

Briefing

Sustainable design, climate change and the built environment

Tackling climate change involves creating sustainable places. Construction and use of the built environment currently accounts for around half of national carbon emissions. But there are planning, design and management solutions to climate change, if we use design as a problem-solving process.



CABE's contribution to climate action

CABE believes that sustainable design is an integral part of good design. No building, space or place can be considered well designed if it does not contribute to environmental, social and economic sustainability. Conversely, no building, space or place can be considered sustainable if it is not well designed.

However, many people see design quality and sustainable design as two separate issues: one a question of aesthetics, the other of technical solutions to the problems of reducing energy consumption. **From CABE's perspective, sustainable design and good design are mutually reinforcing.** Design quality is not just defined by how a building, space or place looks, but by how it functions, how it meets the social, economic and environmental needs of the people it serves, and how it can be managed and adapted as those needs change over time. We recognise the value of a 'long life, loose fit, low resource use' philosophy.

No built form is inherently sustainable or unsustainable. The point is to assess the environmental performance of the building or masterplan as one part of assessing its design quality, which you do in the context of the economic and social sustainability of the place in which it is located. It is essential to think in an integrated way about the longevity, flexibility and efficiency of buildings within the wider environment.

CABE's unique contribution to the climate change debate is rooted in our involvement across the decision-making cycle of projects at a range of scales. From the planning and design process to the management and maintenance of buildings, spaces and places, and from advising on regional spatial strategies and masterplans for new settlements to funding for neighbourhood parks. Our strengths lie in joining things up, making the links between national, regional and local government and being able to bring together the many disciplines that make up the built environment professions.

We also have a huge advantage in being able to draw on some of the UK's most creative minds and forward-thinking designers to visualise scenarios for a low carbon, sustainable world. We can inspire and inform change, using good practice examples to show that radical change is not just possible but that it can lead to better places and better lives than those we lead today. **CABE is well placed to explore what low carbon, sustainable places might be like now and in the future.** This kind of public inspiration is essential for decision makers who are looking for a strong public mandate to back up tough decisions and motivate changes in behaviour.

CABE's design review team considers 400 of the most significant development proposals in England each year. Our enabling teams have so far provided advice to 165 local authorities and every housing market renewal and housing growth area. In total, CABE has offered practical support to improve the quality of £13.5 billion of public expenditure on new schools, health buildings, cultural facilities, and public spaces.

We are now seeing many more projects coming through design review that aspire to reduce their environmental impacts and make a positive contribution to social and economic welfare. But these proposals often display only partial consideration of the issues. For example, a low energy building may have a green roof and grey water recycling but be located in an out of town business park only accessible by car.

At the time of writing there is **only a handful of sizeable housing schemes and masterplans on the drawing board, in planning, or in existence which could be described as places designed for sustainability:** for example One Gallions in Newham, East London; Middlehaven in Middlesbrough; BedZED in Sutton, South London; New Islington in East Manchester; Waterlooville, Hampshire, and Southall Gasworks in Ealing, West London.



Chimney Pot Park, Salford © Urban Splash

At Chimney Pot Park in Salford, highly innovative design by Urban Splash has turned traditional 19th century terraces upside down, improving the quality of the local neighbourhood and giving the homes a new lease of life for 21st century living

What the issues are

In line with the best available evidence, CABE believes climate change is mainly the result of human activity. We also observe that **the problems climate change presents us with are in large part planning, design and management issues**. Climate change and wider objectives of sustainable development are subject to a circular relationship in which dynamic feedbacks between the two affect one another¹. These problems are a consequence of where things are located and how they're designed: how resources and energy are consumed; land developed; buildings and infrastructure constructed; services supplied, and places connected. The construction and use of the UK's built environment infrastructure currently accounts for around 50 per cent of national carbon emissions² and 1 per cent of total global emissions³. There are, therefore, planning, design and management solutions to climate change, based on the application of design as a problem-solving process.

CABE will work to address the issues of sustainable design, climate change and the built environment through the UK government's framework for sustainable development, applying the five principles of: living within environmental limits; a strong, healthy and just society; a sustainable economy; good governance, and sound science.

