defined by national legislation. Within these they are able to operate independently of Government intervention. This flexibility enables the bank to adapt its instruments to a business world that is in constant flux. Through this KfW is able to advance economic and social change. This has enabled them to develop a wider number of products, which include:

Loans to individual and housing companies to promote energy efficient housing. KfW started to provide loans to improve the quality of housing in East Germany following reunification. Between 1990 and 1997 they helped to modernise 3.2 million apartments – nearly half of all apartments available in the former German Democratic Republic at the beginning of the 1990s.This work highlighted the need for energy efficiency improvements and in the mid 1990s KfW developed a programme to fund energy efficiency improvements in new and existing housing. In 2001 the Government provided additional funds for this programme to increase the level of subsidies, which are scaled to encourage customers to achieve higher energy efficiency standards. KfW developed the structure of the funding mechanism, using its existing distributional network (on-lending through customer banks) to streamline the customer journey. KfW also developed standards for energy efficiency measures, which now have wider recognition in Germany than the EPC ratings, and are-used by industry for both new build and retrofit. This programme has delivered significant benefits with a reduction of 3.9 million tonnes $C0_2$ p/a, almost 1 billion Euro savings and 200,000 jobs created or safeguarded between 2001 and 2006.

Financing of infrastructure projects. KfW also provide loan funding to municipalities, municipally owned companies and non-profit organisation to fund a range of infrastructure projects. As with the home energy programme, the higher levels of subsidy are provided for projects achieving higher standards, particularly relating to carbon emission reductions. Larger municipalities can apply for funds annually for a portfolio of individual projects.

Promotion of SMES, entrepreneurs, environmental and climate protection business start ups. Funds are also available to support the start up of SMEs, especially in renewable energy. These could include projects led by social enterprises or municipally owned companies. For these projects KfW provide both equity finance and loans.

KfW operates at national level, however it has also established a number of regional promotional funds which enables it to access EU funding, such as JESSICA. The bank also undertakes international project and export finance and promotion of developing transition countries.

The Commission would like to see a GIB developed which provides these functions to support investment at a variety of scales. By doing so, it would help to overcome many of the barriers preventing neighbourhood partnerships from accessing private sector investment, particularly scale. If developed effectively, a GIB could also provide a supportive framework for many of the mechanisms outlined above. For example, with the PAYS concept, the idea is that the cash from PAYS flows to the intermediary funding vehicle which then issues bonds (to institutions and other purchasers) or borrows (from a bank). There would be potential for a GIB to loan money to the intermediary funding vehicle in the early stage of the project, which the vehicle would subsequently re-finance in the capital markets. Some of the investment could be longer-term and be retained by the GIB. The GIB could also play a role in setting up and managing the intermediary vehicle. Given the amount of time required to establish a GIB, the EIB could provide immediate support in these roles. JESSICA could also be utilised differently by funding pilots. Based on PAYS, it could sell these cash flows to an intermediary funding vehicle or GIB, which would then refinance in the capital markets.

In turn, a GIB could be useful in disbursing Green Bonds – suggested by commentators as a good way to unlock the long-term 'patient capital' required by pension funds for investment in low carbon projects with a high upfront cost, but a long and steady payback period. These would be conventional bonds (to attract a wide range of interest), but with funds ring-fenced to deliver sustainable outcomes. Climate Change Capital and E3G recommend that a GIB would be the most effective way to disburse funds from these in a direct, controlled way.[125]

As noted above neighbourhood partnerships could also seek development debt from a GIB, who would bundle the mature revenue producing assets and sell these to institutional investors, recycling the proceeds into new developments and providing a return to communities. Chapter 6 identified the need to improve dialogue between private sector finance and public and third sector bodies. A GIB could provide this brokering role too.

Recommendation: The Green Investment Bank should direct finance to a wide range of low carbon infrastructure projects at a variety of scales, including neighbourhood.

Support could be provided to neighbourhood partnerships through:

- providing capital or guarantees where private finance is unwilling to take the risk
- bundling small projects to attract wider investment
- providing a brokering service between private, public and third sectors
- raising capital (for example, through Green Bonds) for sustainability projects identified by the partnerships.

As an interim measure Government should explore the idea of a national retrofit fund, potentially building on the 2020 European Fund for Energy, Climate Change and Infrastructure

How do you fund projects with uncosted benefits?

The income from quick and slow win projects is unlikely to meet the costs required for all neighbourhood retrofit projects, especially in the early years when they are not fully operational and/or repaying loans. There will be a need to find public sector funding for projects with uncosted benefits, as well as addressing urgent local needs, such as fuel poverty, and providing initial funding or subsidies for quick and slow win projects. Funding routes could include:

Creation of a local fund

Ring-fenced funds for sustainable and/or low carbon projects have been created by a few enterprising local authorities and community-led initiatives. Income is generated through a variety of sources, including savings from energy efficiency upgrades, green taxes, developer contributions for new homes, or income from community-scale renewables.

Table 14 **Innovative local authority approaches to funding**

- **Milton Keynes** – the council introduced Supplementary Planning Guidance which requires developers to pay a contribution into the Carbon Offset Fund based on the additional carbon emissions generated by their buildings. The money is collected using a Section 106 agreement and is payable on completion of the scheme. Since the scheme was introduced in 2008, developers have paid over £400,000 into the fund. This money has been used to fund energy efficiency upgrades in existing homes
- **Kirklees** – as noted in the earlier case study the council established a Renewable Energy Fund funded from the council's lower National Insurance contributions arising from the introduction of the Climate Change Levy in 2000. The fund is accessible to council services only and has enabled the attraction of around £4 million of additional funding from the EU, UK Government and private investment
- **Woking** – in 1990 the council calculated that investment of £1.25 million would deliver 20 per cent reduction in carbon emissions over five years. This was too much to be invested upfront so they created a recycling fund for energy efficiency work. Money for specific projects was put in a separate account and any money saved or generated was recycled back into the pool. Projects in the first year (which included waterless urinals and energy efficient lighting) saved £164,000, generating cross party support for the establishment of a 0.25m capital fund. By recycling savings back into the fund, Woking BC invested £2.5 million by 2001, resulting in current annual savings of over £725,000 per annum.

This model could provide useful resources for neighbourhood retrofit projects. Potential sources of funds for these projects are:

Funding from quick wins

The Prudential Code for Capital Finance in Local Authorities enables those authorities with a good financial record to borrow unlimited amounts, as long as they can demonstrate that spending plans are affordable, prudent and sustainable in the long-term. This provides an excellent opportunity for local authorities to fund energy efficiency upgrades on their own building stock and ring-fence the savings for a sustainability fund. There is also potential to use savings from other areas. Since it was introduced in 2004, prudential borrowing has been used against a number of income streams. For example, the London Borough of Barnet borrowed money for highway maintenance works which resulted in reduced overall maintenance costs. It was therefore able to redirect savings into priority services. Adur and Worthing Borough Councils borrowed capital to support a joint refuse collection and recycling service, as this would enable cost savings (through economies of scale and reduced landfill costs) and an improved service.[126]

Recommendation: With the introduction of the Feed-in-Tariff and Renewable Heat Incentive, there will be potential to develop new income streams. *Warm Homes, Greener Homes*[127] restated the previous Government's commitment to consider enabling local authorities to borrow against these. We urge the new Government to continue this approach and address this as a matter of urgency given that the Feed-in-Tariff is now operational. Consideration should also be given to ways in which these income streams can be utilised more effectively by community groups and neighbourhood partnerships to fund sustainability and/or low carbon projects, and to show how these could work with other income streams and financing mechanisms.

As outlined earlier it is notoriously difficult for community projects to access early finance, even for projects which can generate an income stream. We therefore welcome the introduction in Wales of the Community Scale Renewable Energy Generation project. This will provide finance of £100k to £300k per project to support the development of community-based renewable energy schemes such as wind, biomass and hydro power. This will enable projects to generate an income from the Feed-in-Tariff income.

Funding from slow wins

There is potential for communities to gain financially from renewable energy generation in their areas, especially from wind farms; the British Wind Energy Association agrees that offering benefits to communities that host wind farms is the right way forward.[128] The LGA has backed this route, suggesting that where the community does not own a share in the project, a community tariff be established for local residents to benefit from wind energy generation as already happens on a voluntary basis in some areas.[129] We would like to see these currently voluntary arrangements formalised to ensure that developers of all energy infrastructure provide payments which are equivalent to any loss of amenity. The funds should then be made available for projects which deliver sustainable outcomes, such as a neighbourhood retrofit programme.

An alternative way of creating a revenue stream would be providing communities with an ongoing share of the increase in business rates from the infrastructure development.

Another option would be to enable direct community investment in the project, potentially through a joint venture vehicle where communities are unable to raise sufficient funds or have sufficient expertise to finance either the whole project or purchase of an individual turbine.[130] In Denmark, which is now a net exporter of energy, 23 per cent of wind capacity is owned by investor cooperatives – with 100,000 members. These are largely individuals but local authorities also own shares in a number of substantial wind farms.[131]

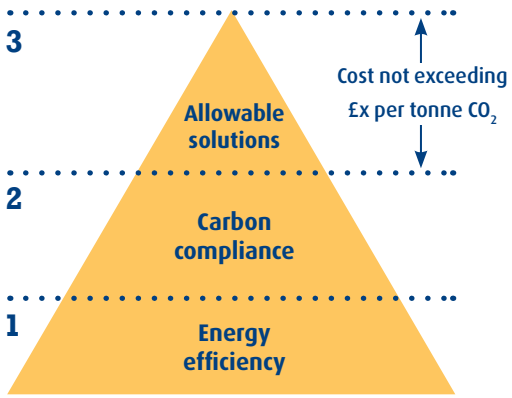
Other sources: allowable solutions

In 2008, the Government consulted on a range of 'allowable solutions' for homes which were unable to meet zero carbon requirements on site from 2016. These included a credit for Section 106 planning obligations towards local low and zero carbon infrastructure, and investment by the developer in low and zero carbon infrastructure. Due to concerns over a potential lack of local opportunities and/or local authority interest in promoting these, they were not originally included as an option in the consultation. However, there is growing support for this money to be paid into a local community energy fund.[132]

The Commission supports this proposal, as it will enable funds to be pooled and directed to projects where they can deliver greatest carbon savings in the area, as well as providing a clear process for developers and a clear link to the planning process.

The development of neighbourhood partnerships would help to support this by identifying local projects for investment and the type of public sector funding (i.e. grant, subsidy or investment) required to make these happen.

Figure 13 **Government's preferred hierarchy for zero carbon**



Other sources: Community Infrastructure Levy (CIL) /tariff/section 106

Where neighbourhood partnerships have developed delivery plans, these should be used to inform the development of future Sustainable Community Strategies and allocation of CIL, tariff and/or section 106 funding. In addition, it is likely that local authorities will be able to borrow against CIL receipts. There will be potential for this to be used to fund low carbon infrastructure for new and existing places.

Other sources: local green charges

These have been utilised by Woking Borough Council, which raised the prices for taxi licences, based on the vehicle's carbon emissions. Funds have been used for a variety of sustainability upgrades. Ray Morgan, Woking's Chief Executive, believes these charges are acceptable to residents because they are clearly linked to local, visible projects, such as installation of photovoltaic panels on local schools.[133]

Recommendation

The Government should create ways in which local communities are able to derive long-term benefits from the siting of low carbon energy infrastructure, such as new housing or wind turbines, in their area.

There is a number of issues raised in this chapter that would benefit from a more detailed investigation. SDC will be investigating the options available to Government to stimulate the scale of investment required to make the transition to a sustainable economy – including the role that can be played by community-level financing, both directly and as an exemplar developing national-level policy.

Chapter 7 summary:

- Public sector funding will diminish significantly in key areas such as highways, transport, housing, and the environment. This means private sector investment will be crucial to the development of neighbourhood retrofit projects. Public sector finance will, however, still be needed to leverage this

- Emerging findings from the Total Place and Total Capital studies are that, where public sector bodies work together at a local level to align funding, investment and service delivery, this can lead to better outcomes at lower cost. Neighbourhood partnerships should therefore map existing funding and maintenance streams and, through a 'Total Neighbourhood' approach, look for ways in which they can be reconfigured to deliver better outcomes

- Neighbourhood retrofit projects have different business models, depending on the amount of upfront investment required, and their revenue-generating potential. We have grouped these into three categories of 'quick wins', 'slow wins' and 'projects with uncosted benefits' (i.e. those which have no revenue-generating potential). The type of investment available for quick- and slow-win projects will vary according to the stage of the project. The risk will be highest in the early scoping and development phase, requiring more public sector support

- Local investment can support long-term sustainability of an area by providing an income stream for future works. Some communities have established revolving funds using income from community owned renewables or Energy Service Companies (ESCOs). There is potential for this to increase with the roll-out of the Feed-in-Tariff and introduction of the Renewable Heat Incentive in 2011. Where possible, local areas should develop funding mechanisms which enable local investment

- Institutional investors will require investment scales of circa £50 million (for equity investment) and £100m (for debt investment). This may be difficult for neighbourhood partnerships to achieve. Neighbourhood partnerships can attract institutional investors by working with other bodies to develop portfolios of this size. This should be supported by a Green Investment Bank

- The early stages of projects (scoping and development) are the highest risk. Public sector funding should be used to minimise this risk and enable local investment. This can be achieved through a variety of methods including public sector underwriting, use of assets, seed funding for scoping works, research and development and a clear policy framework

- The previous Government was developing mechanisms to attract institutional finance to large-scale, strategic low carbon projects. We would like the remit of these bodies expanded to support neighbourhood retrofit project portfolios. For example, a Green Investment Bank should provide support and access to finance for neighbourhood partnerships

- Some projects will require public subsidy. These can be funded from a variety of means, including surplus profits from quick- and slow-win projects (where there is local investment or a community tariff on private sector development), allowable solutions, section 106/Community Infrastructure Levy/tariff and other local green charges.

