RIBA

DECC Heat and Energy Saving Strategy Consultation

Response by the Royal Institute of British Architects

May 2009

Introduction

The Royal Institute of British Architects is one of the most influential institutions in the world, and has been promoting architecture and architects since being awarded its Royal Charter in 1837. The 35,000-strong professional institute is committed to serving the public interest through good design. It also represents 85% of registered architects in the UK through its regional structure as well as a significant number of international members. Our mission statement is simple – to advance architecture by demonstrating benefit to society and promoting excellence in the profession.

Question 1

- **Q1 Do you agree with the level of ambition and the indicative pathway set out in this chapter? If not, why, and what alternative would you suggest?**

Yes. The RIBA believes that it is vital that we deliver a reduction in green house gas emissions of at least 80% by 2050. This must be achieved as part of a global strategy to curb emissions and mitigate global warming.

We believe that a reduction target of 80% is in line with the latest scientific data suggesting that at least this level of reduction compared to the UK's recent historic emissions rate will need to be implemented (and replicated worldwide) to be able to slow global warming and limit the process of climate change. We also believe that this level of reduction is achievable, and that the design, refurbishment and use of our buildings and the built environment as a whole can play a significant role in achieving the 80% target.

To achieve this will require a mix of regulatory standard setting through the planning and building control regimes, and new fiscal and other stimuli to encourage the renovation of existing building stock and to change behaviour in the use and maintenance of buildings.

We believe that it is vital to establish a "big picture" approach of how and much energy will need to be provided in the future (see work of Professor David Mackay, Cambridge University). One initiative that we believe is missing from the consultation proposals is the development of a National Energy Strategy, providing a long term future energy mix strategy with a trajectory to 80% reduction in emissions and the path to zero carbon development. The trajectory should include an assessment of the potential and necessity of various on- and off-site energy generation solutions, and a practicable assessment of the true cost and potential savings from focused renovation of existing building stock, particularly housing. We believe that such a clear and

unambiguous national energy trajectory is required to underpin efforts by the construction industry and other sectors.

On the issue of the pathway to zero carbon development, we agree with the clear targets already set for new buildings in the public and private housing sectors. This provides the necessary certainty and long-term planning that the development industry requires of Government.

However we feel that there should be greater clarity of the energy efficiency/emissions targets set for other building types. We continue to argue for a clear pathway to zero carbon development for all other building types, and a widened, emissions-focused Code for Sustainable Buildings, broadened to include all building typologies, both public and private.

The pathway to renovating and improving the efficiency of existing buildings should be more ambitious. We believe this to be the single biggest challenge in mitigating and adapting to climate change. We also firmly believe that now is the time to commit to a much more ambitious programme of energy upgrades to our existing housing stock.

Why now?

1. A programme of energy upgrade of the existing housing with clear outcomes and an ambitious timetable of 20 years will not only make a major reduction in UK greenhouse gas emissions, but will communicate a powerful message both globally and nationally. Globally, it will show the UK taking leadership, as it has through the Code for Sustainable Homes. Nationally, it will help public understanding and endorsement of the steps that we must take to prevent runaway climate change.
2. Schemes for upgrading homes in some cases will not require planning permission and can therefore be brought on stream quicker.

How do we pay for it?

3. The projected multi billion pound cost of such a programme clearly cannot be met, or even significantly defrayed, by government. We have to trigger a virtuous cycle where the energy saving in the context of rising fuel prices help fund the upgrade and at the same time a culture of collective responsibility for tackling climate change is built up.
4. Some 25% of all housing is in some form of social ownership and it is hard to imagine an alternative to significant government spending on at least this portion of the stock. We propose that in conjunction with the Homes and Communities Agency and the RSL sector the government makes a start on the energy upgrade of all social housing to a 15 year time scale (a Decent Homes Programme 2 for example.)
5. We believe that the upgrading of the socially owned housing stock could form a catalyst for the other two major tenure forms – owner occupied and private rented. For example RSLs could embark on programmes of mass upgrades neighbourhood by neighbourhood that offers economies of scale and greater purchasing power. These RSLs could then make upgrade packages available to local owner-occupiers at better rates than they could otherwise obtain. The offer would not only be attractive in terms of cost, but could also have quality and considerate construction assurances. Many owner-occupiers are rightly

nervous about having builders in, and where the result is largely hidden they have even fewer ways of checking quality. The clout of a major organisation would help to allay these fears. Such projects will also be extremely valuable in learning about and refining the best and most efficient solutions and processes.