In this context, the top three issues for CABE are:

- **design and management of buildings, spaces and places**
- **public sector leadership and influence**
- **scale and sufficiency of action.**

Design and management of buildings, spaces and places

The effects of climate change and the strategies for dealing with it will all manifest themselves in the places where we live and work. This is true regardless of the targets and timescales for environmental impacts we debate or the balance we strike between regulatory frameworks and fiscal incentives. As a result, **strategic urban design, masterplanning and the management of buildings, spaces and places must be essential parts of any sustainable development or climate change strategy**. A holistic approach is required which goes beyond measurement and calculations to consider the quality of places. CABE intends to ensure the right processes and spatial decisions are put in place at the right time, creating opportunities for both new development and refurbishment projects to perform better and be more sustainably designed and managed.

Individuals, local authorities, cities, organisations and companies all need to take action on climate change. Tangible, visible changes at the building and local environment scale are important in raising awareness and promoting understanding of the issues. But **the majority of an average individual's carbon emissions come from their use of shared infrastructure and services**, such as schools, hospitals, roads and airports, and the production and transportation of food⁴. Reducing emissions is therefore not just about the design and management of individual buildings and changing individual behaviour but about planning and designing for sustainability at the scale of neighbourhoods, cities and regions.

In terms of value for money and economies of scale, it is sensible to address the causes and effects of climate change sooner rather than later⁵. However, well-managed interventions at larger spatial scales could also have a much greater positive impact for relatively less money.

London offers one example of how spatial planning at different scales is beginning to relate more broadly to strategies for dealing with climate change. The London plan⁶ is the overarching strategic spatial strategy document for the London region and the London climate change action plan focuses on what action is specifically required to achieve carbon reduction targets. At the same time, the London Climate Change Partnership⁷ informs policies which begin to address the adaptation measures London needs to take in addition to climate change mitigation⁸. **This is about a complex, but necessary, connecting up of what everyone is doing across different sectors and at different scales**. Regional and sub-regional spatial strategies set out the spatial vision for an area and have the potential to incorporate strategies for climate change mitigation and adaptation,

- 1 Mohan Munasinghe and Rob Swart (2005) *Primer on climate change and sustainable development*
- 2 Department for Business, Enterprise and Regulatory Reform (2007) *Draft strategy for sustainable construction: a consultation paper*
- 3 This figure is based on emission estimates published by Defra (2005) that calculate the UK's contribution to global carbon emissions are approximately 2 per cent www.tinyurl.com/3cody3. However, this figure has been challenged by Christian Aid who claims that exported consumption, in the form of the international activities of UK companies, means that the UK's real impact on global carbon emissions has been underestimated. Christian Aid claim that a more accurate figure would actually be around 12-15 per cent of the global total www.tinyurl.com/yvkg7b
- 4 Pooran Desai and Paul King (2006) *One planet living*
- 5 HM Treasury (2006) *Stern review on the economics of climate change*
- 6 Greater London Authority (2004) *The London Plan* www.tiny.cc/YlxKp
- 7 Greater London Authority (2007) *London climate change action plan*, www.tiny.cc/F7NgA
- 8 London Climate Change Partnership (2006) *Adapting to climate change: lessons for London*, www.london.gov.uk/mayor/planning/strategy.jsp

while sub-regional and local development frameworks and area action plans can act as delivery agents.

Dealing with climate change is also about delivering and maintaining environmental infrastructure.

Well irrigated green spaces, for instance, can mitigate and adapt to climate change and deliver on the wider sustainability agenda. This kind of thinking is evident in the Thames Gateway Parklands⁹ initiative, born out of work undertaken by CABE on the identity of the Thames Gateway. It considers environmental processes to be at the heart of social, physical and economic regeneration and pioneers new responses to reducing carbon emissions, flood management and the responsible use of land, water and other natural resources. The GreenGrid¹⁰ project in the South Essex area of the Thames Gateway aims to develop and improve a network of green spaces, providing a long-term vision for the design and management of land as environmental infrastructure.

Public sector leadership and influence

Research shows that **people believe that government should take the lead in combating climate change and use the regulatory framework to support behaviour change**¹¹. People agree that government has a mandate and responsibility to do so. Clearly, there is huge potential for government and the public sector to lead by example. Government has three tools: regulation; fiscal incentives, and procurement. Any action by the public sector needs to be matched by, and done in partnership with, business and the public.

The public sector procures over £150 billion of buildings, goods and services each year¹², with expenditure across the government estate responsible for around £13 billion. A recent National Audit Office¹³ report highlights the fact that the majority of government departments and agencies are failing to meet targets to make their new buildings and major refurbishments sustainable. Measurement and benchmarking of the environmental sustainability of buildings, organisations, estates and services should become the norm through techniques such as ecological and carbon footprinting and design quality and environmental assessment tools.