Recommendations

- **Public sector funding mechanisms should promote devolution of funding to neighbourhood partnerships to enable them to influence decisions on how public sector money is spent in their area.** To enable this, neighbourhoods should be provided with greater information about local public expenditure, potentially by providing neighbourhood level breakdowns as in the Local Spending Report. The Government's review of local government finance should look at the issues raised by the Total Place pilots, Total Capital case studies and Total Capital and Asset pathfinders, and promote ways to devolve greater financial autonomy to neighbourhoods (Action: CLG, HMT)

- **Government should minimise development risk through provision of clear policy support for neighbourhood retrofit.** This should include equalisation of VAT on refurbished properties with new build, and the introduction of minimum standards for the energy efficiency of existing buildings (Action: CLG, DECC, HMT)

- **The Green Investment Bank should direct finance to a range of low carbon infrastructure projects at a variety of scales, including neighbourhood.** As an interim measure Government should explore the idea of a national retrofit fund, potentially building on the 2020 European Fund for Energy, Climate Change and Infrastructure (Action HMT, Infrastructure UK)

- **Local authorities should be enabled to borrow against Feed-in-Tariff and Renewable Heat Incentive income streams** as a matter of urgency (Action HMT, CLG)

- **The Government should create ways in which local communities are able to derive long-term benefits from the siting of low carbon energy infrastructure, such as new housing or wind turbines, in their area**. This could include enabling communities to purchase a share in the development, providing them with an ongoing share of the increase in business rates or a community tariff. In addition 'allowable solutions' (i.e. offset payments for new homes unable to meet zero carbon levels onsite) could be paid to the local authority and used to fund low carbon projects identified in neighbourhood partnerships' delivery plans. (Action: BIS, HMT, CLG).

Conclusions

Our research has identified the need to improve the infrastructure in our existing neighbourhoods in an integrated way if we are to improve quality of life, avoid future costs of poor infrastructure, and reduce carbon emissions. These works also have the potential to make places more resilient to the impacts of climate change, reduce fuel poverty, improve energy security, make more efficient use of natural resources, improve biodiversity, improve health, create local jobs, improve wealth retention in local economies, improve the quality and value of existing places, reduce crime or fear of crime, and improve community interaction.

We believe that this work to upgrade neighbourhood infrastructure will be achieved most effectively through integrated, area-based programmes. This approach encourages sustainable lives, increases uptake of works, reduces costs, builds capacity in local firms, creates local jobs, makes the benefits of retrofit visible, galvanises communities into action, overcomes barriers for households to undertake retrofit, improves the viability of some technologies, and provides opportunities to integrate delivery of different infrastructure upgrades. Working in an integrated way also reduces the cost and disruption of works, utilises resources more efficiently, and engages communities.

It was clear from our research that an integrated, area-based approach will require coordination through a local body, ideally one involving communities and local authorities. We identified a number of these local neighbourhood partnerships that are already delivering works to make our existing places more sustainable. These exemplar partnerships are, however, the exception rather than the rule – often springing from government pilots, motivated individuals or strong communities.

It was also clear, however, that there are many more people at the local level with a desire to get involved in works to improve the long-term sustainability of their neighbourhoods. Encouraging, enabling and empowering these bodies to drive and coordinate integrated neighbourhood retrofit programmes will not only improve the quality of existing places. By working together and building capabilities, it will also strengthen existing communities and increase their ability to tackle challenges in the future.

If we are to mainstream integrated, area-based delivery to achieve economic, environmental and social benefits cost-effectively, Government must:

- **Prepare the ground** – ensure that government policies, programmes and regulation support integrated delivery, and improve the evidence base on the benefits of working with communities to deliver sustainable outcomes through an integrated, area-based approach, and issues arising

- **Coordinate support** – review existing support structures for communities and local government; develop a coordinated framework which simplifies the offer to neighbourhood partnerships, enables quick identification of gaps in existing provision, and promotes the development and sharing of best practice

- **Provide access to funding** – increase flexibility on how public sector finance is used at a local level; improve access to seed funding; develop mechanisms which direct finance to neighbourhood partnerships; minimise development risk through clear policy support for neighbourhood retrofit.

Annexes

Annex A: Government targets that can be supported through neighbourhood retrofit

	LA	National	EU
Carbon reduction	• NI 185: CO_2 reduction from local authority operations • NI186: Per capita CO_2 emissions in the LA area*	• PSA 27: Lead the global effort to avoid dangerous climate change • 34% reduction in UK carbon emission by 2020 • 80% reduction in UK carbon emission by 2050	• 15% energy from renewables by 2020
Adaptation	• NI 188: Adapting to climate change*	• PSA 28: Secure a healthy natural environment for today and the future	None
Waste	• NI 191: Residual household waste per head* • Local authorities required to collect at least two types of recyclable waste from households	• Recycle and compost 40% of household waste by 2010; 45% by 2015; and 50% by 2020 • Recover (recycling, composting & energy) 53% of total municipal waste by 2010; 67% by 2015; 75% by 2020 • Reduce household residual waste by 29% from 2000 levels by 2010; 45% by 2020 • Halve construction, demolition and excavation waste to landfill by 2012 compared to 2008 levels • Reduce GHG emissions from waste management by 9.3m tonnes CO_2 equivalent per year from 2006 levels	• Landfill Allowance Trading Scheme (LATS): reduce BMW to landfill to 75% of 1995 levels by 2010; to 50% of 1995 levels by 2013; and to 35% of 1995 levels by 2020 • Waste Framework Directive: recycling of 50% of household waste and 70% of construction & demolition waste by 2020
Water efficiency and quality	No targets	• PSA 28: Secure a healthy natural environment for today and the future • England 130 l/p/d average per capita consumption (ambition 120 l/p/d) by 2030	• By 2015, all inland and coastal waters to achieve good ecological and chemical status and all groundwater bodies to achieve good groundwater quantitative and chemical status
Transport	• NI 167: Congestion* • NI 175: Access to services and facilities by public transport, walking and cycling * • NI 198: Percentage of children walking or cycling to school*	• PSA 5: Deliver reliable and efficient transport networks to support economic growth • PSA 13: Improve children and young people's safety • Increase public transport by 12% by 2010 from 2000 levels • 40% reduction by 2010 in the number of people in Great Britain killed or seriously injured on 1994-98 average. 10% reduction in the slight casualty rate** • Low Carbon Transport Strategy measures are projected to reduce emissions to about 110 million tonnes of CO_2 by 2020 (a reduction of 17.7 million tonnes of CO_2 in 2020)	None

Green Infrastructure	• NI 199: Children and young persons' satisfaction with parks and play areas*	None	None
ICT	None	• 2 Mbps broadband universal service by no later than 2012	
Re-use of existing land	Local targets	• PSA 20: Improve long term housing supply and affordability • 60% of homes to be built on brownfield land	None
Fuel Poverty	• NI 116: Proportion of children in poverty* • NI 185: Tackling fuel poverty*	• PSA 9: Halve the number of children in poverty` by 2010-11, on the way to eradicating child poverty by 2020 • PSA 17: Tackle poverty and promote greater independence and well being later in life • Fuel poverty to be eradicated by 2016	None
Health	• NI 119: Self-reported measure of people's overall health and well being*	• PSA 12: Improve the health and wellbeing of children and young people • PSA 18: Promote better health and wellbeing for all	None
Economic wellbeing	• NI 152: Working age people on out of work benefits • NI 172: VAT registered business in the area showing growth	• PSA 1: Raise the productivity of the UK economy • PSA 4: Promote world class science and innovation in the UK • PSA 8: Maximise employment opportunity for all	None
Biodiversity	• NI 197: Improved local biodiversity – active management of local sites	• PSA 28: Secure a healthy natural environment for today and the future	• 2006 EU Sustainable Development Strategy: halt biodiversity loss by 2010
Crime	• NI 17: Perceptions of anti-social behaviour*	• PSA 23: Make communities safer	None
Community Cohesion and inclusion	• NI 2: % of people who feel that they can influence decisions in their locality* • NI 3: Civic participation in the area*	• PSA 21: Build more cohesive, empowered and active communities	None

Annex B: Benefits of upgrading existing infrastructure

This section provides a summary of the evidence on how upgrading physical infrastructure can enable people to live more sustainable lives.

Retrofitting infrastructure in our existing places can help us **live within our environmental limits** through:

- reducing carbon emissions
- making efficiency use of resources
- improving energy security through increasing generation of renewable energy
- making places more resilient to the impacts of climate change
- improving biodiversity

Retrofitting infrastructure in our existing places can help to **achieve a sustainable economy** through:

- creating local jobs and strengthening local economies
- improving the quality and value of existing places
- avoiding costs of poor infrastructure

Retrofitting infrastructure in our existing places can help **ensure a strong healthy and just society** through:

- reducing fuel poverty
- improving health and reducing health inequalities
- reducing crime
- improving community interaction
- informing and enabling sustainable choices

1. Reducing carbon emissions

Three key infrastructure elements contribute to the UK's carbon emissions: buildings, transport and waste.

1.1 Buildings

Residential buildings account for over 26 per cent of UK's carbon emissions, and non-domestic account for a further 18 per cent.[134] As outlined in the Heat and Energy Savings Strategy,[135] Government ambition is for carbon emissions from buildings to be virtually eliminated by 2050 if the 80 per cent 2050 target is to be met. The Committee on Climate Change states that there is considerable technical potential to reduce emissions in the residential sector by 2022. Even factoring in the various supply and demand constraints that exist it estimates that carbon savings of between 35 and 38 per cent on 2007 levels are achievable.[136] For non-domestic buildings the Carbon Trust estimated that carbon reductions of 70-75 per cent by 2050 can be achieved at no net cost, using options which exist today and that accelerating emissions reductions to 2020 will lead to a significant reduction in the cumulative cost to 2050.[137]

Achieving these levels of cuts will require each building to have a 'whole house' package. This may be delivered in a single upgrade or as a programme of staged works. The initial focus of this should be to ensure that buildings are effectively insulated given that 60 per cent of average domestic energy bills are spent on heating. This includes measures to improve the insulating properties of the building fabric such as double glazing and loft, cavity wall, solid wall and floor insulation. This should be followed by measures to reduce the amount of energy used in this process such as new boilers and heating controls, installation of solar thermal systems or heat pumps and connection to heat networks. Smart meters should also be introduced as they can have a positive impact, enabling householders to understand and make informed decisions regarding their energy use.[138]

Reducing the amount of potable water used will reduce carbon emissions. The recent EA/EST study[139] found that water use in the home produces 35 million tonnes of CO_2 per year. This includes energy for heating water but excludes space/central heating. 10 per cent of these emissions originate from abstracting, treating and supplying water, and subsequent wastewater treatment. Whilst the average person uses 150 litres or water a day only 2 litres of this is used for drinking purposes.[140] Significant carbon emissions could therefore be saved if non-potable water is used for lower grade uses.

The amount of potable water used in buildings can be reduced through installation of water efficiency devices, rainwater harvesting and re-use of grey water. Installation of water meters into all homes can also have a significant impact on the amount of water used. Research has shown that domestic metering reduces water use by between five and fifteen per cent.[141] On the basis of this and other evidence Ofwat have recognised that a ten per cent reduction from installation of water meters is a credible assumption.

Buildings can also be utilised to generate electricity through siting of micro generation technologies such as Photovoltaic panels or wind turbines.

Retrofitting buildings can reduce carbon emissions through:

- Insulating buildings so they require less energy for heating
- Connecting buildings to low carbon sources of heat
- Installing smart meters, new boilers and heating controls
- Using buildings as sites for the generation of renewable electricity and heat
- Installing water efficient fittings in buildings

- Installing water meters
- Using grey and rain water devices to capture and use non-potable water

1.2 Waste

Methane emissions from biodegradable waste in landfill account for 40 per cent of all UK methane emissions and 3 per cent of all UK greenhouse gas emissions (as methane is 25 times more harmful as a greenhouse gas than carbon dioxide).[142]

The following hierarchy is commonly used to prioritise the actions required to reduce the impact of waste: prevention, minimisation, reuse, recycling, energy recovery and disposal. This should be used as a basis for carbon assessment, although other factors – such wider sustainable development benefits – may play a key role in deciding which action is appropriate.

Current recycling in the UK (paper, glass, steel, plastic) is estimated to save more than 18 million tonnes of carbon dioxide a year through avoided emissions from primary material production.[143] In addition to carbon savings this also reduces the need for global primary extraction of materials.

Waste can be turned in to energy in three main ways: incineration; advanced thermal technologies (gasification and pyrolysis); and anaerobic digestion. Currently around eight per cent of municipal waste is treated by waste to energy facilities but it is estimated this will rise to at least 25 per cent by 2020. Consideration needs to be given to the overall impacts of these different processes as the carbon savings vary significantly.

Anaerobic Digestion (AD) and mechanical biological treatment (MBT) technologies are seen to have far greater potential to reduce GHG emissions than incineration.[144] However with landfill as the baseline option, all other options provide more sustainable outcomes. The Committee on Climate Change report[145] claims that emissions from the waste sector could be reduced by at least 80 per cent by 2050 with AD and MBT accounting for 75 per cent of this total.

Retrofitting waste infrastructure can reduce carbon emissions by:

- Promoting waste prevention and minimisation in construction and demolition works relating to upgrading existing infrastructure
- Providing facilities for collection, reuse and repair of bulky household items such as furniture and trade waste
- Using ICT to establish and promote *freecycle* and other local re-use and recycling networks
- Developing facilities to collect and recycle household and trade waste
- Developing facilities to process waste to generate energy
- Using inert construction waste as material for SUDS, landscaping and habitat enhancement schemes.

1.3 Transport

Domestic transport accounts for 21 per cent of the UK's carbon emissions, an increase of 12 per cent since 1990. Passenger cars account for 58 per cent of this amount. Within this almost 21 per cent of carbon emissions from domestic cars arise from journeys of less than five miles.[146] It would therefore appear that there are substantial carbon savings to be made from achieving a switch to walking, cycling and use of public transport for these journeys.

For longer journeys we need to consider how infrastructure can both reduce the need for the journeys and support increased vehicle efficiency and occupancy. We should also look at the potential for some of these journeys to be made by bicycle as they are in the Netherlands.

The Committee for Climate Change progress report recognises the role that physical infrastructure (such as proximity of homes to public transport, increased density, mix of land use etc) plays in reducing the need for travel. It estimates that up to 2MT CO_2 carbon could be saved in 2020 by better integrating land use planning.[147]

Retrofitting transport infrastructure can reduce carbon emissions by:

- Installing of ICT networks and office hubs to enable teleconferencing and local working
- Developing and improving safe and convenient cycling and walking routes, linking homes to key services and movement routes
- Redesigning streets to prioritise non vehicular transport through measures such as traffic speed reduction, car free areas (see Vauban suburb in Freiburg), filtered permeability (see Ashford and Groningen) and shared space solutions (see Friesland and Haren in Netherlands, Chambery in France, and Exhibition Road, London)
- Providing of infrastructure to support cycling and walking. This can include separated routes, clear signage, lighting, secure parking areas, cycle hire schemes (now common in most European cities and due to be launched in London later this year) and showers at workplaces.
- Providing quality infrastructure to encourage use of public transport. This can include safe and secure bus stops, provision of real time information on bus and rail networks and bus lanes.
- Maximising opportunities provided through land use planning, new development and redevelopment to locate key services (such as shops, doctors, schools) in hubs within walking distance of residential areas. Decisions about where to site facilities must balance carbon costs alongside potential cost savings from centralisation of services.
- Maximising opportunities provided through land use planning, new development and redevelopment to increase densities, especially around existing services and transport hubs
- Providing community transport services for elderly and infirm, who may have difficulty walking or using public transport
- Providing infrastructure to ensure all motorised transport can utilise 'state of the art' technology in terms of low carbon emissions
- Providing parking spaces for car club vehicles
- Reducing parking for private vehicles

It should be noted that other elements will also make minor contributions to carbon emissions such as installation of green infrastructure to provide effective carbon sinks.

