Urban planning for an oil constrained world – the case of housing

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This presentation draws on the results from three studies:

- Homes for the future[i] – which looked at the impact of the rise in one-person households on resource consumption (including energy) and sought housing alternatives and policy initiatives for tackling the problem.
  News article:
  http://www.telegraph.co.uk/news/1525288/Singletons-%27will-cause-an-energy-crisis%27.html

- Green houses for the growth regions[ii] – which investigated whether current government policy could deliver ecological homes in the growth regions, the barriers experienced to the development of eco-homes and the post-occupancy issues.
  News Article
  http://www.guardian.co.uk/society/2008/jan/29/zerocarbon.homes

- Microgeneration in the Gateway[iii] – which explored current practice in terms of the inclusion of microgeneration in new housing developments throughout Thames Gateway, determined the factors influencing implementation (with particular focus on the role of local planning authorities) and identified examples of good practice with a detailed study of the GLA.

The key findings were as follows:

1.0 One-person households

- Increase in one-person households will significantly increase domestic energy consumption : increases demand for housing units, reduces energy efficiency per capita and one-person households are becoming increasingly affluent which increases energy consumption.
- One-person households are the biggest consumers of energy per capita. They consume 55 per cent more electricity and 61 per cent more gas per capita than four-person households.

- Of the growth groups single never-married males aged 35-44 (i.e. The most affluent group) consume the most energy.

- Design, fiscal and awareness-raising solutions including ecological homes, communal and collaborative housing forms, the introduction of occupancy tax and more widespread relocation packages, educational programmes and targeted advertising campaigns, could be used to significantly reduce the future environmental impact of one-person households

2.0 New housing programme

- Cost is not the key barrier to the developing housing to higher environmental standards. Insufficient regulatory standards, technological, infrastructural and knowledge capacity are the key barriers to overcome.

- There is a real issue about whether there is currently the capacity in the house-building and energy industries to provide zero-carbon homes.

- Current government strategy is unlikely to drive the required increase in technological, infrastructural, service and knowledge capacity needed to deliver zero-carbon homes.

- The statutory framework needs to be strengthened if zero-carbon housing is to be delivered – using building codes (national or regional) or placing a statutory duty on local authorities to achieve carbon targets.

- Developing the capacity to deliver zero-carbon homes will take time and may mean that the

housing programme will need to go on hold or at least be slowed to enable this to happen.

3.0 Post-occupancy problems

- A variety of post-occupancy problems could restrict the effectiveness of technologies provided in zero-carbon homes, ranging from malfunctioning energy systems to residents removing the technologies and installing low performance alternatives.
- Developers complained that lack of suppliers, management and maintenance companies to support zero-carbon homes was the main barrier to their successful operation. Thus investment in this area is required to build the required capacity for delivery.
- The involvement of ESCO's in new housing developments would help to overcome this problem.
- Use of passive technologies in new developments maintained and managed by external service providers is the most likely to be effective.
- A resident led approach is also feasible if there is some imperative for residents to change their behaviour (e.g. using voluntary agreements , personal carbon budgets) but only if appropriate training was provided in combination with adequate access to suitable technologies.
- The introduction of appropriate product legislation to ensure all new appliances and fixtures comply with zero-carbon standards.

4.0 Existing stock

- Installation of passive technologies
- Provide some imperative for resident action - voluntary agreements, personal carbon budgets, etc
- The need for resident training programmes – using information and monitoring techniques – Global Action Plan provides excellent model
- The need to strengthen communities - based on cohousing principals – encourage sharing resources, education through informal networks, easier to implement and see impact of local energy initiatives, peer pressure, etc.
- Tackle under-occupancy – relocation service, better designed communal accommodation, occupancy tax, etc.
- Provide some imperative for local government action, investment and support – e.g. local carbon targets.
- Improve access to technologies needed – product legislation.
- Encourage the involvement of ESCO's in existing communities

5.0 Bigger questions

- How should the Government strengthen statutory framework for delivering zero-carbon housing?
- Will the energy and house building industries be able to build zero-carbon homes and provide associated services by 2016? If not what support is needed?
- Should the rate of development be slowed until the framework for delivering zero-carbon homes is in place?
- What will be done to resolve post-occupancy issues?
- Can existing stock make a bigger contribution to reducing domestic energy consumption?
- Is there a case for housing renewal programmes?

Zero-carbon Homes Project
http://zerocarbonfutures.org/
ONLINE JULY 20th 2008

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[i] WILLIAMS, J, (2007) Innovative solutions for averting a potential resource crisis – the case of one-person households in England and Wales – Journal of Environment, Development and Sustainability, 9 / 3, pp 325-354.

[ii] WILLIAMS, J (2008) Greenhouses for the growth region, *Journal of Environmental Planning & Management*, 51(1), pp 1-34.

[iii] WILLIAMS, J , Planning's role in delivering zero carbon homes – forthcoming in 2009