Spending decisions at different levels of government have a critical role to play in acting as levers to stimulate the market for more sustainable goods and services and to change behaviour. However, **a change in mindsets about costs and values is required**. It will almost always cost more upfront to achieve higher sustainability standards but public sector expenditure should be assessed on the basis of whole-life costs and benefits and the opportunities for economies of scale over longer time periods.

This 'spend to save' thinking is encapsulated in the HM Treasury's Green Book¹⁴ and the Office of Government Commerce's Common Minimum Standards¹⁵. However, this needs to be made much more explicit to public sector funders, decision makers and accountants, for whom the knowledge and skills to deliver can also be a challenge.

Scale and sufficiency of action

The UK is beginning to develop the knowledge, technology and a policy framework to create sustainable places. But there is still a business-as-usual mentality and a piecemeal approach to sustainability, rather than embarking on a radical restructuring of the built environment, its supporting infrastructure and the economic models that drive decision making. One of the key barriers is a lack of willingness by both the public and private sectors to take political, economic and reputational risks at a time when risk taking and a boldness of vision are exactly what is required. There is a standoff, with government wary of over regulating for fear of discouraging investment and the private sector wary of over innovating for fear of smaller profit margins. The result is that **things are not being done on a big enough scale to make a difference**. This partly accounts for the calls from business leaders to government to help create a clear route map for change.

The government's aim to achieve a 60 per cent reduction in carbon emissions by 2050 and its target for all new homes to be zero carbon by 2016 are positive steps. But if the target should really be an 80 per cent reduction, not just in carbon dioxide but all greenhouse gases by 2050, as suggested by Sir Nicholas Stern, then this is not a sufficient response. Targets, timescales and frameworks for action need to be set at the right scale and **the idea of 'sufficiency' needs to be applied to all targets and strategies to create sustainable places**. The principles of contraction and convergence, at the global, national and local scale, should inform this process.

9 CABE (2006) Thames Gateway Parklands, www.cabe.org.uk/default.aspx?contentitemid=1606

10 Green Grid www.greengrid.co.uk/strategy.cfm

11 Ipsos MORI (2007) *Climate change survey*

12 Defra (2007) *UK government sustainable procurement plan*

13 NAO (2007) *Building for the future: sustainable construction and refurbishment on the government estate*

14 HM Treasury (2007) *Green Book, appraisal and evaluation in central government*. www.greenbook.treasury.gov.uk

15 Office of Government Commerce (2006) *Common Minimum Standards for procurement of built environments in the public sector*

CABE research has revealed clear gaps between policy aspirations and what has been built in the past in this country. In recent CABE audits of design quality over half of schools audited were 'mediocre' or 'poor' and 29 per cent of new housing developments should not have even got planning permission. The audits did not explicitly assess environmental sustainability criteria but CABE considers that when a place fails in terms of design quality, it fails in terms of sustainable design.

The timescales of most current building and refurbishment programmes do not correspond with recently introduced targets for carbon emission reduction and sustainability. For example, the government's Decent Homes programme has gone some way to addressing fuel poverty and energy efficiency in existing homes within the social housing sector, but it was never intended to be a response to climate change. With only two years of the programme left to go, new plans are needed to tackle carbon emissions from existing social housing.

Across all tenures, there are around 21.8 million homes in England now. New building makes up less than 1 per cent of the total stock in any year¹⁶. **At least 75 per cent of the homes that will exist in 2050 have already been built¹⁷**. Carbon emissions from existing homes are therefore of greater significance than those from all the new homes that will be built by then¹⁸.

Having set zero carbon targets and timescales for new homes, **we need a new initiative for upgrading existing homes to the lowest possible carbon standards**. This could be achieved by harnessing and consolidating financial resources from funding programmes such as the Energy Efficiency Commitment, and the Warm Front programme. Clear targets and milestones for comprehensive sustainable refurbishment and adaptation should be set, and specific incentives developed to engage homeowners and landlords.

Carbon offsetting is not the solution to climate change but CABE believes there is some value in using it as a means of reaching low and zero carbon targets for new and existing homes. Carbon offsetting involves calculating emissions and then purchasing 'credits' from projects which have prevented or removed an equivalent amount of carbon elsewhere. It has a role to play in helping to raise awareness and reduce the impact of our actions, but it is at the bottom of the carbon management hierarchy, below avoiding emissions, reducing them through energy efficiency, and replacing high carbon energy sources with low or zero carbon alternatives. This hierarchy should ensure that offsetting does not become a substitute for real reductions in greenhouse gases and a licence for business as usual.