2. Making efficient use of resources

Too often we fail to consider how resources can be multi-functional, or how waste from one process can be used as fuel for another. For example in the UK we waste enough heat in central power stations to heat all the buildings in the UK.[148] As detailed in Chapter 1 there are many synergies that can be exploited through reconfiguring our existing infrastructure. We can also significantly improve the efficiency of existing infrastructure through improved ICT which enables people to access information easily and different parts of an integrated infrastructure system to communicate.[149]

Retrofitting infrastructure can maximise efficiency of resources through:

- Making buildings energy efficient so they need less energy to heat
- Considering how all waste products can be used as resources
- Recovering maximum value (financial and carbon) from residual waste
- Aiming for zero waste to landfill (thereby avoiding landfill tax payments)

- Reusing waste heat from electricity generation to heat buildings
- Linking buildings with different heat load profiles (i.e. homes and schools) to maximise output of district heating networks
- Generating energy from renewable sources
- Developing multifunctional green infrastructure
- Growing food or grazing animals on underused land and public realm
- Using ICT to provide real time information on public transport networks, cycle hire, car clubs etc
- Using ICT to remotely control systems to manage energy use and avoid wastage
- Using smart meters to understand energy use and avoid wastage.

2.1 Underused land and assets

A significant amount of the land and buildings in our existing places is derelict or underused. Despite policies to promote brownfield development there were still over 62,000 hectares of previously developed land across England in 2007. Of these 54 percent of the sites were vacant or derelict. Likewise in 2008 there were over 650,000 empty homes across England.[150]

There has also been significant works over recent years to bring many of the UK's disused railways and canals back to functional use for communities. We need to ensure that assets like these are bought back into use to prevent the requirement of additional greenfield land for new development.

There is also potential to use land in transition to deliver short and medium term benefits, such as food growing or siting of temporary infrastructure.

Retrofitting infrastructure can help us maximise value of underused land and assets through:

- Using small infill sites for new development, or to house infrastructure to support sustainable lifestyles
- Using vacant buildings, underused land and other infrastructure to meet the needs of the wider community and support sustainable lifestyles
- Bringing disused canals and railway lines back into use as cycling and walking networks, wildlife habitats and leisure use
- Installing wind turbines and hydro electric schemes on canals and rivers
- Using old docks and railway sidings for any energy generation technology with a negative visual impact e.g. energy from waste, AD. The advantage of these sites if that they are low in value yet frequently close to urban centres, making them ideal for District Heating networks[151]
- Using derelict sites and public realm for growing food.

3. Increasing local generation and distribution of heat and energy

Upgrading existing infrastructure will enable places to develop a diverse energy supply at the local level. In their report into sustainable energy management in the built environment, the Government Office for Science found that targets for carbon reduction and renewable energy will necessitate deployment of decentralised energy systems. It states this can help 'address fuel poverty, enhance security and enable communities to play a more active role in addressing climate change.'[152] Having a percentage of power generated from decentralised sources may also help to smooth out the peaks in demand for centralised power generation that are likely to occur from increased use by electric cars and heating. This will however depend upon the load factor and availability over time of the decentralised technologies.

EST's review of distributed energy at community scale found that with sufficient incentives in the form of price rises and effective policy support, 7.5 per cent of UK's energy demand could be met

from individual/small communities or 10 per cent from large scale community action. The report estimates this could save up to 35 per cent of annual household emissions.[153]

Decentralised energy production can deliver savings through minimising energy lost in transmission and capturing and utilising waste heat for use in nearby buildings. On average power plants currently lose over 60 per cent of the energy from fossil fuels between production and end use consumption.[154]

Research from an international study co-financed by the European Commission estimates that approximately 9.3 per cent of carbon emission reduction could be achieved if more district heating (and cooling) infrastructure were to be implemented across the 32 Member States.[155] The Poyry/Aecom report on district heating calculated that a network covering 250,000 homes could save between 0.25MtC02 and 1.25Mt CO_2 per year.[156]

There is also good potential for land, buildings and water to be used to generate electricity for use in buildings and for sale.

Retrofitting infrastructure can generate energy through:

- Developing decentralised energy systems, especially those utilising CHP. These can be delivered at neighbourhood or town/city scale
- Retrofitting micro-generation technologies to existing buildings (including photo-voltaic cells, solar hot water systems and heat pumps)
- Using underused and community land and water for renewable energy generation
- Providing natural resources for biomass.

4. Making places more resilient to the impacts of climate change

The most visible impact of climate change to date has been from water related weather events, in both flooding and drought. So we need to think about how we can redesign our existing places better to make them more resilient against extreme weather. Retrofitting areas with Sustainable Urban Drainage Systems (SUDS) can help to reduce the amount of surface water run-off, which is one of the main causes of inland flooding in the UK. Measures include French drains, swales, detention and retention basins and ponds, below ground storage, permeable paving, rainwater harvesting, green roofs and constructed wetlands. These softer measures can provide a cost effective and viable way to manage water.

Wider green infrastructure also contributes to this. Research by University of Manchester has shown that increasing the green space cover in urban areas by 10 per cent reduces surface run-off by almost 5 per cent. In addition adding green roofs to all the buildings in town centres can reduce surface water run-off by almost 20 per cent.[157]

Infrastructure can help to make places more resilient to impacts of climate change through:

- Improving pipes and distribution networks
- Retrofitting of SUDS
- Improving green infrastructure to alleviate flood risk and minimise Urban Heat Island effect

5. Improving biodiversity

Retrofitting infrastructure in our neighbourhoods (and the area based planning required to support this) provides opportunities to conserve and enhance biodiversity, particularly where threatened by climate change. The key contribution will be improvements to green and blue infrastructure to enhance existing habitats and created a coherent network with the creation of new areas of habitat.

This can include pockets of land which have been derelict for long enough to have developed a unique and diverse habitat.

Infrastructure can help to conserve and enhance biodiversity through

- Developing of green infrastructure/ green space strategies
- Developing new and interlinked habitats through retrofitting of SUDS, street trees, green roofs and green bridges
- Creating functional floodplains and re-opening culverted watercourses.

6. Creation of jobs and stronger local economies

There is a growing wealth of evidence on the potential job creation opportunities from work to make our places more sustainable. South Korea's green stimulus package which covered energy conservation, quality of life (green neighbourhoods and housing), environmental protection and infrastructure (IT and green transport networks) is estimated to create almost a million jobs over the next four years.[158]

Research by Stern and Bowen found investment in energy efficiency measures in homes and public buildings as delivering the highest economic and climate benefits for the UK.[159] Evidence from Germany suggests that home energy efficiency programmes can support 25,000 jobs for every billion Euros invested.[160] These include jobs across a wide range of sectors, with roles for installers, builders, advisors, consultants, technicians and engineers etc. NEF estimated that this work would have significant impact on local economy with at least half of the value of this work expected to be retained in the UK, given the labour intensity of the work.[161]

Neither is this a one-off benefit during a fixed period of retrofit. In California three decades of emphasis on energy efficiency has created 1.5 million jobs, saved households $56 billion in energy bills and resulted in California having a per-capita energy use 40 per cent below the national average.[162] The study in California highlighted that many of these jobs come from households spending the savings on energy bills in ways that both create more jobs and retain money in the local and regional economy for longer. Conventional spending on goods and services in shops, cafes, hairdressers, etc employs more people in the local economy than spending the same amount on electricity or gas.

In the UK, Kirklees Warm Zone has estimated that every £1 invested returns £5 into the local economy. The total economic impact is over £80m from a combination of direct funding, job creation, householder fuel savings and increased benefits uptake.[163] A study into the effects of Citizens Advice Bureau in Glasgow[164] also found that low-income residents spend a high majority of any increase in income on local goods and services.

In their work on a Green Stimulus package, NEF argue that the retained value for the UK economy is likely to be significantly more for labour intensive work such as home insulation than 'big ticket items' of railway carriages. For these labour intensive works they would expect the UK to retain more than half of the value of this work.[165]

7. Improving the quality and value of our existing places

The previous Government's World Class Places strategy[166] identifies there are 'very strong economic arguments for investment in quality of place'. CABE have undertaken a number of studies in this area and found that the quality of the infrastructure in our existing places has a significant impact on their value.[167] For example properties that overlook a park are on average five to seven per cent more valuable than neighbouring properties.[168] CABE also found that increased street design quality increased both property prices and shop rental yields by around five per cent.[169] This work is corroborated by wider studies in both the UK and America[170] that have found a sales premium,

usually in the region of 15 per cent for places built to basic urban design principles (which includes the provision of quality infrastructure). Studies have also found high quality public environments can have a significant impact on the economic success of towns and cities with shopper, visitors and businesses all attracted by well designed and maintained parks and public spaces.[171]

Retrofitting work has the potential to directly impact on the quality of the built environment. External insulation can significantly improve the appearance of many properties, especially when undertaken on a street level. In Stirling Council 125 homes were upgraded with external cladding. These works improved visual quality to such an extent that a large number of the area's owner-occupiers have since enquired about having the work undertaken on their properties.[172]

Research undertaken for the Australian Greenhouse Office found that six years after the introduction of a mandatory energy rating the market is recognising the value of energy efficiency and is willing to pay a premium for better performance[173] There is some evidence from the UK to suggest that retrofitting buildings for energy efficiency could have a positive impact on their property prices in the UK too. Research by NWDA found that during the recession 'factors such as sustainability and energy efficiency are becoming increasingly significant in competitive markets.'[174]

Retrofitting infrastructure can improve the value of our existing places through:

- Enhancing visual quality through public realm improvements
- Improving the visual quality, accessibility and functionality of green infrastructure
- Bringing derelict land back into use
- Improving the energy efficiency of buildings (including cladding of those of limited visual quality).

8. Avoiding costs of poor infrastructure

Retrofitting infrastructure is not just about improving the value of our existing places. It can also help to avoid significant costs of poor infrastructure. CABE's *Cost of Bad Design*[175] found that badly-designed places with poor public transport connections and badly designed public spaces can lead to a range of external costs, which are usually borne by residents and wider society. The report cites the examples of Holly Street in Dalston which was so badly designed that it had to be demolished 20 years into its 60 year design life at a cost of £92 million. Prior to demolition 80 per cent of the tenants had applied to leave the estate because of problems with crime, drug abuse and difficulties getting jobs due to discrimination on account of the postcode.

Investing in existing places can avoid significant costs to the NHS. As noted above, a lack of green infrastructure and safe and convenient pedestrian and cycling routes can contribute to physical inactivity, which in turn is a primary cause of obesity. With obesity already estimated to cost the NHS directly £1 billion a year and the wider UK economy in the range of £2.3- £2.6 billion, this is a significant and growing cost.[176] Green infrastructure also has a positive impact on mental health. The costs of mental illness (primarily depression) to the NHS are estimated at £12 billion a year to the NHS and £64 billion to the wider UK economy.[177]

In addition the National Housing Federation have estimated that poor housing costs the NHS £2.5 billion a year as people living in homes that are cold, damp and affected by mould are far more likely to become ill. The research also found the cost to the wider public purse of police responses associated with substandard housing were around £1.8 billion a year.[178]

Retrofitting infrastructure can help avoid costs of congestion, which are a growing concern. The Eddington Review estimated that if left unchecked congestion would cost England alone £22 billion by 2025.[179] Evidence from Sustrans shows that improving cycling and pedestrian routes can deliver significant economic benefit. Using Government's criteria for assessing the economic benefits of

transport schemes, it found that a programme of walking and cycling schemes linking schools to communities delivered a benefit to cost ratio of 20:1 compared to a typical ratio of 3:1 for transport schemes such as rail and road improvements. This considered savings to the health service from increased physical activity but did not take into account the further savings that could be achieved from reduced carbon emissions.[180]

Improving existing infrastructure can also help both individuals and society avoid costs arising from climate change. Stern estimated that the impact from extreme weather alone could reach 2 per cent of world GDP by 2050, with the global economy shrinking by around 20 per cent.[181] Manchester undertook their own 'mini-Stern' and estimated the city region risks losing £12 billion over the next twelve years if it fails to adapt (and £70 billion for the North West region).[182] The floods in the summer of 2007 show the levels of damage that can be incurred. These cost insurers over £3billion and rising insurance costs have left many people without cover or with excesses above £10,000.[183]

Although we must take immediate action to reduce carbon emissions, it will take many decades for mitigation measures to have any impact. This means that many of the impacts of climate change are already with us or unavoidable. We must therefore look to reduce the costs from these impacts by adapting our existing infrastructure to become more resilient. Green infrastructure has a key role to play in this by helping to lower the temperatures of cities and reducing flood risk in urban areas through SUDS. Research from ASCCUE found that a 10 per cent decrease in urban green results in increased temperatures in Manchester of up to 8.2c, whereas an increase of 10 per cent will enable temperatures to be kept at or below current levels until 2080. Wider measures can help to reduce overheating (both of buildings and urban areas), reduce water use and ensure our roads and public realm can deal with higher temperatures and increased rainfall.

Retrofitting infrastructure can avoid future costs resulting from our existing places through:

- Improving resilience to impacts of climate change through measures to reduce flooding, overheating and reduce water use
- Providing sustainable transport options and green infrastructure (as set out in sections 1.3, 4 and 5).

9. Fuel Poverty

There is a strong correlation between the energy efficiency of buildings and fuel poverty. The average SAP rating for a fuel-poor household is 37 compared to the average of 50 and an average of 80 for properties built to building regulations.[184] A number of Government programmes (Warm Front, Warm Zones, the Community Energy Savings Programme (CESP) and a percentage of CERT etc) are therefore targeted to reduce fuel poverty through improving the energy efficiency of existing homes.