6. The private rented sector is possibly the most difficult to reach and a judicious mixture of carrot and stick, grant and regulations, would probably need to be added to the above.
7. With regards to private sector housing, we believe that it is vital that any loans extended to upgrade energy efficiency be linked to the property rather than the person.
8. A current barrier to a higher take up of retro-fitting and and improved energy efficiency is the unfair and counter-productive system of VAT. Currently the VAT rates are heavily weighted in favour of demolition and new build as opposed to refurbishment - 0% VAT on new homes but 15% (due to rise to 17.5% by the end of 2009) on the renovation and repair of existing homes. Reducing the level of VAT from to 5% on repairs and maintenance to buildings would reduce the costs to householder of making their home more sustainable. Such a reduction is now permitted following a European Commission decision, and we therefore believe the Government should implement a VAT rate reduction without delay.

The role of design

9. In any construction project seeing the whole in an integrated way is essential to getting best value and the integration of the energy efficiency measures, mechanical engineering solutions and possible contributions of renewables is a design challenge. Refurbishment of homes from the point of view of energy efficiency has significant architectural implications on the interior and in many cases on the exterior of houses.
10. We believe the architectural profession is particularly well suited to leading a national retrofit programme. We believe the architectural profession is particularly well suited to leading a national retrofit programme. Architects posess design coordination skills incorporating the involvement of other building professionals / trades (including the successful integration of low and zero carbon technologies). On every project, architects carry out option appraisal, seeking to secure the most efficient outcome for the available investment, and possess design skills that can be put to best advantage when redesigning the envelope of poorly designed stock (such as through overcladding). Furthermore architects have a wide understanding of the range of technical skills required to scrutinise the myriad of materials and systems that can be applied to any given situation, and of course are well placed to ensure compliance with planning, building regulations and standards.
11. We propose that government funding be conditional on proper attention to design. A significant proportion of the work (in the domestic sector particularly) is likely to be carried out through DIY or by small-scale builders and contractors. However architects and other design professionals are best placed to develop (and test) integrated solutions that can then be rolled out to the wider market. One method of applying/promoting these 'off the shelf' solutions may be through Domestic Energy Advisors referred to below. On large-scale schemes, conducting the programme under the umbrella of organisations that are used to dealing with consultants and contractors makes

sense. The procurement routes must be configured to get the best the best long terms value.

We believe that the roadmap presented in the consultation is ambitious, but not ambitious enough in terms of the timescales envisaged. This is an unprecedented challenge, but already other nations in Europe and beyond are tackling the issue of renovating existing housing stock to significantly foreshortened timescales. We would like to work with Government to identify impediments to moving forward the timescales envisaged in the UK.

- **Q2 Do you agree with the Government's policy approach set out in paragraphs 1.31 to 1.49 to achieving our ambitions on heat and energy saving?**

We agree that greater information about the benefits, incentives and practicalities of undertaking home energy efficiency improvements needs to be presented to the public and other building types' owners, investors and occupiers (see Q3 below).

The Whole House Approach
We also agree with the principle of dealing with houses on a 'whole house' basis. However such an approach could be both time consuming and financially wasteful if carried out on a house by house basis. There are considerable efficiencies that are possible if such work is carried out on a street/ neighbourhood basis and think that local authorities should be empowered and resourced to undertake assessments of local need and opportunities to take such a strategy forward.

We believe that by applying design and technology intelligence, it would be possible to develop sets of packages that could be applied to perhaps 8-10 different 'standard' typologies of house, that could provide a detailed guide to what measures and solutions could be applied to the majority of UK home types to achieve the greatest efficiency and CO2 reduction for a certain price. Such 'off the shelf' solutions could be tested, and the in-use performance of such packages of technological and design fixes certified, to ensure value for money and the highest possible environmental performance achieved.