National Assembly for Wales, Cardiff © Redshift Photography

The National Assembly for Wales raised the bar for public building. The assembly was completed by Richard Rogers Partnership in 2006. It showed a real commitment to securing exemplary standards of sustainable design in the public sector

The carbon offsets industry has previously been criticised for a lack of verification and for making investments that are either worthless or even damaging. There is also a lack of transparency in the voluntary market. What this suggests to us is that local authorities, could develop schemes that are inspiring, transparent and not for profit instead of outsourcing. Local money would stay in the local economy and bring benefits beyond climate change in areas such as skills, fuel poverty and public health. For instance, **carbon offsetting for new housing developments could be linked with investment in improvements to the energy efficiency of existing homes and neighbourhoods and investment in well irrigated, multi-functional green space.**

- 16 Communities and Local Government (2005) *English house condition survey annual report* and CLG (2006) *Building a greener future: towards zero carbon development*
- 17 Sustainable Development Commission (2006) *Stock take: delivering improvements in existing housing*
- 18 Communities and Local Government (2007) *Homes for the future: more affordable, more sustainable – housing green paper*

What CABE will do

CABE will work to address the issues of sustainable design, climate change and the built environment through the UK government's framework for sustainable development.

Our aim is to frame everything we do within the context of sustainable design and climate change. **We will strengthen and embed the principles and practice of sustainable design across all areas of our work, internally and externally**, so that they are fully integrated into everything CABE does.

CABE will promote inspirational design for sustainability through best practice; as a champion for the demand side; and as an expert advisor to the commissioners of buildings, spaces and places. We will continue to be an advocate for a well-planned, designed and managed built environment, but will be increasingly demanding about sustainable design and placemaking.

Southall Gasworks Masterplan, Ealing, London © Make



Sustainability is not just about how we live in our homes, but how we live our lives. This mixed-use masterplan by Make Architects, for over 3,500 homes in Southall, West London, incorporates commercial space, leisure facilities and health and education buildings. It is being designed to promote a culture of sustainable behaviour amongst its residents, workers and users

There is also a clear crossover between what we do and learn through the process of reducing our own carbon and ecological footprints and what the wider built environment sector needs to do. **In 2006, our carbon footprint was 503 tonnes of carbon dioxide¹⁹, or 4.6 tonnes of carbon per member of staff and our ecological footprint was 222 global hectares, or 2.05 global hectares per member of staff.** We now have a series of sustainability action plans in place across the organisation and a programme of training and education is being developed, tailored to the specific needs of CABE staff and family.

CABE has eight objectives for the next three years, 2007–2009:

- Demonstrate that designing for environmental, social and economic sustainability is essential and leads to better places and a higher quality of life.
- Develop a robust set of principles, tools and data to underpin the evolution of England's built environment to one that is well designed, high quality, inclusive, low carbon and sustainable.
- Assemble an evidence base for the economic efficiency of strategic investment in sustainable design and places and advocate whole-life cost and value as a sound basis for decision making.
- Clarify the need not only to mitigate impacts but also to adapt our existing built environment to cope in a changing climate. We will give greater prominence to the incorporation of environmental and green infrastructure in strategic urban design through the guidance we give to clients.
- Seek to make sustainable refurbishment of the built environment socially desirable and economically viable through lobbying for the removal of VAT on work on existing buildings, influencing those responsible for regeneration and renewal projects, and providing guidance on best practice.
- Influence built environment education and training curricula to improve sustainable design and environmental management literacy among both young people and professionals and ensure integrated approaches to the creation and refurbishment of sustainable buildings, spaces and places.
- Work to reduce CABE's own ecological and carbon footprints as much as possible, setting targets and milestones by the end of 2007. We will also examine the implications of becoming carbon neutral by 2012 again reporting on this by the end of 2007.
- Implement a programme of training and development for CABE staff and family to enable them to deliver the seven objectives above.