With the possibility of significant increases in fuel prices in the next decade, improving the energy efficiency of the UK's homes will be the most effective way to tackle fuel poverty.[185] A SAP rating of 81 is generally accepted as the level required to future proof properties from fuel poverty. In 2008 the Fuel Poverty Charter (comprising a coalition of Age Concern, Association for Conservation of Energy, Barnardo's, Centre for Sustainable Energy, Child Poverty Action group, Disability Alliance, Energywatch, Friends of the Earth, Help the Aged, National Energy Action, National Right to Fuel Campaign and WWF) called for all properties to be updated to a minimum energy efficiency standard of SAP81. It was estimated that this would eliminate fuel poverty by reducing heating costs by at least 50%.The 2009 EFRA select committee inquiry into fuel poverty called for government to 'assess the cost and feasibility of introducing a SAP 81 standard as the basis of an improved thermal comfort standard for all social housing'.[186] In their report *Rebuilding Britain*, NEA called for regulation to ensure that all homes achieve this standard by 2020.

How energy is sourced and provided to buildings can also have an impact on fuel poverty by reducing the price. Linking properties to heating networks can help to lower prices of fuel. While upfront costs may be high (and could not therefore be funded by fuel poor households) the annual fuel costs are invariably lower especially where either the network is provided by a not-for-profit Energy Service Company (such as Aberdeen Heat and Power Company) or waste heat is available (such as from a CHP plant).

Improving the energy efficiency of buildings will reduce their demand for heat, thereby impacting on the viability of a district heating scheme. An assessment should therefore be made to determine which of these options delivers greater carbon and cost savings.

Retrofitting infrastructure can reduce fuel poverty through:

- Improving the energy efficiency of existing buildings
- Providing cheaper sources of heat for buildings

10. Improving health and reducing health inequalities

Several infrastructure elements have been found to have a direct impact on the health of those living in the neighbourhoods. As detailed below these include buildings, access to green space, and transport.

10.1 Buildings and health

There is substantial evidence that the quality of people's homes impacts upon their health. Cold is believed to be the main factor underlying the extra deaths which occur in from December to March, compared with the death rate for other months of the year. Research published in the Lancet concluded that improvements in the efficiency of UK household energy use could, if implemented correctly, have appreciable benefits for population health, mainly arising from improved indoor air quality and control of winter indoor temperatures.[187]

Improvements in buildings have also been found to have wider benefits. A study in Scotland found that improvements in housing condition can reduce the frequency of minor ailments such as coughs and colds as well as reducing use of asthma inhalers amongst children and tranquilisers amongst adults.[188]

10.2 Green infrastructure and health

An evidence review by SDC found that contact with natural spaces can improve both physical and mental health directly and indirectly.[189] Studies highlighted a range of benefits including a lower Body Mass Index for children,[190] positive impacts on blood pressure and cholesterol,[191] better resilience to stress,[192] quicker patient recovery times,[193] improved mental health,[194] and decreased levels of depression.[195] A study by Mitchell & Popham also found that income-related inequality in health is less pronounced in populations with greater exposure to green space.[196] This wide ranging evidence on the health benefits of green infrastructure led the Royal Commission on Environmental Pollution to conclude that 'access to good quality green space provides an effective, population-wide strategy for the promotion of good health, wellbeing and quality of life.'[197] There is also evidence that producers of 'home grown' food can gain psychological and physiological benefits through physical activity and improved nutrition, as well as through self empowerment, engaging with nature, and participating in communal activities.[198]

10.3 Transport and health

Improving sustainable transport options will deliver health and economic benefits alongside carbon reductions. This is achieved through improving road safety, decreasing air and noise pollution and the physical and mental health benefits from increased physical activity due to walking and cycling.

Road safety

There are around 30,000 deaths or serious injuries from road accidents every year. These deaths are disproportionally felt in deprived areas with child pedestrians from the most deprived areas four times more likely to be killed or injured on the road than those from the least deprived areas.[199] Reducing car speeds to under 20 miles per hour can be crucial in reducing the severity of injuries from accidents.[200] This can be achieved through either introduction of traffic calming measures (which can include softer landscaping measures often used in home zones) and/or the introduction of 20 mph speed limits in residential areas (as has been introduced in several cities in the UK including Portsmouth). UK evaluation of 20mph zones showed them to be effective in reducing traffic speed and accidents.[201] Child pedestrian injuries fell by 70 per cent and child cyclist injuries by 48 per cent [37]. Research using American, Danish, Dutch and British data sets also found that increasing the number of people walking and cycling actually helps to improve road safety.[202]

Reducing pollution

Transport causes additional health problems through air pollution. It is estimated that this contributes to respiratory diseases and is estimated to reduce life expectancy by seven to eight months.[203] Several recent studies indicate that children living close to busy roads have an approximate 50 per cent increased risk of experiencing respiratory illness including asthma.[204] In addition this is an increased health risk for those travelling inside vehicles. Several studies have shown that occupants of vehicles can be exposed to internal air that is more polluted than that outside. In an Amsterdam study, the exposure of cyclists travelling the same routes was always lower than vehicle occupants.[205] A review by the World Health Organisation cited an extensive list of the adverse health effects of transport-related air pollution in Europe. These included mortality, asthma, rhinitis, cardiovascular disease, cancer, adverse pregnancy and birth outcomes and lower male fertility.[206] They concluded that there needed to be immediate action not only to reduce transport-related pollution through technology and regulation but also to tackle the growth of transport, expansion of urban areas and traffic congestion. Improvements to existing infrastructure (such as those outlined above) will be required if we are to achieve this shift.

Increased physical activity

The layout of towns and cities has been shown to achieve lower levels of car use through good design for cycling, walking and public transport. The SDC literature review[207] found numerous studies showing evidence that residents of highly walkable neighbourhoods are more active and healthy than those in less walkable neighbourhoods. Making areas car free (such as Vauban in Germany) or blocking through-routes to motorised transport can, however, change how people move around these areas. There are also opportunities to reconnect areas through new cycle or pedestrian routes or utilising vacant buildings to bring key services back into communities.

The evidence is so strong that it has led NICE to develop clinical guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children, which called for local authorities to provide facilities and schemes such as cycling and walking routes, cycle parking, area maps and safe play areas.[208] Likewise SDC's *Every Child's Future Matters*[209] called for construction of designated cycle routes to include schools, and locating new schools on existing routes, as well as provision of quality cycling facilities at all schools, to allow children to make healthier, safer choices. The previous government's strategy on childhood obesity also highlights the role that the built environment, and particularly access to sustainable transport options, has on children's health. It calls for changes to be made to existing physical infrastructure in order to promote healthy living. These include measures to promote active travel including traffic calming, and building more cycle infrastructure.[210]

Research in Sandwell,[211] an area of deprivation in the West Midlands, has highlighted inequalities in access to food which could potentially be addressed by the appropriate provision of services and

public transport systems. The research – undertaken by local authority, business and community members – showed that small, local retailers struggle to compete and fail to sell affordable fresh fruit and vegetables, in turn forcing residents to travel by car or limited public transport to out-of-town shopping centres.

Retrofitting infrastructure can improve health through:

- Improving the quality of existing housing
- Improving access to and quality of green spaces
- Providing space for community allotments
- Retrofitting streets with traffic calming measures
- Promoting sustainable transport options

11. Reducing crime and fear of crime

The design of the built environment can also impact on how safe places are to live in. This primarily relates to the buildings, public realm and green infrastructure. Living in an unsafe area can not only cause stress and anxiety but also prevent both adults and children from utilising outside areas for social interaction and exercise.

An evaluation of estates in West Yorkshire which had been retrofitted incorporating Secured by Design principles (i.e. designing out crime through physical improvements) showed that crime rates reduced significantly as a result of the work. On one estate, the crime rate reduced from five crimes per home per year to one. Only 2.9 per cent of residents in the retrofitted homes had experienced burglary in the previous year compared to 8.4 per cent of residents in homes that had not had the work carried out.

An evaluation of several home zones in England found that they could contribute to making places safer, even though this is not their primary aim. Retrofitted streets in Plymouth saw a 90 per cent reduction in crime the year after the home zone was completed.[212]

Wilson and Kelling's broken window theory[213] also attributes higher crime levels to the condition of the neighbourhood. It states that places which display signs of neglect and decay such as uncared-for building exteriors, broken windows and graffiti are more likely to be targets for criminal activity. This is because these factors signal to would-be criminals that residents are not likely to respond to criminal activity.

Retrofitting infrastructure can help reduce crime through:

- Retrofitting existing buildings, public realm and green infrastructure to improve surveillance and provide clear demarcation of private space
- Bringing back into use derelict buildings and land.

12. Improving community interaction

The design of our existing areas, and the infrastructure within them, can also promote social interaction. A study by NWDA/RENEW found that well designed, well managed neighbourhoods with a mix of uses and tenures and generous access to open space can increase civic pride, improve social cohesion, reduce fear of crime and improve people's sense of well being and belonging.[214]

This is particularly true of natural green spaces, which several studies have found to facilitate higher levels of social contact and social integration. The presence of trees has been found to significantly increase the use of public space and therefore stimulate increased social contact.[215] These findings were supported by later research in a similar neighbourhood that found that 83 per cent more individuals engaged in social activity in green areas (with trees and grass) than in barren spaces.[216]

The SDC literature review into health and place[217] also found that community gardens, and green activities linked to clubs or groups, have been shown to provide opportunities for socialising, helping to strengthen neighbourhood ties. Likewise SDC's *Every Child's Future Matters* concluded from a review of the evidence in this area, that participation in local regeneration and environmental projects provides excellent opportunities for communities to both re-connect to nature and improve social capital.

Several studies have also shown that retrofitting streets with traffic calming measures promotes children's use of these areas for play.[218] This is especially true of Home Zones which go further than simply introducing physical measures. They also provide the ability for communities to legally designate streets for purposes other than passage, such as children's play.

It is not only children who experience increased social interaction on quieter streets. A recent study in Bristol found that residents of busy streets have less than one quarter the number of local friends that those living on similar streets with little traffic.[219] This reinforces Donald Appleyard's seminal work on this topic, *Liveable Streets*. The findings have also been found to hold true for street with higher traffic speeds even where volumes remain constant.[220]

ICT can also play an effective role in enabling community interaction. Research has found that community networking projects and digital technologies provide good opportunities to build social capital by bringing people together, helping to maintain social relations, providing collaboration and sharing information.[221,222] Participation in these networks, however, requires access to ICT networks and equipment. This infrastructure needs to be accessible to all if the 'digital divide' will not contribute to wider social and economic inequalities.

How decisions are made on infrastructure design and management can also have an impact on community interaction. Research by the Young Foundation has found that providing residents with greater opportunities to influence decisions affecting their neighbourhoods was important for facilitating well being, as it helped residents to gain the confidence to exercise control over local circumstances.[223] This could be facilitated through community ownership and management of assets through structure such as ESCOs or community trusts.

Indirectly, social cohesion has been found to have a strong influence on health, a range of studies have shown that people who are socially disconnected are between two and five times more likely to die from all causes, compared with matched individuals who have close ties with family, friends, and the community

Retrofitting infrastructure can improve social interaction through:

- Improving access to and quality of green spaces
- Providing space for community allotments
- Retrofitting streets with traffic calming measures
- Providing access to ICT networks and equipment.

13. Informing and enabling sustainable choices

SDC's report *Smarter Moves*[224] looked at the potential for ICT to enable people to live more sustainable lives – both in terms of reducing carbon emissions from travel and wider economic, environmental and social outcomes. The study concludes that ICT can support a range of ways to make mobility, and our lifestyles, more sustainable. These include enabling home working and travel avoidance; speed limit enforcement; delivering congestion charging and road pricing; reducing barriers to the use of public transport and improving the journey experience, and facilitating car sharing, car clubs and eco driving.

Provision of information to individuals on the amount of energy they use is also crucial in informing and enabling sustainable choices. To enable this all homes are to be fitted with a smart meter by 2020. This is estimated to deliver net benefits of between £2.5bn and £3.6bn by 2030, and a reduction in UK carbon emissions of about 2.6 million tonnes per year by 2020[225].

Retrofitting infrastructure can inform and enable sustainable choices through:

- Using ICT to provide real time information on public transport networks, cycle hire, car clubs etc
- Using ICT to remotely control systems to manage and avoid wastage
- Using smart meters to understand energy use and avoid wastage.

Annex C: Benefits of area based delivery

This annex outlines the existing evidence on the benefits of an area based approach to retrofit. As noted in the report these are:

- Encourage sustainable behaviour change
- Increase uptake of works
- Reduce costs
- Build capacity in local firms and create local jobs
- Make the benefits of retrofit visible by improving quality of place
- Galvanise communities into action
- Overcome barriers for householders
- Improve the viability and effectiveness of some technologies
- Provide opportunity to integrate delivery of different infrastructure upgrades

Encourage sustainable behaviour change

A significant part of improving the sustainability of our existing places will come from encouraging and enabling people to live more sustainable lives. The evidence below outlines how working with communities can encourage individuals to make changes to their everyday behaviour through intensive marketing, peer to peer learning, peer pressure, creation of social norms, heightened community awareness and focused support.