We discussed a similar scheme with DEFRA officials and representatives of the Energy Saving Trust last year. Such a solution could easily be stimulated through the use of international design competition (for example the Technology Strategy Board's current competition "Retrofit for the Future"), and we would welcome further discussion with Government as to how this could be taken forward.

- **Q3 How can the Government encourage people and communities to change behaviour to save energy? What is the appropriate balance between changing attitudes, and providing advice and information?**

While cheap conventional fossil fuelled energy is available through the national grid, the public will remain largely unpersuaded as the merits of changing what are often long-entrenched patterns of behaviour. However, energy pricing will become a much more powerful driver if the relative cost of polluting, non-decarbonised energy increases over time.

The overall aim of consumer-focused energy policy is primarily to trigger mass change, and a step change in attitudes and behaviour. This simply will not happen

unless the economic case is completely obvious and compelling. In the same way that the Code gave a clear steer on the future steps in regulation, we need a similar framework on which consumers can base their investments with certainty.

We agree that more information needs to be provided to people concerning the incentives and opportunities available to them to change their properties and lifestyles, and the economic, environmental and social benefits of doing so. The better the economic payback for individuals, the greater the perceived benefit, and this may eventually flow through to an improved market value of properties where renovation and energy saving measures have already been implemented. This would be a key driver in changing the perception of home owners and investors and would significantly increase the uptake of residential energy efficiency renovation and energy generating technologies.

An overarching factor is the need to better connect people to their actions, their energy use, and the relative costs and environmental impacts of their behaviour choices. Smart metering, information of the energy efficiency of buildings, and energy labelling via clear consumer-oriented information sources can help to engage the public in changing their energy use and lifestyle choices. However, financial payback through reduced bills/feed-in tariffs/increased property values will be the most effective drivers for change.

- **Q4 How can home energy audits be made most useful, and do you agree that the Government should use Domestic Energy Advisors, who have been suitably trained, to deliver them as widely as possible?**

We agree that face-to-face advice is more effective in persuading homeowners to make physical and lifestyle changes to reduce energy use. Advice given by energy suppliers is often viewed with suspicion – there is a long way to go before energy-reducing advice from suppliers of energy is accepted at face value by consumers. Therefore, accredited independent advisors are likely to have greater influence on homeowners' actions.

However, there is currently too little information available to homeowners about the cost, benefits and availability of such services. There are also currently far too few professionals with the training and skills to undertake home audits in a significantly expanded scheme, in either the private or public sectors. However, to an extent such skills shortages could be balanced by the development of 'off the shelf' generic solutions – packages of measures developed by architects and others, rigorously tested, that can then be rolled out with confidence. However, even then, significant further investment in training and accreditation will be required, and efforts made to make such advisory roles attractive to professionals with appropriate skills working in linked sectors – including architects.

- **Q5 Should the Government work with industry to develop accreditation standards for advice about, and installation of, energy efficiency technologies? What would be the best model for such a scheme, and why?**

For both manufacturers, consumers and the construction, design and energy industries, clear, comparable standards of accreditation and performance are vital. A proliferation of non-comparable, individual schemes will be of little benefit, and will cause confusion in the marketplace, particularly among non-technically literate

consumers/end-users. Such schemes may need to be Government-led to avoid accreditation confusion.

- **Q6 Are the information, advice and support services provided by Government to businesses effective in encouraging them to reduce their energy use and their CO_2 emissions? What other types of support services are useful and how can these be provided cost-effectively?**

The Energy Saving Trust and Carbon Trust both provide detailed advice and support. However, it is often difficult for non-experts to access the correct information.

Existing information and support has proved insufficient to drive a step change. Energy consumption has to matter to businesses for them to spend time and money on improving performance. The main driver for businesses will be price, or regulation.

However, clear and factual information will play an important part. Businesses need information to allow them to easily benchmark their performance against reliable typical consumptions. Requiring Display Energy Certificates for all businesses would be a good and simple step forward, and promoting benchmarking information provided as a matter of course by energy providers should be encouraged. There should also be much more usage of post occupancy assessments to improve performance and improve understanding of a building's energy use.