19 Best Foot Forward and CABE (2007) *An ecological footprint and carbon audit of the Commission for Architecture and the Built Environment (CABE)* www.cabe.org.uk/AssetLibrary/9695.pdf

20 KPMG / YouGov (2007) *Climate change business leaders survey*

21 Examples of companies beginning to consider their environmental performance, via emerging policy and management plans, include BSKyB www.tinyurl.com/2va254 and Boots Company Plc www.tinyurl.com/37jecv

22 Department for Business, Enterprise and Regulatory Reform (2007) *Draft strategy for sustainable construction: a consultation paper*

What others need to do

Government and the public sector

- The power of regulation and public sector procurement to stimulate markets for more sustainable built environments, goods and services should not be underestimated. Government can lead by example by extending the targets within the framework for Sustainable Operations on the Government Estate to out-sourced operations and publicly funded bodies. Public sector contracts should set out stringent specifications for sustainability so that bidders will have to respond through market research and development, and investment in innovation.
- Public buildings could make a far greater contribution to sustainable development if their performance was measured and understood. Government should insist on the comprehensive use of environmental and design quality assessment tools for all buildings on post-completion and post-occupancy evaluations for all new and refurbished public buildings. This is the only way to drive continuous improvement.
- Legislation, policy and guidance need to be clearer and more consistent. Strategy and policy on sustainable development, planning, energy, climate change, waste, water, food, landscape character, biodiversity and transportation including aviation need to be mutually reinforcing and obvious conflicts resolved so that policies join up rather than appear at odds with each other.
- Many local authorities are developing climate change strategies and action plans but implementation varies greatly. There should be greater emphasis on linking core spatial planning strategies with climate change strategies to ensure mutual reinforcement of objectives and targets. These need to be backed up by sound technical implementation, delivery and evaluation.
- Public bodies should establish baseline data on their carbon and ecological footprints as the norm and build in organisational capacity to reduce them.
- The European Commission and the UK government should require multinational construction companies to report on their sustainability performance to ensure transparency and to foster a culture of benchmarking.

Industry and the private sector

- Some UK-based companies such as partners in the Good Homes Alliance, the UK Green Building Council and We're in this Together have made climate change and sustainability a business priority. However, this agenda is still a low priority for the majority of Britain's largest companies²⁰ when many of their

counterparts in the rest of the EU are leading the way. Few major private corporations in the UK have yet published a climate change adaptation strategy²¹.

- We believe that adoption and delivery of the principles and targets set out in the UK sustainable construction strategy²² will be central to the industry's ability to meet the challenge. Partnership working is also critical, with clients and contractors working towards the same goals, with complementary targets and milestones.
- The private sector needs to identify barriers to sustainable design and articulate them clearly to government, while government must regulate and enforce regulation robustly. Business is not afraid of regulation, just inconsistency.
- Closer collaboration between government and industry on research and development is essential to stimulate the development of a broad portfolio of low carbon and sustainable technologies and practices. This can in turn lead to widespread dissemination and reduced costs.
- Larger firms involved in construction and the built environment need to dedicate more human resource to addressing climate change and sustainability. Instead of the single sustainability champions we are commonly seeing today, firms need to give this issue more weight by, for example, creating dedicated leadership teams drawn from across the business. Corporate objectives need to be defined. Lessons can be learned from companies that take a strategic, corporate approach across all aspects of their work.
- We believe that all UK-based multinational construction groups should undertake an ecological and carbon footprint of their operations, publish the results, and adopt targets and milestones to reduce their footprints year on year, just as central and local government and public agencies should do.
- Even though the UK contributes a relatively small percentage of global carbon emissions from within our borders, many people look to the UK for leadership on climate change. This is partly because the UK does not routinely see subsidy as a solution and because English is the common language of industry. It might also be expected that the country that led the world into the industrial revolution should understand and deal most rapidly with the negative consequences. There is a real opportunity to gain a competitive advantage by doing so, positioning the UK as a world leader in the business of using sustainable design to address the challenge of climate change.

This briefing sets out what CABA will do to address the issues of sustainable design, climate change and the built environment and the action we think is urgently needed from the public and private sectors. It is intended for policy makers in central, regional and local government, public sector bodies, and key players in the construction and development industry.

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Commission for Architecture
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The government's advisor
on architecture, urban design
and public space

As a public body, CABA encourages policymakers to create places that work for people. We help local planners apply national design policy and offer expert advice to developers and architects. We show public sector clients how to commission buildings that meet the needs of their users. And we seek to inspire the public to demand more from their buildings and spaces. Advising, influencing and inspiring, we work to create well-designed, welcoming places.

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