- **The SDC and Futerra undertook research for DECC** to find a narrative to increase citizen engagement in climate change and their desire for effective policy. Through literature reviews and focus groups, one of the key recommendations to deliver the narrative effectively, was the need for local-level communication. Communications should be visible, creative, and engage a wider spectrum of people by reframing or integrating messages to focus on positive goals, rather than simply environmentalism

- **The Sustainable Consumption Round table** led by SDC and NCC[226] found that community action was vital to reassuring people that their actions make a difference, over and above individual action. It was identified as being a key way to engage people (one of the four 'E's in Defra's intervention types likely to induce behaviour change.[227]) They noted that 'People are willing to change, but they need to see others acting around them to feel their efforts are worthwhile.' It noted that unfreezing bad habits is more successful in groups; achieving social lock-in requires group support; new social norms are negotiated in groups; social learning is an effective tool for encouraging new behaviours; and community based management of social goods has a long and effective pedigree. The report cites research on the popularity of walking groups and weight watchers to overcome apathy and encourage participation in new areas of interest

- The **Big Energy Shift**, undertaken by IPSOS Mori on behalf of DECC[228] found that word of mouth is very important in encouraging individuals to change their behaviour in the home, and that seeing real life examples was one of the most compelling incentives for individuals to take up new ideas. However, communities felt that action would be increased if local authorities developed and supported area-based programmes rather than if they were left to organise themselves

- A **summary report from CSE to Defra**[229] on mobilising individual behaviour change through community initiatives, argued that in order for people to take action they need to feel a sense of collective agency which motivates and justifies individual and group action to cut emissions

- A literature review by the **Committee on Climate Change**[230] stressed the significance of community-based networks and face-to-face approaches in changing behaviour. Community initiatives can play a key role in establishing and reinforcing positive social norms and engaging and educating individuals through existing, trusted relationships. It found that the peer group had the most influence on behaviour and therefore strategies which enlist community mobilisation are most likely to be effective. They concluded that information on its own is rarely sufficient to change behaviour
- A study by **Global Action Plan**[231] found that encouraging change in social norms is most effectively done through engaging key influencers (usually close friends, people whom householders knew from community activities or a member of the project team) to encourage the adoption of a particular behaviour by a community
- **EST's Power in Numbers** looked at a range of policy scenarios and found that 'action at community level tends to amplify the effects of policies, making substantially larger carbon savings economically available, compared to action at the individual householder level'
- Research commissioned by **COI on behalf of Defra**[232] found that 'groups have a key role to play in supporting the adoption of behaviours for sustainability'. The study found that group working can not only motivate those with a lower sense of personal agency to change their behaviour, but it can also provide all group members with the support and information required to maintain that behaviour change until it becomes habit
- **IPPR**[233] undertook a review of British Gas's Green Streets programme to understand how communities had achieved an average of 25 per cent carbon reductions from a combination of improvements to the energy efficiency of homes and behaviour change. They found that a key influence on behaviour change was the competition element between the streets, and mutual support and peer pressure between participants. They also noted that the project had elicited interest from members of the community not involved in the original competition, some of whom had been motivated to take measures to save energy as a result
- **CAG consulting**[234] undertook a review of the Ashden Award winners. This found that community involvement can bring significant benefits. These include improved awareness leading to increased take up, a sense of ownership, increased community confidence and capacity, and behaviour change at both an individual and collective level. This builds on their previous research[235] which found strong evidence that face-to-face discussions and awareness raising, and the involvement of local people in energy projects, can lead to longer term behavioural change, helping to reduce energy use in the longer term
- A report from **Futerra**[236] found that people are more likely to turn to trusted intermediaries to help shape their opinions and behaviour, with evidence that the most trusted and effective proponents of change are family, friends and the local community. These findings are consistent with a range of studies that have assessed whose advice individuals are most likely to act upon
- Research by **Bamberg**[237] suggests that those with low level of environmental concern are most influenced by social situations. Those with higher levels of concern are most influenced by the amount of control they perceive they can influence. Community approaches to sustainability have the potential to address both of these
- **EST** (2009)[238] advocate the use of smart meters to improve consumer awareness and energy use on an individual level, but also found that participants in its study learnt from each other and from their common experience of using the meters.
- The **University of Salford** undertook research into effective ways to engage the public in flood risk planning.[239] The research, which looked at schemes and studies in the Netherlands,[240]

Norway,[241] India[242] and the UK,[243] recommended that community leaders and local committees should be the principal disseminators to the wider community

- **Sustrans' 'Bike It'** scheme demonstrated how effective a scheme focusing on a community (in this case schools) could be at delivering behaviour change. Through a variety of measures including peer to peer advice, dedicated support and minor improvements to physical infrastructure, they achieved a 100 per cent increase in the number of pupils cycling to school every day and a reduction in the number of pupils who never cycled to schools from 75 per cent to 55 per cent[244]
- The lessons drawn from **NESTA's Big Green Challenge**[245] concluded that together with other government initiatives, community-led innovation can be a powerful means for delivering national strategic objectives. The competition's finalists also found that through talking with community members, their ideas helped to engender cultural change in beliefs and behaviour. NESTA concludes that community capacity for action has been increased as a result of the challenge, and that community initiatives have the potential to become self-sustaining
- Public surveys by **NESTA** found that given the right kind of opportunity, advice and support, communities from various backgrounds would be likely to participate in local projects that address a social issue, and will be much more likely to get involved if this support is locally-based, rather than government-led[246]
- In a recent report on influencing behaviour through public policy,[247] the **Institute for Government** noted the importance of tailoring messages to situations and specific groups of people. It also found peer influence is an important factor in sustainable behaviour change, and that delivering messages through recognised 'community champions' is often more acceptable and productive than doing so through 'agents of the state'. Enhancing the status of these individuals may encourage others to take more action.

2. Increase uptake of works

Research from the UK and beyond also indicates that delivering energy efficiency programmes through area-based approaches benefits from this heightened community awareness through higher take-up rates:

- **WWF** undertook a review into the effectiveness of an area-based approach for three insulation schemes in Scotland.[248] The approach provided a high level of take up with 76 per cent of the target group accepting and receiving energy efficiency surveys. This is a very high response rate given that the Energy Agency in Scotland reports that other approaches, such as ones either based on eligibility criteria, requiring upfront contribution or with less geographical focus would have a typical response rate of 10 per cent. Almost 40 per cent of the target group received at least one physical energy-saving measure. The study explains that the high take-up rates for surveys could only have been achieved through area based delivery. Working on an area basis enables intensive engagement methods such as posters, public meetings, energy lessons at schools, working with existing community groups and use of thermal imaging all to be deployed at the same time with continuing coverage in the local press. WWF conclude that this enables projects to get 'deep into a community and ... gain a level of awareness and trust'
- These findings are echoed by **research from Yale University**[249] which shows that peer pressure has played a key role in effective delivery of environmental measures. One of America's most effective energy efficiency campaigns was in Hood River, Ore where civic groups (including the scouts) campaigned to sign up the entire neighbourhood so that contractors could save costs by moving from house to house. Peer pressure was the key with it being seen as socially

unacceptable for homes not to sign up. The programme exceeded original target of 20-30 per cent take up delivering results closer to 90 per cent.

3. Reduce costs

There are a number of ways in which working at neighbourhood scale can help to reduce the costs of retrofitting infrastructure. As noted in the research below these include economies of scale from bulk procurement and installation, shared information on measures for common housing types and potential to share external costs (such as scaffolding or skips).

- The **Audit Commission**[250] undertook a review into the value for money of existing delivery of energy efficiency housing programmes. They concluded that local authorities should pursue greater economy, efficiency and effectiveness, for example by working with partners to undertake area based programmes of work on energy efficiency. They noted however that value for money would vary according to location (dense urban/ rural), ability to measure the impact of the measure (especially around behaviour change) and changes in technology and government subsidies
- From an evaluation of area based initiatives **EST** concludes that they are one of the most proactive and cost effective methods for achieving significant CO_2 reductions. They note that bulk purchase of insulation measures through Area Based Approaches has been able to achieve 30 per cent reductions over individual purchase[251]
- **WWF's** study into area-based delivery of household energy initiatives in Scotland[252] found that transport costs were minimised through neighbourhood delivery, thereby reducing operational costs on surveying and installation. This figure is substantiated by findings from Kirklees where productivity has been estimated to increase 50 per cent due to reductions in contractor's travel time. The study also noted that increased take-up rate from the area based delivery also reduced the cost per lead
- A report for **EST/ EEPH on Solid Wall Insulation**[253] found that costs reduced significantly for projects involving multiple properties. This applies both to the costs of the material and installation and the externalities (which includes preparatory works such as erection of scaffolding or stripping wallpaper, removal of items such as gutters on the outside or electrics on the inside and making good through refixing and redecorating)

	Cost of External Wall Insulation + installation (for 3 bed semi)	Extra costs for installation (externalities)	Total costs
Multiple properties (100+)	Average £5,500	Average £3,500	Average £8,500
Multiple properties (<100)	Average £6,500	Average £3,500	Average £10,000
Individual homes	£7,600	Midpoint £5,000	£12,600

The report notes that interviews with local authorities and RSLs suggest that average costs for multiple properties (under 100) would be closer to £8,400 than the £10,000 quoted.

The report also found cost savings for fitting internal wall insulation to multiple properties although there is not quite as much savings in the externalities

	Cost of Internal Wall Insulation + installation	Extra costs for installation (externalities)	Total costs
Multiple properties	Average £3,400	Average £1,500	Average £4,900
Individual homes	Midpoint £5,000	Midpoint £2,000	Midpoint £7,000

- In her report *Home Truths* **Brenda Boardman**[254] found that the '*economies that come from the scale of treating a whole street are substantial and reduce the required contribution from private homes, making a full opt-in more likely'*. Using figures from the Energy Savings Trust she estimates the costs for a retrofit package to lift all homes to SAP 80 would cost £7,500 per home. Packages could include solar thermal (including scaffolding), solid wall insulation (using existing scaffolding), connection to an existing CHP scheme, loft insulation and some double glazing and repairs
- **EST's** *Power in Numbers* report[255] provides a wealth of data on the merits of a range of distributed energy technologies at the community level. The report found that 'the economics of all distributed energy technologies improve with increasing scale, leading to lower cost energy and low cost carbon savings'. In terms of costs they found that by acting together, a terraced urban community of 50 dwellings householders can save the following compared with individual purchases: Solar hot water: 34%; Photovoltaics: 7%; Wind: 18%; Ground Source Heat Pumps: 18%; Air Source Heat Pumps: 21%; and Biomass boiler: 36-41%. Even greater savings can be achieved when acting at the larger scale (about 500 dwellings) and in different community types. The report concluded that greatest benefits of scale occur for wind turbines in windy areas and for biomass and CHP technologies in dense urban areas. It noted that the scale benefits for technologies such as PV, solar thermal and heat pumps arise primarily from bulk purchase discounts
- **The Housing Corporation and ESD** [256] estimate costs for both grey water and rain water recycling systems at £3,500 for individual dwellings, and £500 per dwelling for a communal system
- **Ecofys's**[257] report into the hidden costs and benefits of domestic energy efficiency and carbon saving measures found that community approaches will have benefits in reducing some hidden costs as well as direct costs through economies of scale
- **NESTA**[258] notes that involving community-based groups and organisations in the design and delivery of local projects can reduce public sector costs by contributing resources and increasing positive impact.

4. Build capacity in local firms and create local jobs

As noted in Annex B there is great potential to create local jobs from the labour intensive work required to deliver infrastructure upgrades. To date this has been hampered by the scattergun approach to funding and delivery of initiatives. Evidence shows that planning delivery street by street and neighbourhood by neighbourhood across an area can help to provide the scale that is required to support the growth and development of local businesses. To ensure that these jobs are sustained however, the programmes will require co-ordination, potentially at city or sub-regional level.

- The **Audit Commission** found that investment in planned programmes of work on domestic energy also has the potential to stimulate local economies, securing and creating jobs and driving skills development. They cite the Summerfield EcoVillage in Birmingham as an example of how this can be achieved. This is an award-winning housing regeneration programme that included installing a range of renewable energy technologies to reduce energy usage and fuel poverty among households with low incomes, was carried out by a West Midlands firm that provided 3,000 hours of training to job seekers in partnership with a local social enterprise
- **Kirklees** – by January 2010 area-based delivery through Kirklees Warm Zone had provided over 127,000 energy assessments delivering loft insulation to almost 37,000 properties, and cavity wall insulation to over 17,000. Through this work, the Warm Zone has directly created over 100 jobs per year for three years, and indirectly created an additional 29 jobs per year. The indirect

jobs are calculated as a result of the extra spending generated and spent in the local economy, thus generating more jobs. In addition a leading installer of energy conservation systems has built a local depot and training centre nearby. Over 200 fitters have been trained so far[259]

- The **WWF** study into area-based initiatives highlighted the potential for area-based schemes to stimulate the local labour market, with greater potential for larger programmes of work, such as Kirklees. It also cited research which found that the 'high majority' of money saved in deprived areas through energy efficiency measures would be 'spent and spent locally'.

5. Make the benefits of retrofit visible by improving quality of place

Evidence from a number of case studies included in this report (Daneville, Cardiff, Bellenden and Barkantine) demonstrates that where work to retrofit existing homes is undertaken on a neighbourhood basis it can have a positive impact on quality of place. Daneville in particular demonstrates the ability of the works to transform a problem estate with long term vacancies into a place people are proud to live in. These are by no means the only examples of this. As noted above the WWF Carbon Countdown report cites the example of Stirling where (as with Cardiff) the improvement in visual appearance was significant enough to encourage private sector residents to request measures of their own.[260]

It is not just retrofitting of the building stock that can deliver improvements in quality of place. As detailed on CABE's Sustainable Cities website there is great opportunity for, and benefits in, upgrading community infrastructure elements, particularly green infrastructure and public realm structures/systems. This can include planting street trees, retrofitting SUDS, or the creation of home zones. These can be delivered most effectively when planned as part of an integrated, place-based approach. The UKGBC's report on Sustainable Community Infrastructure also notes the benefits that community-wide infrastructure can deliver in terms of placemaking. In particular it identifies the potential to use SUDS for soft landscaping or underground waste systems to minimise the impact of waste collections.[261]

6. Reach target groups

Historically fuel poverty programmes have targeted individual households through means testing recipients for eligibility. There is growing understanding that programmes are more effective if targeted at deprived communities rather than individuals. This ensures that those on the edge of fuel poverty are helped along with those who are eligible but do not want to be stigmatised 'fuel poor'. The Community Energy Savings programme (CESP) launched in 2009 is taking this area based approach by targeting areas in the bottom decile of the Index of Multiple Deprivation rather than CERT priority households (those aged 70 and over and those in receipt of relevant benefits / tax credits).

WWF's research into area based initiatives[262] found that projects which targeted wider areas rather than those eligible for fuel poverty measures reduced fuel poverty by between 13 and 26 per cent. The study notes that it is not the lack of access to households that prevented this being higher, but the fact that the measures on offer (primarily insulation only) were insufficient to move all recipient households out of fuel poverty. The study found that in one of their study areas (Fintry) 69 per cent of those in fuel poverty were neither claiming a relevant benefit or were aged over 70. In all three localities there were a significant number who did not want to provide data on their income, which would have prevented them from being offered means-tested schemes. The report therefore argues that non-means tested area-based schemes can deliver significant benefits in terms of tackling fuel poverty.

The research found that for every £1 spent in one of the examples (Fintry) £1 was saved by those who received energy efficiency measures. This compares very favourably with a cost of £2.45 per £1

saved for the Scottish Government's Warm Deal scheme, which was non area-based. This meant the cost to save one tonne of carbon dioxide in Fintry was £196 compared to £350 under the Warm Deal scheme. The other schemes also delivered cost savings compared to Warm Deal.

Key reasons for the success of this approach were:

- raised or heightened awareness from increased potential for intensive marketing
- increased trust through work with local intermediaries and word of mouth
- a co-ordinated approach to bring together funding sources
- economies of scale bringing about increased productivity
- removal of means testing and provision of measures free of charge.