Information also needs to be better focussed. More needs to be done to stream relevant information, services and schemes to the correct recipients, in a manner that is focused, and easy-to-access. Information overload is often a deterrent for small businesses and members of the public alike.

Is there scope to do more on behaviour change through businesses and their employees? Please support your suggestions with evidence.

The RIBA has considerably changed its own business and the behaviour of its staff through committed and well informed schemes, partly funded through the Carbon Trust, calling upon expert audit, and staff-engagement advice. It is possible to achieve considerable shifts to business models and staff behaviour now, but only with committed in-house leadership. There is too little sustained support for this type of scheme, and many businesses are likely to decide that such self-driven action is beyond their knowledge, and outside of their business' interests, while there is no significantly enhanced financial and/or expert assistance and little perceived benefit to their profitability. Achieving a true step change in behaviour and decision making is still not possible under current conditions for the majority of businesses and individuals.

- **Q7 Are the existing commitments for public sector buildings sufficient for the public sector to fulfil its role in driving improvements and leading by example?**

The RIBA strongly welcome the Government's strategy of establishing targets to move towards a carbon neutral Government estate by 2012, and the setting of targets for all new build schools to be zero-carbon by 2016, and all buildings by 2019. These targets will play an important party in driving a revolution in the way that we design and construct buildings. Government should however set an earlier date – perhaps 2016 rather than 2019 – for all new-build public buildings to be zero-carbon.

There is a great deal of uncertainty regarding some current targets and the definitions that underpin them. What will a carbon neutral Government Estate by 2012 mean in practice? There is too little time to do anything significant to the estate to reduce consumption so to reach the target we assume it will mean the use of offsetting and/or allowable solutions. If so, what is the incentive to reduce consumption after 2012? This illustrates the danger of an exclusive focus on carbon rather than targets for reducing energy consumption first, then looking at how that energy is provided. In the recent Zero Carbon Definition consultation the RIBA responded by making clear its support for the hierarchical approach – energy use minimisation, followed by energy efficiency in the fabric of the building, followed then by on-site clean energy generation, finally followed by off-site energy generation.

We believe that a roadmap on how the government are intending to achieve their target would be useful in achieving such ambitious targets. The public sector should certainly take the lead in driving improvements and leading by example. The existing commitments are ambitious yet achievable, if the industry is consulted and engaged and Government recognises the breadth of expertise within the sector. To that end the RIBA looks forward to working with Government to deliver this important agenda.

- **Q8 What will be the most effective way for Government to develop RHI and FIT policy so that combined financing packages of insulation, renewable heat and small-scale low carbon electricity technologies might be offered?**

No response

- **Q9 What action, if any, should the Government take to enable finance to be arranged for the higher cost energy efficiency and low carbon measures? Are there other options the Government should consider? Please provide evidence to support your response.**

See answer to Question 1, under our heading "How do we pay for it?".

- **Q10 What should the Government do beyond these initiatives to promote investment in energy saving and low carbon energy technologies in business and the public sectors?**

No response

- **Q11 Should levels of support through the Renewable Heat Incentive vary by technology and/or customer group? Are there any other ways of differentiating levels of support under the RHI?**

No response

- **Q12 How can we introduce the levy to fund the Renewable Heat Incentive so as to minimise suppliers' administrative costs and reduce uncertainty among suppliers of fossil fuels for heat?**

No response

- **Q13 Do you think that financial institutions, such as banks or other loan companies, would be an effective way of assisting potential small-scale heat generators (such as householders) with financing of the initial capital cost of renewable installations?**

Yes. However Government funding should be conditional on proper attention to design.

What other considerations, if any, should be taken into account when determining eligibility for an up-front payment (for example, only generators with equipment below a certain size can apply, such as domestic customers)?