7. Overcome barriers for householders

- Research undertaken by UKGBC (with support from Energy Efficiency Partnership for Homes, SDC and the Technology Strategy Board) identified the key 'hassle factors' preventing householders from undertaking energy efficiency retrofit of their homes as lack of trusted advice, lack of confidence in suppliers and installers, too many different people to deal with and inconsistencies in funding and delivery programmes.

From discussions with our Task Group members and case study research, it appears that delivery through a co-ordinated programme can remove or minimise many of these by arranging works on behalf of householders, finding suppliers and developing shared solutions for issues such as loft clearance or the potential need to move out whilst work is undertaken.

8. Improve the viability and effectiveness of some technologies

Some technologies and infrastructure elements simply do not work at individual household level, such as district heating or flood alleviation measures. As the research below shows other elements will deliver greater cost or carbon savings if delivered at scale.

- **EST's** *Power in Numbers* notes that working across communities provides the option of using community buildings as 'initiators' around which a hub of activity can focus. It also noted that to achieve the benefits from district heating will require deployment in communities of over 100 households, preferably in dense communities. The optimal distributed technology for a community depends upon characteristics such as wind speed, energy demands and building density.
- **Buro Happold's** *London First*[263] study noted that scale was crucial to the financial viability of establishing and running decentralised energy networks. Financial viability is the major barrier to developing such networks and working at scale will help to reduce legal, procurement, compliance and maintenance costs. This study found that at least 1,500 buildings (preferably including existing) would be required to deliver commercial rates of return. It also highlighted work by CHPA which found large scale CHP to deliver the highest carbon emission savings per unit of installed electrical output.
- **UKGBC**'s report into Sustainable District Infrastructure notes that whilst there are technically no lower limits to a heat network, private sector ESCos and energy companies will require a minimum base demand. This is usually in the region of 500 units unless an anchor load can be provided nearby or there is a mix of commercial and domestic buildings to generate a lower marginal peak demand. It should also be noted that both the type of building and delivery vehicle also impact on viability for District Heating. For example not-for-profit organisation Aberdeen Heat and Power have retrofitted a District Heating network of 50 flats in a high rise block

- In their study on community energy **CHPA**[264] outline the benefits of community level solar thermal over individual building level
- Local design and management of green infrastructure can help ensure that its functions are maximised. This will enable it to be most effective in managing rainwater, enhancing biodiversity, improving sustainable travel routes and to be utilised for energy generation. It will also enable co-ordination of resources to deliver street trees, improve parks and maximise use of public realm
- In its study on adaptation the **Town and Country Planning Association (TCPA)**[265] states that flood risk can be minimised at neighbourhood level by identifying and understanding flood pathways and protecting areas at risk. It notes that well designed flood management can have additional benefits for water quality, resource management and enhancing the public spaces

  In particular SUDS will include measures including rainwater, soakaways, swales, porous urban features, green infrastructure and basins and ponds. Whilst some of these measures and techniques (such as green roofs and permeable surfacing of front gardens) can be applied effectively at individual building scale, many others will only work at neighbourhood scale
- Traffic calming measures can also be effectively delivered at neighbourhood scale. Whilst 20mph zones can deliver most benefits if introduced at local authority wide scale,[266] the retrofitting of physical measures, such as home zones will need to be undertaken at a much smaller scale. Sustrans' DIY Streets project is working effectively with communities to help them re-design their own streets based on home zone principles but at a fraction of the cost[267]
- Car clubs can also become effective at the neighbourhood scale. Although there are now several larger players operating at city scales, most UK car clubs have developed from bottom up. As outlined in DfT's review of smarter travel choices[268] these 'community clubs' have mainly grown at neighbourhood scale by attracting members through advertising and word-of-mouth. New cars are then added to the scheme as membership grows sufficiently to support them.

It should be noted that whilst other elements may need to work at larger scale (i.e. public transport networks, waste management, flood planning) there is work that can be undertaken at neighbourhood scale to increase their effectiveness. For transport this could include travel planning with local schools or businesses, improving access to information or upgrading pedestrian and cycling links to wider networks. Evidence shows that improved provision and delivery of information on local transport options can reduce car usage by 10-14 per cent.[269]

9. Provide opportunities to integrate delivery of different infrastructure upgrades

There are currently a wide range of different funding streams and grants available for upgrading existing infrastructure. Research supports the view that working on an area basis will provide an effective opportunity for co-ordination of these different funding streams.

- **WWF's** study of area-based delivery concluded that an area-based approach enabled managing agents to identify and co-ordinate funding partners (CERT/ LA/ RSLs/ grants for renewable etc)
- The **Audit Commission** found that area-based programmes provide opportunities for joint working across public sector agencies. They found that 'The partnership approach ensures better coordination of effort, for example, in raising residents' awareness of energy issues.'
- Many of the **Warm Zones** have joined up energy efficiency home assessments with checks on fire safety, carbon monoxide, benefit eligibility etc. These have helped councils to achieve a wide range of differing targets through a single programme.

Annex D: Summary of Buro Happold's Report

Buro Happold were appointed by the SDC to undertake a review of existing infrastructure provision in three existing neighbourhoods, and the potential for this to be reconfigured to deliver more sustainable outcomes (using the outcomes framework in chapter 1 of the main report). The three areas were selected so as to represent a range of housing densities, housing types, land uses and geographical locations. Neighbourhood scale was taken to be around 1,000 homes.

Blacon, Chester	A 1960s extension of Chester. The study area comprises residential low rise housing with a mix of retail and public buildings along with parks and open space. Density is approximately 18dph. Blacon is a relatively deprived area (IMD is in the 20% most deprived SOAs). Unemployment levels are higher than the LA as a whole. There has been a history of neighbourhood management and regeneration initiatives. This has led to strong community led partnerships, particularly Blacon Community Trust and its subsidiary Sustainable Blacon.
Southville, Bristol	An inner city suburb of Bristol, situated on the south bank of the Avon. The study area comprises a mix of pre 1920s housing, two 1960s social housing tower blocks a primary school and open space. Density is approximately 40 dph. Southville is a relatively up and coming area of Bristol with a mix of owner occupiers and social housing residents. There are a number of existing community partnerships in the area. These include Southville Community Development Association (a development trust) and the Sustainable Southville Project. Southville comes under the Greater Bedminster Community Partnership (one of 14 neighbourhood partnerships being established across Bristol).
Armley, Leeds	Located 3km west of Leeds city centre. The study area comprises mainly pre 1920s terraced housing (in both private and council ownership), with a school and industrial buildings. There is very little green space or trees around the streets although there is parkland and a canal nearby. Density is approximately 75 dph. Minor parts of the study area are within conservation areas however the main housing is outside of this. No community group apparent from desk based research. The area is included within an Area Action Plan currently out for consultation by Leeds City Council.

Existing infrastructure provision

For the purposes of this study, infrastructure is taken to include the statutory utilities – water, gas (and heat) electricity and telecoms – along with transport infrastructure – roads, rail, cycle and foot paths – waste-related infrastructure, and 'green' and 'blue' space – parks, lakes, rivers etc.

For each infrastructure element provided in the areas they identified the who owned the asset, the maintenance/ repair cycles and funding options, the regulatory framework, the potential customer base, the scale at which the element operated and its potential carbon impact.

Key findings from this analysis were:

- At utility level, there is little difference in the way services are delivered in each location. Dwelling density *per se* has little impact on utility infrastructure. As revenues are dictated by an overall return on capital investment, high density areas can be considered to effectively subsidise low density areas
- There is a consistent pattern across study areas on infrastructure ownership. Gas, electricity, water, telecoms and rail are in private ownership. Waste, roads, cycle and pedestrian routes and green and blue spaces are owned by local authorities
- There are few linkages between different infrastructure elements. This situation has largely arisen due to the different institutional and regulatory frameworks. Although this brings

efficiencies at larger national and regional scales, it makes implementation of integrated upgrade projects at neighbourhood scale complex.

Potential infrastructure linkages

The study identified a number of potential linkages that could be achieved as part of a neighbourhood retrofit programme. For example:

- Potential for sharing ducts and co-ordinating upgrade works to minimise costs and disruption
- Infrastructure upgrades which support sustainable living i.e. use of ICT for smart metering or sustainable transport options
- Turning waste from one sector into a resource for another (i.e. biomass gathered from industry waste or woodland management to be used for generating electricity and heat)
- Using buildings to generate electricity and heat (and therefore income), reduce flood risk and increase biodiversity
- Linking cycle routes, parking facilities and public transport routes.

They also noted that infrastructure upgrades could have a significant impact on behaviour change by making sustainable choices more convenient and pleasurable to use, with capacity to meet users' needs. Targeted incentives will also increase use of sustainable infrastructure.

Reconfigured infrastructure options

Buro Happold identified the following potential upgrades for the study areas.

Blacon	Installation of low and zero carbon energy systems (solar thermal, PV, CHP etc) as part of planned redevelopment project of the mixed use block, energy efficiency upgrades in existing buildings (using social housing to catalyse) and linked to demonstration home, community travel plan, local management of green spaces, gardening club, local repair shops utilising vacant properties and water butts.
Southville	Energy efficiency upgrades in existing buildings (homogenous terraces could support collective street approach), community biomass or CHP heating for tower block (density elsewhere may be too low), PV on south facing terrace roofs, provision of high speed broadband to all dwellings, water butts, better use of private gardens for biodiversity and food production, bike park for tower block residents, use of land surrounding tower blocks as allotments, local repair shops/ social enterprises, improved pedestrian links to city centre and community travel plan.
Armley	Energy efficiency upgrades in existing buildings (likely to require external cladding given compact dwelling size), sports and leisure centre as anchor load for CHP/DH system, PV on primary school, redevelopment of underused areas for community use and better use of school/ community centre, development of communal recycling areas/ bin storage, improved pedestrian links to shopping centre, school and city centre, use of railway sidings or park for food production, introduction of micro green spaces in public areas and provision of safe bike parking area.

Linking infrastructure in practice

Based on the reconfiguration exercise Buro Happold identified that the following issues would need to be addressed to make integrated neighbourhood upgrades a reality:

- The links and interdependencies need to be understood during the retrofit design process in order to maximise opportunities. There is, therefore, a need to understand the details of the community and to combine this knowledge with a holistic approach to infrastructure upgrade
- There are a range of bodies that have this dual knowledge. These could include community based organisations (such as Sustainable Blacon), Local Authority Partnerships (such as the Neighbourhood Partnerships in Bristol) or city wide programmes of neighbourhood delivery (such as London's RE:NEW programme)
- The local authority has a significant role to play in supporting community led initiatives, providing financial and commercial support to implement measures and through its control of the public realm (including blue and green infrastructure).

Cost ranges of infrastructure reconfiguration

The study undertook a high level review of the capital costs and revenue potential of each infrastructure element. The key findings of this were:

- Measures which generate an output with market value have potential to attract private finance. Those that do not (such as enhanced biodiversity, a more pleasant place to live, greater security) will require public funding
- There are fewer measures with high revenue potential than those with low revenue potential. This means neighbourhood retrofit measures are likely to require some level of public sector involvement
- There is currently little funding available for the hidden costs of stakeholder engagement or disruption. Whilst these are likely to be low they can be a significant barrier to project development.

Full details of the Buro Happold study can be found on SDC website.

Annex E: Glossary of key terms and acronyms

Term	Description
CERT	Carbon Emissions Reduction Target
CESP	Community Energy Savings Programme
CHP	Combined Heat and Power
CIC	Community Interest Company
CIL	Community Infrastructure Levy
EIS	Enterprise Investment Schemes
ESCo	Energy Services Company
ETS	Emissions Trading Scheme
FIT	Feed-in Tariff
Green Infrastructure	A network of multi-functional green space, both new and existing, both rural and urban, which supports the natural and ecological processes and is integral to the health and quality of life of sustainable communities
GSHP	Ground Source Heat Pump
ICT	Information and Communication Technology
IPS	Industrial and Provident Society
JESSICA	Joint European Support for Sustainable Investment in City Areas
LATS	Landfill Allowance Trading Scheme
LDO	Local Development Order
LSP	Local Strategic Partnerships
MUSCo	Multi Utility Services Company
NDC	New Deal for Communities
Neighbourhood	Local areas within towns and cities recognized by people who live there as distinct places, with their own character and approximate boundaries
OJEU	Official Journal of the European Union
PAYS	Pay As You Save
PFI	Private Finance Initiative
PV	Photovoltaic(s)
REAP	The Resources and Energy Analysis Programme
RHI	Renewable Heat Incentive
RSL	Registered Social Landlords
SAP	Standard Assessment Procedure
SPV	Special Purpose Vehicle
SUDS	Sustainable Urban Drainage Systems
Sustainable Development	The goal of sustainable development is to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life, without compromising the quality of life of future generations. The 'Five principles of sustainable development' can be viewed here - http://www.sd-commission.org.uk/pages/our-principles.html
TRA	Tenants and Residents Association
VCT	Venture Capital Trust
WACC	Weighted Average Cost of Capital

Endnotes

[1] In his speech on 17 May 2010 - http://www.hm-treasury.gov.uk/press_02_10.htm last accessed 25 May 2010.

[2] BioRegional and CABE 2008. What Makes an Eco-town?

[3] DECC/ONS 2010. Statistical Release – UK Climate change sustainable Development Indicator: 2009 Greenhouse Gas Emissions, Provisional Figures, and 2008 Greenhouse Gas Emissions, final Figures by Fuel Type and End-User.

[4] Carbon Trust 2009. Building the Future, Today.

[5] SDC 2006. Stock Take.

[6] Existing Homes Alliance (not yet published) *Refurbishment Costs – A Position Paper*

[7] Carbon Trust 2009. Building the Future, Today.

[8] Jowit and Wintour 2008. Cost of tackling global climate change has doubled, warns Stern, The Guardian, 26 June.

[9] Deloitte 2008. 'Mini-Stern' for Manchester - http://www.deloitte.com/assets/Dcom-UnitedKingdom/Local%20Assets/Documents/UK_GPS_MiniStern.pdf

[10] Environment Agency 2010. The costs of the summer 2007 floods in England. Bristol: Environment Agency.

[11] House of Commons Health Committee 2004. Obesity: Third report of session 2003-2004 Volume 1. London: TSO.

[12] Sainsbury Centre for Mental Health 2003. Economic and Social Costs of Mental H ealth in England. London: The Sainsbury Centre for Mental Health.

[13] National Housing Federation/ECOTEC 2010. Social Impact of Poor Housing.

[14] DfT 2006. Eddington Transport Study 2006.

[15] Sustrans 2005. Economic Appraisal of Local Walking and Cycling Routes.

[16] Committee on Climate Change 2010. *Meeting Carbon Budgets – Ensuring a low-carbon economy.* Second Progress Report to Parliament

[17] http://www.kirklees.gov.uk/community/environment/green/pdf/WZCaseStudyWithJanuaryFigures.pdf

[18] CLG/DECC 2010. Warm Homes, Greener Homes: A Strategy for Household Energy Management.

[19] CLG 2010. What works in neighbourhood-level regeneration? The views of key stakeholders in the New Deal for Communities Programme.

[20] Example drawn from a study at Fellows Court, Shoreditch, with the costings ascertained by Dearle and Henderson Ltd.

[21] CLG/DECC 2010. Household Energy Efficiency Delivery Model - Initial Assessment of Impacts.

[22] BioRegional and CABE 2008. What Makes an Eco-town?

[23] SDC 2006. Stock Take.

[24] SDC 2010. Sustainable Development: The key to tackling health inequalities.

[25] SDC 2008. Health, Place and Nature.

[26] SDC 2009. Prosperity Without Growth?

[27] CLG 2007. Making Assets Work: The Quirk Review.

[28] CLG/DECC 2010. Warm Homes, Greener Homes: A Strategy for Household Energy Management.

[29] HM Government 2010. Shaping our future: The joint ministerial and third sector Task Force on climate change, the environment and sustainable development.

[30] All SDC reports can be found at http://www.sd-commission.org.uk/adv_search.php

[31] HM Government 2005. Securing the Future: Delivering the UK Sustainable Development Strategy.

[32] http://www.buildingforlife.org/

[33] SDC 2006. Stock Take.

[34] Stern, Nicholas 2007. *The Economics of Climate Change: the Stern Review.* Cambridge: Cambridge University Press.

[35] NEA 2009. Rebuilding for Britain's Energy Future.

[36] Press release - http://www.ippr.org.uk/pressreleases/?id=3844

[37] Price rise set against 2009 levels. Investment of up to £200 billion is predicted. See press release here - http://www.ofgem.gov.uk/MEDIA/PRESSREL/Documents1/Ofgem%20-%20Discovery%20-%20PR8%20(2).pdf

[38] ONS 2009. Statistical Bulletin: Labour Market Statistics December 2009.

[39] HMG 2009. The UK Low Carbon Transition Plan.

[40] SDC 2009. A Sustainable New Deal.

[41] The Marmot Review 2010. Fair Society, Healthy Lives.

[42] ONS/Defra 2009. Sustainable Development Indicators in Your Pocket 2009.

[43] SDC 2010. Sustainable Development: The Key to Reducing Health Inequalities.

[44] Both Brenda Boardman (Boardman, Brenda 2007. Home Truths: A Low-Carbon Strategy to Reduce UK Housing Emissions by 80% by 2050) and WWF Scotland (WWF Scotland 2008. Carbon Countdown for Homes: How to make Scotland's Existing Homes Low Carbon) have argued that an area-based approach is fundamental if Government are to reduce carbon emissions from existing housing stock 80 per cent by 2050.

[45] Committee on Climate Change 2009. Meeting Carbon Budgets - the need for a step change.

[46] House of Commons Environment, Food and Rural Affairs Committee 2009. Energy Efficiency and Fuel Poverty, Third Report of Session 2008–09 http://www.publications.parliament.uk/pa/cm200809/cmselect/cmenvfru/37/37.pdf

[47]Government Office for Science 2008. Powering Our Lives: Sustainable Energy Management and the Built Environment.

[48] NEA 2009. Rebuilding for Britain's Energy Future.

[49] LGA 2009. from Kyoto to Kettering, Copenhagen to Croydon.

[50] UKGBC 2010. Sustainable Community Infrastructure.

[51] CABE 2009. Hallmarks of a Sustainable City.

[52] The Climate Bonds Initiative 2009. Financing a rapid, global transition to a Low Carbon Economy.

[53] Regeneration and Renewal 2009. Liverpool Facelift, 26 October.

[54] UKGBC 2010. Sustainable Community Infrastructure.

[55] NEA 2009. Rebuilding for Britain's Energy Future.

[56] Environment Agency and EST 2009. Quantifying the energy and carbon effects of water saving.

[57] The figure is approximate because it is heavily dependent upon behaviour change. DECC currently estimate 8 per cent for SAP ratings although this is acknowledged to be on the conservative side.

[58] Figure provided by water companies in discussion at EST/EA event on 23 February 2010.

[59] UKGBC 2010. Sustainable Community Infrastructure.

[60]Total Place is a Government initiative exploring how a 'whole area' approach to public services can lead to better services at less cost. The initial stage has seen 13 pilot areas participating in the scheme, each area ensuring a diverse mix of economic, geographical and demographic profiles.

[61] HM Treasury/CLG 2010. Total Place: A whole area approach to public services.

[62] Office for Public Management 2009. Total Place: Lessons Learnt.

[63] SDC/Futerra 2009, unpublished. Creating visible support for climate action - A research report.

[64] UKGBC 2010. Sustainable Community Infrastructure.

[65] Hansard, House of Commons Debate 03 December 1984 vol 69 cc63-4W.

[66] DETR 1998. The Impact of Urban Development Corporations in Leeds, Bristol and Central Manchester; and Roger Tym and Partners 1998. Urban Development Corporations: Performance and Good Practice.

[67] DETR 2000. Transferable lessons in regeneration from the Housing Action Trusts.

[68] DETR 2000. DETR City Challenge: Final National Evaluation.

[69] CLG 2005. New Deal for Communities 2001-2005: An Interim Evaluation, and CLG, The New Deal for Communities Experience: A final assessment.

[70] Public Accounts Committee 2010. Twenty-first report – Decent Homes programme, and Communities and Local Government Select Committee 2010. Fourth report – Beyond Decent Homes.

[71] CLG 2010. Evaluation of the National Strategy for Neighbourhood Renewal – final report, and CLG 2010. Evaluation of the National Strategy for Neighbourhood Renewal: Local research project.

[72] Ashden Awards 2010. Power to our neighbourhoods: Towards Integrated Local Sustainable Energy Solutions. A report by CAG Consultants for Ashden Awards.

[73] CLG/DECC 2010. Warm Homes, Greener Homes: A Strategy for Household Energy Management.

[74] CLG/DECC 2010. Household Energy Efficiency Delivery Model - Initial Assessment of Impacts.

[75] CLG 2010. What works at neighbourhood level.

[76] English Partnerships 2007. Urban Design Compendium 2.

[77] El-Haram, M, S Marenjak and R M W Horner 2002. Development of a Generic Framework for Collecting Whole Life Cost Data for the Building Industry. Journal of Quality in Maintenance Engineering, 8, 2 pp144-151.

[78] UK Business Council for Sustainable Energy 2010. Delivering Carbon Savings in the Domestic Sector.

[79] Consumer Focus 2009. A New Energy Infrastructure.

[80] SDC 2008. Supplier Obligation Project - Household energy from 2011.

[81] UKGBC 2010. Sustainable Community Infrastructure.

[82] Community Development Foundation 2006. Local Action Global Impact (and updating survey).

[83] HM Government 2010. Shaping our future: The joint ministerial and third sector Task Force on climate change, the environment and sustainable development.

[84] For examples and discussion see Annex B.

[85] CLG 2010. What works in neighbourhood level regeneration.

[86] http://www.london.gov.uk/thelondonplan/

[87] CLG/DECC 2010. Household Energy Efficiency Delivery Model - Initial Assessment of Impacts.

[88] The SD lens was developed by I&DeA and SDC to provide a tool that could be used by local authorities to monitor their performance on sustainable development. Full details can be found at http://www.sd-commission.org.uk/pages/local-sustainable-development-lens.html

[89] Deloitte 2008. 'Mini-Stern' for Manchester - http://www.deloitte.com/assets/Dcom-UnitedKingdom/Local%20Assets/Documents/UK_GPS_MiniStern.pdf

[90] Audit Commission 2009. Lofty Ambitions.

[91] EST website, accessed 25/03/2010.

[92] Royal Commission on Environmental Pollution 2010. 28th Report – Adapting Institutions to Climate Change.

[93] NESTA 2010. Galvanising Community-led Responses to Climate Change.

[94] Regeneration and renewal, 29 June 2009.

[95] See http://www.londoncouncils.gov.uk/Transport/consultationsandresponses/roadworksconsultation.htm

[96] CLG/DECC 2010. Warm Homes, Greener Homes: A Strategy for Household Energy Management.

[97] In *Lost in Transmission* (2007), SDC called for changes to Ofgem's primary duty to give greater balance to sustainable development issues and to have regard to the interest of future consumers as well as existing. Ofwat and Ofgem both have a duty to exercise their powers and duties in a way best calculated to contribute to the achievement of sustainable development.

[98] These include DEFRA's Greener Living Fund, DECC's Low Carbon Communities Challenge, EST's Green Communities, CABE's Sustainable Cities programme, and the Carbon Trust's Carbon Management programme.

[99] Consumer Focus 2009. A New Energy Infrastructure.

[100] SDC, I&DeA and CIPFA 2006. Financing Local Futures: Survey of Sustainable Development Funding in Local Government.

[101] http://www.communities.gov.uk/documents/localgovernment/pdf/1061446.pdf

[102] NESTA 2010. Galvanising Community-led Responses to Climate Change.

[103] Ashden Awards 2010. Power to our neighbourhoods: Towards Integrated Local Sustainable Energy Solutions. A report by CAG Consultants for Ashden Awards.

[104] DECC (not yet published). Funding Revolution: A guide to establishing and running low carbon community revolving funds

[105] SDC, I&DeA and CIPFA 2006. Financing Local Futures, Survey of Sustainable Development Financing in Local Government.

[106] DECC (not yet published). Funding Revolution: A guide to establishing and running low carbon community revolving funds

[107] HM Treasury/CLG 2010. Total Place: A Whole Area Approach to Public Services.

[108] HCA 2010. Total Capital.

[109] LGA 2009. From Kyoto to Kettering, Copenhagen to Croydon.

[110] Environment Food and Rural Affairs Select Committee 2009. Energy Efficiency and Fuel Poverty: Third Report of Session 2008-09.

[111] NEA 2009. Rebuilding Britain.

[112] NESTA 2010. Galvanising Community-led Responses to Climate Change.

[113] CLG/DECC 2010. Warm Homes, Greener Homes: A Strategy for Household Energy Management.

[114] Bowen, Fankhauser, Stern & Zenghelis 2009. An Outline of the Case for a 'Green' Stimulus.

[115] The competition is 'Retrofit for the Future'.

[116] Environment Food and Rural Affairs Select Committee 2009. Energy Efficiency and Fuel Poverty: Third Report of Session 2008-09.

[117] DECC 2009. Government Response to the Efra Select Committee Inquiry: Energy Efficiency and Fuel Poverty.

[118] CLG/DECC 2010. Warm Homes, Greener Homes: A Strategy for Household Energy Management.

[119] Killip 2008. Building a Greener Britain, FMB.

[120] Impetus Consulting 2009. The Case for Including Energy Efficiency Investment in the Fiscal Stimulus Package. Report for Greenpeace.

[121] HM Treasury/CLG 2010. Total Place: A Whole Area Approach to Public Services.

[122] Aldersgate Group 2009. Financing the Transition.

[123] Image taken from http://www.eib.org/products/technical_assistance/jessica/

[124] see http://www.sd-commission.org.uk/pages/breakthroughs.html

[125] Climate Change Capital and E3G 2009. Accelerating Green Infrastructure Financing: Outline proposals for UK green bonds and infrastructure bank: Briefing Note March 2009.

[126] LGA 2007. Funding Innovation: Local Authority Use of Prudential Borrowing.

[127] CLG/DECC 2010. Warm Homes, Greener Homes: A Strategy for Household Energy Management.

[128] Adam Vaughan, Residents close to wind farms should receive energy bill discounts, The Guardian 15 July 2009.

[129] LGA 2009. From Kyoto to Kettering, Copenhagen to Croydon.

[130] TLT Solicitors for the Renewables Advisory Board/ DTI 2008. Bankable Models Which Enable Local Community Wind Farm Ownership.

[131] CHPA 2008. Community Energy: Urban Planning for a Low Carbon Future.

[132] UKGBC, EST and LGA.

[133] As stated in a meeting with SDC on 16 February 2010.

[134] Carbon Trust 2009. Building the Future Today.

[135] See http://hes.decc.gov.uk/

[136] Energy use in buildings and industry 2009. Technical appendix, Committee on Climate Change.

[137] Carbon Trust 2009. Building the Future Today.

[138] http://www.eci.ox.ac.uk/research/energy/downloads/smart-metering-report.pdf and Enviros 2008. The potential for behavioural and demand side management measures to save electricity, gas and carbon in the domestic sector, and resulting supply-side implications.

[139] EA/EST 2009. Quantifying the Energy and Carbon Effects of Water Saving.

[140] Waterwise Water Consumption of Components of Domestic Demand

[141] UKWIR, 2005. The effect of metering on peak and average demand – UKWIR 05/CU/02/1.

[142] IPCC 2007. Climate Change: Synthesis Report. Contribution of I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

[143] Defra 2007. Waste Strategy for England 2007.

[144] Eunomia Research and Consulting 2008. Greenhouse Gas Balances of Waste Management Scenarios: Report for the Greater London. Authority. http://www.london.gov.uk/mayor/environment/waste/climate-change/greenhousegas.jsp

[145] Committee on Climate Change 2008. Building a low carbon economy – the UKs contribution to tackling climate change. The First Report of the Committee on Climate Change.

[146] http://www.dft.gov.uk/pgr/sustainable/carbonreduction/low-carbon.pdf

[147] http://www.theccc.org.uk/sectors/transport/land-use-and-transport-planning

[148] Buro Happold/London First 2008. Cutting the Capital's Carbon Footprint – Delivering Decentralised Energy.

[149] SDC 2010. Smarter Moves.

[150] http://www.emptyhomes.com/usefulinformation/stats/2009breakdown.htm

[151] TCPA/CHPA 2008. Community Energy, Low Carbon Planning for an Urban Future.

[152] Government Office for Science 2008. Powering our Lives: Sustainable Energy Management and the Built Environment.

[153] EST 2008. Power in Numbers.

[154] CABE, www.sustainablecities.org.uk (accessed 20/01/10).

[155] Euroheat and Power 2009. District Heating and Cooling: Country by County 2009 Survey.