No response

- **Q14 How can we maintain demand for renewable heat technologies before we introduce the Renewable Heat Incentive?**

No response

- **Q15 Do you agree with the proposal to continue with a CERT-type obligation until at least 2012? Do you also agree that the proposed CESP framework should run concurrently to the same end date?**

No response

- **Q16 Do you agree with our analysis of the potential impacts of a cap-and-trade approach to delivering energy efficiency in homes? Please support your answer with evidence.**

No response

- **Q17 Do you have views on the merits of moving to a different delivery approach for delivering energy efficiency to households? Do you have other suggestions of alternative delivery models which might be effective in achieving our objective?**

We believe that central coordination is vitally important and agree that moving towards a model that involves a central coordinating body would be sensible. We would question however the need to establish a new and separate body when it would seem sensible for the Homes and Communities Agency to take the lead on delivering this agenda. This would also encourage the integration of energy efficient and renewable technologies across the wider housing arena.

The benefits of the "single conversation" model espoused by the HCA are extensive. This is particularly relevant when it comes to engaging with householders, who too often currently have to navigate a minefield of grants, policy and delivery bodies. A well organised and efficient central coordinating body should offer a clear and coherent way for householders to access help and information about energy efficiency; but also importantly it should be able to facilitate implementation on a street-by-street basis, linking up not just with householders but also local authorities and other key delivery partners.

Of course, if the HCA were to take on such a role, it would require significant extra resourcing, above and beyond that allocated in the current round of the Comprehensive Spending Round. This will prove difficult given the spending constraints Government will encounter in the next CSR; however we believe that this is essential in order to meet our climate change goals and sufficient resources simply must be available for this vital programme.

- **Q18 Would you support a voluntary code of practice on energy performance for landlords and/or builders? How high do you think uptake would be, and would it achieve much additional action? Please support your response with evidence.**

The private rented sector as it stands is very energy inefficient and there is virtually no incentive for either landlords or tenants to carry out energy efficiency improvements. With this in mind, we would support an initial voluntary code of practice but we would urge that such a code soon be made mandatory. We believe this is necessary to ensure take-up across the private rented sector which is extremely fragmented and varied. If such a regulatory framework were to be implemented, it would need to be accompanied with a comprehensive package of incentives and assistance- carrots as well as sticks – to ensure that energy efficiency improvement measures are feasible and that cost-barriers are surmountable. Whilst there would be a cost to such a scheme, both to Government and landlords, we believe that economies of scale would reduce the cost of carrying out such measures to landlords to a suitable level to allow large scale take-up.

- **Q19 Should we require marketing material for property sales and rental to feature the EPC rating more prominently? If so how?**

- **What delivery bodies or industry groups could be given access to the EPC database, and how could they make best use of it whilst ensuring that it is not misused?**
- **Should we require an EPC to be obtained during major building work? If so, what types of work should trigger such a requirement? Please support your answers with evidence.**

We believe that including the EPC rating more prominently on marketing material for both sale and rental property might help to drive both consumer interest and understanding in energy efficiency, however, the crucial issue is how high good energy/ carbon performance is up the list of priorities for a potential occupier – see previous comments on Q3 – behaviour change. . We believe that an EPC should be required to be obtained during major building work, and that any building work that requires planning permission or that goes through permitted development should trigger a requirement to obtain an EPC.

Wider access to the EPC database is potentially an extraordinarily powerful tool to help get to grips with the challenges of developing a clear understanding of existing energy use and rapidly checking how successful attempts to improve performance have been in practice. The issue seems to have become entangled in issues of privacy for reasons that are not easily understood. We believe that the benefits of controlled access to the database will outweigh the disbenefits to individuals or organisations – energy use is an issue of national significance. . At the very least, we believe that if EPC reports were available on a dis-aggregated basis (where reports were not directly

attributable to an individual property), this could prove extremely useful to researchers and industry, by giving a clearer picture of the situation. For example, EPC Reports could be made available on a typology basis (type of property, number of bedrooms etc.)

However we would like to make clear that the emphasis should be on measurement of energy performance and usage and not just predicted energy consumption and building performance. Currently Display Energy Certificates are only required for buildings with a total useful floor area over 1,000m2 that are occupied by a public authority and institution providing a public service. We believe that Display Energy Certificates should be compulsory for all non-domestic buildings, and updated annually to reflect real-life energy usage.