[156] Poyry Energy Consulting/Faber Maunsell-AECOM 2009. The Potential and Costs of District Heating Networks.

[157] Gill et al. 2006. Adapting cities for climate change: the role of green infrastructure. University of Manchester.

[158] SDC 2009. Sustainable New Deal.

[159] Stern and Bowen 2009. An Outline for the Case of a Green Stimulus, Grantham institute on Climate Change, LSE.

[160] UNEP 2008. Green jobs: Towards decent work in a sustainable, low carbon world.

[161] NEF 2009. Green Stimulus or Simulus?

[162] Roland-Holst, D 2008. Energy efficiency, innovation and job creation in California, University of California, Berkeley.

[163] Kirklees WarmZone Case Study – see http://www.kirklees.gov.uk/community/environment/green/pdf/WZCaseStudyWithJanuaryFigures.pdf

[164] Fraser 2005. The Effect of Citizens Advice Bureaux on the Glasgow Economy, Allander Institute.

[165] NEF 2009. Green Stimulus or Simulus.

[166] HM Government 2009. World Class Places: The Government's Strategy for Improving Quality of Place.

[167] CABE 2002. The Value of Good Design.

[168] CABE 2005. Does Money Grow on Trees?

[169] CABE 2007. Paved with Gold.

[170] The Princes Foundation 2007. Valuing Sustainable Urbanism; NWDA/RENEW 2007. Economic Value of Good Design; and Eppel and Tu 1999. Valuing New Urbanism.

[171] TCPA 2008. The Essential Role of Green Infrastructure: Eco-towns Green Infrastructure Worksheet 2008.

[172] WWF Scotland 2008. Carbon Countdown for Homes: How to make Scotland's existing homes low carbon.

[173] Australian Greenhouse Office 2006. Impact of Mandatory Energy Performance Disclosure in the ACT, Commonwealth of Australia.

[174] NWDA 2009. Places Matter: The economic value of good design.

[175] CABE 2006. The Cost of Bad Design.

[176] National Audit Office 2006. Healthcare Commission and Audit Commission. Tackling child obesity – first steps.

[177] Sainsbury's Centre for Mental Health 2003. Economic and Social Costs of Mental Health in England.

[178] National Housing Federation 2010. The Social Impact of Poor Housing.

[179] DfT 2006. Eddington Transport Study.

[180] Sustrans 2005. Economic Appraisal of Local Walking and Cycling Routes.

[181] Stern, Nicholas 2007. The Economics of Climate Change: the Stern Review. Cambridge: Cambridge University Press

[182] Deloitte 2008. 'Mini-Stern' for Manchester - http://www.deloitte.com/assets/Dcom-UnitedKingdom/Local%20Assets/Documents/UK_GPS_MiniStern.pdf

[183] The Observer 2009. Flood victims suffer as insurance costs rise, 8 November 2009.

[184] NEA 2009. Rebuilding Britain's Future.

[185] See evidence from Energy efficiency and fuel poverty committee http://www.parliament.the-stationery-office.co.uk/pa/cm200809/cmselect/cmenvfru/37/8120802.htm

[186] House of Commons Environment, Food and Rural Affairs Committee 2009. Energy Efficiency and Fuel Poverty, Third Report of Session 2008–09 http://www.publications.parliament.uk/pa/cm200809/cmselect/cmenvfru/37/37.pdf

[187] Wilkinson, Paul, Kirk Smith, Michael Davies, Heather Adair, Ben G Armstrong, Mark Barrett, Nigel Bruce, Andy Haines, Ian Hamilton, Tadj Oreszczyn, Ian Ridley, Cathryn Tonne and Zaid Chalabi 2009. Public Health Benefits of Strategies to Reduce Greenhouse-gas Emissions: Household Energy. The Lancet 374 (9705) pp 1917 – 1929.

[188] Welsh Assembly Government 2003. The Implementation of Social Housing Clearance Programmes and their Social Impact, Housing Research Report HRR 4/03, Welsh Assembly Government, Cardiff.

[189] SDC 2008. Health, Place and Nature.

[190] Bell, Janice Jeffrey S. Wilson & Gilbert C. Liu 2008. Neighbourhood Greenness and 2-Year Changes in Body Mass Index of Children and Youth. American Journal of Preventive Medicine, 35(6), 547-553.

[191] Maller Cecily, Mardie Townsend, Anita Pryor, Peter Brown and Lawrence St Leger 2005. Healthy nature healthy people: "Contact with nature" as an upstream health promotion intervention for populations. Oxford: Oxford University Press.

[192] Kuo, Frances E. 2001. Coping with Poverty: Impacts of Environment and Attention in the Inner City. Environment and Behaviour, 33(1), 5-34.

[193] Royal Commission on Environmental Pollution 2007. Study on Urban Environments Well-being and Health.

[194] Bird, William 2007. Natural Thinking – A Report for the RSPB, Investigating the Links between the Natural Environment, Biodiversity and Mental Health.

[195] Mind 2007. Ecotherapy: The Green Agenda for Mental Health.

[196] Mitchell, Richard and Frank Popham 2008. Effect of Exposure to Natural Environment on health inequalities: an observational population study. The Lancet, 372(9650), 1655 - 1660.

[197] Royal Commission on Environmental Pollution 2007. The Urban Environment. London: TSO.

[198] Leake, Andrew Adam-Bradford and Janette Rigby 2009. Health Benefits of Grow Your Own Food in Urban Areas. Environmental Health, 8 (Suppl 1):S6.

[199] http://www.publications.parliament.uk/pa/cm200809/cmselect/cmpubacc/665/66504.htm

[200] Ashton, S. J. and G.M. Mackay 1979. Some Characteristics of the Population who Suffer Trauma as Pedestrians When Hit by Cars and Some Resulting Implications, 4th IRCOBI International Conference, Gothenburg.

[201] Grundy, Chris, Rebecca Steinbach, Phil Edwards, Judith Green, Ben Armstrong and Paul Wilkinson 2009. Effect of 20 mph Traffic Speed Zones on Road Injuries in London, 1986-2006: Controlled Interrupted Time Series Analysis. BMJ 2009. 339:b4469.

[202] Jacobsen, Peter 2003. Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling. Injury Prevention, 9, 205-209

[203] CABE, Sustainable Cities, www.sustainable cities.org.uk (accessed 10/12/09)

[204] Royal Commission on Environmental Pollution 2007. Study on Urban Environments Well-being and Health.

[205] World Health Organization Regional Office for Europe and European Environment Agency 2002. Children's health and environment: A review of the evidence.

[206] WHO Europe 2005. Health Effects of Transport-related Air Pollution. Eds. M. Krzyzanowski, B Kuna-Dibbert and J Sneider. Geneva: WHO

[207] SDC 2008. Health, Place and Nature.

[208] NICE 2006. Obesity: guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children.

[209] SDC 2009. Every Child's Future Matters, revised.

[210] www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_082378

[211] Dowler, E., D. Rex, A. Blair, A. Donkin & C. Grundy 2001. Measuring Access to Healthy Food in Sandwell. Sandwell: Sandwell Health Authority.

[212] Pilot home zone schemes: Evaluation for Morice Town, Plymouth.

[213] http://www.theatlantic.com/doc/198203/broken-windows

[214] NWDA/ RENEW Northwest 2007. Economic Value of Urban Design.

[215] Coley RL., FE. Kuo & Sullivan WC. 1997. Where does community grow? The social context created by nature in Urban Public Housing. Environment and Behavior; 29(4), 468-494.

[216] Sullivan WC., FE. Kuo & SF. Depooter 2004. The Fruit of Urban Nature: Vital Neighborhood Space. Environment and Behaviour; 36(5), 678-700.

[217] SDC 2008. Health, Place and Nature.

[218] 2005. Pilot home zone schemes: Evaluation for Morice Town, Plymouth" TRL640.

[219] Hart, J 2008. Driven to Excess.

[220] Sauter, D. & M. Hüttenmoser 2006. The contribution of good public spaces to social integration in urban neighbourhoods.

[221] Gaved and Anderson 2006. The impact of local ICT initiatives on social capital and quality of life, University of Essex.

[222] NESTA. Mass Localism: A way to help small communities solve big challenges.

[223] Hothi, M 2008. Neighbourliness + Empowerment= Wellbeing. Is there a formula for happy communities Young Foundation.

[224] SDC 2010. Smarter Moves.

[225] These numbers are taken from the central scenarios in the Consultation Impact Assessment for DECC's consultation on Smart Metering for Electricity and Gas -, Impact Assessment of a GB-wide smart meter roll out for the domestic sector sites, May 2009.

[226] NCC/SDC 2006. I Will if You Will.

[227] The others being encourage, enable and exemplify

[228] Ipsos Mori 2009. The Big Energy Shift: Report from Citizens' Forums.

[229] Roberts, S., M. Letcher & Z. Redgrove 2007. Mobilising individual behavioural change through community initiatives: Lessons for tackling climate change. Summary report to Defra from the Centre for Sustainable Energy.

[230]

http://www.theccc.org.uk/pdfs/Technical%20Appendix%20social%20research%20background%206&7%20final%20version%20.pdf

[231] Barr et al 2003. The potential of NGOs in embedding sustainability. A working paper. Global Action Plan. Department of Geography, University of Exeter.

[232] Darnton 2004. Driving public behaviours for sustainable lifestyles.

[233] IPPR 2009. Green Streets.

[234] Ashden Awards 2010. Power to our Neighbourhoods: Towards Integrated Local Sustainable Energy Solutions. A report by CAG Consultants for Ashden Awards.

[235] CAG consultants 2004. The Benefits of Community-based Energy Efficiency Projects.

[236] Futerra 2005. The Rules of the Game: Evidence base for the Climate Change Communications Strategy.

[237] Bamberg, S 2003. How does environmental concern influence specific environmentally related behaviours? A new answer to an old question. Journal of Environmental Psychology, 23 (1) pp. 21-32.

[238] EST 2009. The Smart Way to Display.

[239] Bichard, E. & A. Kazmierczak (not yet published). Resilient Homes: Reward-based methods to motivate householders to address dangerous climate change – A report for the Environment Agency.

[240] Ministry of Transport, Public Works and Water Management, the Association of Provincial Authorities (IPO), the Association of Water Boards (UvW) & the Association of Netherlands Municipalities (VNG) 2003. 'The Netherlands Lives with Water' (Nederland Leeft Met Water).

[241] Krasovskaia, I., L. Gottschalk, N.R. Saelthun, & H. Berg 2001. Perception of the risk of flooding: the case of the 1995 flood in Norway. Hydrological Sciences-Journal-des Sciences Hydrologiques. 46(6), 855-868.

[242] District Disaster Management Authorities set up to help to manage the process of disaster mitigation

[243] Flood Plan UK 2008. Summary report – Dry Run workshop 1. Flood simulation exercise, Boroughbridge, Saturday 15th November 2008. Available at: http://www.floodplanuk.org/userfiles/file/Summary%20report%20-%20Flood%20simulation%20Boroughbridge.pdf (21 May 2009)

[244] Sustrans 2009. Bike It Project Review.

[245] NESTA 2010. Galvanising Community-led Responses to Climate Change.

[246] NESTA 2010. 'Mass Localism Survey.' Research conducted by Opinion Matters. London: NESTA.

[247] Institute for Government 2009. MINDSPACE: Influencing Behaviour through Public Policy.

[248] WWF 2009. Achieving our potential: an analysis of area based approaches to improving energy efficiency of Scotland's homes

[249] http://e360.yale.edu/content/feature.msp?id=2141

[250] Audit Commission 2009. Lofty Ambitions

[251] EST 2009. Area Based Approach - Best Practice Guide

[252] WWF 2009. Achieving our potential: an analysis of area based approaches to improving energy efficiency of Scotland's homes.

[253] Purple Market Research 2009. Solid Wall Insulation Supply Chain Review – prepared for EST/EEPfH.

[254] Brenda Boardman 2007. Home Truths.

[255] EST 2008. Power in Numbers.

[256] Housing Corporation/ESD 2008. Fit for the Future: The Green Homes Retrofit Manual.

[257] Ecofys 2009. The hidden costs and benefits of domestic energy efficiency and carbon saving measures.

[258] NESTA 2010. Mass Localism: A way to help small communities solve big social challenges.

[259] http://www.kirklees.gov.uk/community/environment/green/pdf/WZCaseStudyWithJanuaryFigures.pdf

[260] WWF Scotland 2009. Carbon Countdown for Homes: How to make Scotland's existing homes low carbon.

[261] UKGBC 2010. Sustainable Community Infrastructure.

[262] WWF 2009. Achieving our potential: an analysis of area based approaches to improving energy efficiency of Scotland's homes.

[263] Buro Happold/London First 2008. Cutting the Capital's Carbon Footprint – Delivering Decentralised Energy.

[264] CHPA 2008. Community Energy: Urban Planning for a Low Carbon Future.

[265] TCPA 2007. Climate Change Adaptation by Design.

[266] http://www.20splentyforus.org.uk/Documents/20sPlentyLeaflet190309.pdf

[267] Sustrans 2008. DIY Streets Project Review 2009 and House of Commons Transport Committee, Ending the Scandal of Complacency: Road Safety Beyond 2010.

[268] DfT 2005. Smarter Choices - Changing the Way we Travel.

[269] Sustrans 2009. Travel Smart Project Review.

Sustainable
Development Commission

The Sustainable Development Commission holds Government to account to ensure the needs of society, the economy and the environment are properly balanced in the policy decisions it makes and the way it runs itself.

We are the only organisation charged with reporting publicly, independently and impartially on how well Government decisions contribute towards a fair, healthy and prosperous future for everyone.

We are jointly owned by the UK Government, the Scottish Government, the Welsh Assembly Government and the Northern Irish Government, reporting directly to the Prime Minister and First and Deputy First Ministers.

www.sd-commission.org.uk

England
(Main office)
55 Whitehall
London SW1A 2HH
0300 068 6305
enquiries@sd-commission.org.uk

Scotland
Osborne House
1 Osborne Terrace
Edinburgh EH12 5HG
0131 625 1880
Scotland@sd-commission.org.uk
www.sd-commission.org.uk/scotland

Wales
Room 1, University of Wales
University Registry
King Edward VII Avenue
Cardiff CF10 3NS
029 2037 6956
Wales@sd-commission.org.uk
www.sd-commission.org.uk/wales

Northern Ireland
Room E5.11, Castle Buildings
Stormont Estate,
Belfast BT4 3SR
028 9052 0196
N.Ireland@sd-commission.org.uk
www.sd-commission.org.uk/northern_ireland