- **Q20 Besides removing the threshold for consequential improvements, which will be considered in the consultation on changes to the Buildings Regulation in 2009, are there any other options for wider building regulation that you would like to see considered in the longer term? Please support your answer with evidence for the effectiveness of your suggestions.**

Rather than rely solely on building regulations to drive change, in the context of the need to instigate a step change reduction in building energy consumption we need drivers that instigate changes to buildings in order to achieve that reduction rather than use regulations to compel upgrades as an adjunct to other works (Again see comment on Q3).

With regards to wider changes to building regulation do have a number of suggestions.

Use of roofs in dwellings: all roofs to detached and semi detached houses are a resource for future generations and must be used to the full. The obvious need for all issues of suitability need to be addressed; comprising not just materials and materials resources but also "designed in" facilities. Roofs should be able to be used in as many ways as possible, as designing a pitched roof where the volume cannot be easily used is condemning this to no more than simple storage for its whole life. Roof spaces should be capable of easy conversion in to storage and with the addition of appropriate fire light and vent measures also convertible in to useable space. Additionally it should be relatively easy to covert part of the roof in to a terrace (where over looking is not a problem). All of these opportunities for conversion can contribute to sustainability- whether that means allowing conversion/ change of use in future, or providing space for urban agriculture.

Roofs where pitched should also be easily convertible for the addition of solar panels (both thermal and PV). Rainwater collection and re-use is feasible and achievable without excessive expensive, and if flat roofs are provided, these should be easily adaptable to provide green roofs.

We would suggest that all these sustainability measures should be considered for future inclusion within the building regulations.

- **Q21 Do you agree with the approach of conducting a review in 2012 to assess the effectiveness of other policies before considering further policy interventions for the energy performance of existing buildings?**

Are there other options you think should be part of our strategy? Please support your answer with evidence.

Yes.

There is strong evidence currently to suggest that in areas of comprehension compliance and effectiveness the current regulations have missed the point by some measure. There needs to be a clear understanding and review of the objectives and the best way to communicate this to the industry and the general public. Anecdotally, RIBA members have suggested that too often building regulation requirements are ignored, manipulated or misinterpreted.

For example the concept of the Planning Portal is excellent, but in reality few members of the public (or construction profession) are aware of it and many others appear to be confused by the content. The name should be more obvious and much clearer advice available.

- **Q22 Do you agree that the heat markets forum should consider regulatory arrangement for district heating to ensure consumer protection? Are there specific issues you think it should cover?**

No response

- **Q23 There are a number of ways to tackle commercial barriers to district heating. These include using the planning system and heat mapping, encouraging or requiring certain buildings to connect to networks and engaging property developers. Which of these options should be taken forward and why?**

Within a development boundary it is often difficult to balance the heat to electricity load and delivering a community-wide district heating network, serving properties beyond the site boundary, cannot be the responsibility solely of individual developers. There needs to be a coordinated approach by local government to enable district heating networks where the heat supply would be most beneficial. Whilst there are dangers in developing overall strategies that rely on the concept of using "waste" heat in a world that may well not be based on burning fuels to generate electricity (as explored in Q26), we suggest that Conservation areas and listed buildings be automatically mapped by local authorities as a particular case where the heritage issues are so significant as to make extensive interventions to the building fabric unacceptable. By using this analysis, decentralised power plants can be strategically planned so that historic buildings that are unable to be upgraded to the same building fabric performance as new build can benefit from a district heating network.

If heat networks are to be developed, local authorities are best place to plan them in a coordinated manner. It cannot be left to public or private sector individual developments each with their own CHP high levels of heat wastage spread across our towns and cities, regardless of the site's constraints or opportunities. This local strategy could be delivered by strengthening the existing requirement for local planning authorities to carry out analysis set out in the supplement to PPS1.

With regards to encouraging or requiring certain buildings to connect to networks, we are in favour of this proposal. We would point to the example of the Greater London Authority, which has led the way in encouraging developers to incorporate combined

heat and power generation in major developments through the London Plan and subsequent Supplementary Planning Guidance. This approach has led to improved energy efficiency and significant reductions in CO2 on new developments through the use of new CHP and Community Energy systems. We would urge the Government to consider introducing such planning guidance across the national planning system, with an obligation on developers to incorporate CHP systems in developments over a certain scale (and where technically feasible.)

- **Q24 What are your views on the options for reducing the risks of poor returns on investment in district heating networks? Which do you think would be most effective and are there other more appropriate solutions?**

No response

- **Q25 Will the ETS and other policies, such as the Carbon Reduction Commitment and support for renewable CHP, send a strong enough signal to encourage the development of combined heat and power schemes and more efficient use of surplus heat? If not what measures do you believe would provide sufficient stimulus to accelerate new CHP capacity build? Can you provide evidence to support your view?**

No response

- **Q26 As electricity generation overall becomes much less carbon intensive than today, the advantages of CHP powered by fossil fuel in reducing carbon emissions will diminish, although it will continue to be a cost-effective energy efficiency measure. When do you think CHP powered by fossil fuels will no longer help to reduce emissions because the alternatives are less carbon intensive?**

Decentralised energy and district heating networks assumes that gas can be used to generate heat and power. This presumption needs to be considered in the context of a long term vision to decarbonise the national grid, and the long term security of our national gas supply. Consideration of long term gas supply is particularly important as North Sea gas production has peaked, and the UK will increasingly move from being a net exporter of gas to a net importer.

We believe that the role of biomass in decarbonising energy supply needs to be reappraised. In some circumstances biomass can play an important role. For example, biomass can provide a sustainable, cost-effective energy supply for large scale specialist installations in suburban areas, ideally where there is security of supply and material can be locally sourced. It may also play a role in decarbonising existing, hard to treat buildings at appropriate densities and scales.

The considerable disadvantage is that biomass boilers require a high-volume of fuel, and land-take to produce it, which can be in direct competition with farming. We would question the inherent sustainability of competing with food production for the UK's farming land to deliver biomass in our cities.

The heat-energy production ratio from such installations also provides a perverse disincentive to improve the energy efficiency of buildings, as discussed above. While there remains a disincentive to improving thermal performance & air tightness of our buildings, the RIBA believes that we should not be encouraging the transportation of

biomass into our cities for individual developments. Assuming improving the thermal performance of our buildings is achieved, then biomass could prove a viable alternative fuel source, led by consumer demand as fossil fuel prices increase. However it should not become the default fuel source driven by arbitrary clean energy targets. For city developments other clean technologies should be utilised wherever possible.

Government must investigate fully the potential of bio-gas to de-carbonise our gas supply network. Whether through Anaerobic Digestion or MBT or even newer gas supply technologies, there is massive potential for the UK to move away from North Sea/ imported gas and play a part in decarbonising our gas grid. However this will require a shift in thinking across all sectors of the economy- food waste will need to be comprehensively assessed and viewed as a resource.

- **Q27 Should the Government do more to publicise the opportunities and benefits of CHP and surplus heat. If so, how should it do this, and which are the key audiences we need to reach?**

Any promotion of the opportunities and benefits of CHP and surplus heat must be in the context of a coherent plan for fuel supply over time. CHP generator installations have a finite life and it may be that CHP is a bridging technology that maximises the efficiency of fossil fuel (or indeed biomass) use in the short to medium term but is programmed to be replaced in due course as other technologies are developed – this obviously has implications for the corresponding longevity of the associated pipework infrastructure.

- **Q28 Do you consider such cooling technologies can play a role in delivering a renewable and low carbon energy mix? What opportunities exist for their exploitation in the UK? What further factors do we need to consider?**

The key issue is how scalable such cooling technologies are – a technology that works well under particular isolated circumstances may not work at all if adopted indiscriminately. Again the work of Professor David MacKay is useful as an example of how the orders of magnitude of problems and solutions can be compared. (That is not to say, of course, that such technologies should not be exploited in appropriate circumstances).

Q29 Do you agree with our analysis of the likely impacts of the proposals in this document and in the associated impact assessments on:

- **carbon dioxide emissions?**
- **energy prices?**
- **fuel poverty?**
- **security of supply?**
- **sustainable development?**
- **the economy?**

Are there any other wider issues that we should consider? Do you have any other comments on the Impact Assessments?

No response.